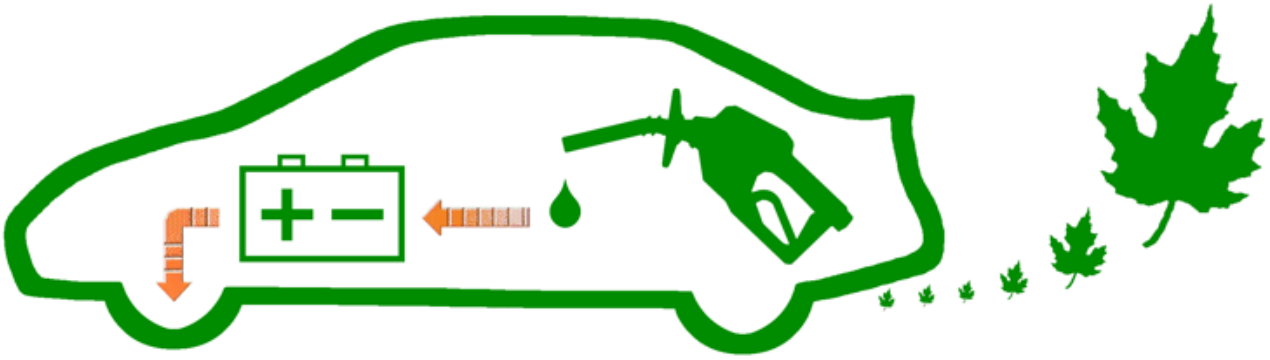
john1701a's
Personal Log Book



I purchased a Classic Prius (hybrid-electric, fuel-efficient, super-ultra-low-emission vehicle) back on 9/9/2000 and drove it in Minnesota until I replaced it on 10/23/2003 with an Iconic Prius (which was even cleaner and more efficient). Then on 5/26/2009, I upgraded to a 2010 Prius (for amazing efficiency). Following that on 2/29/2012, I got my first plug-in model (pushing MPG significantly higher). The big upgrade happened 4/01/2017, when I replaced the PHV with a Prime, trading 11 miles of EV driving for 25. This book documents those personal thoughts & experiences.

From: **2-13-2019** to **10-04-2019**

Bookmarks:

2-13-2019 **Smug.** Ever wonder how the smug respond to the logic of a sensible business approach? This was a great example: "*And in Toyota's case it's head in the sand and fingers in the ears, while loudly screaming lalalalalala I can't hear you.*" That's how they perceive the choice to ignore rhetoric. That never ceases to amaze me. Their own hypocrisy goes totally unnoticed. The very comments they make about the situation are their own version of lalalala. Yet, they don't see it. Pushing ahead blindly with nothing but the hope of "*if you build it, they will buy it*" has failed dramatically. Studying the market and staying true to goals is meaningless. They have a group-think idea and believe everyone else will follow, even when there's nothing to support that belief. I find the lack of understanding quite troubling. They simple dismiss what they don't like, rather than addressing the issue. How does that fix a problem? This was my response to the nonsense they stirred today: Hear who? GM made the mistake of listening to enthusiasts. Volt-1 failed to attract their own loyal customers as a result. Volt-2 repeated that same mistake, delivering even more of a niche product. Targeting the wrong audience cost GM immensely. They now have a plug-in hybrid about end production with no successor. It was a huge waste of tax-credits. Toyota isn't concerned about the opinions of those screaming "*anti-EV*" because they don't represent their showroom shoppers. Profitable high-volume don't come from listening to those not interested in what mainstream consumers will actually purchase. Why would Toyota put so much hope on dealers serving a complacent market? Setting the stage for plug-in offerings by shifting a large chunk of their fleet over to hybrids is a sensible next step. Meanwhile, other automakers are making a lot of noise but delivering very little. It's quite hypocritical to pretend not to see that taking place by aiming a spotlight on Toyota. Those of us paying attention see what's really happening. Think about how easy it will be to sell Corolla plug-in hybrid when Corolla hybrid is a common sight on roads and in parking lots. It will be that silent sucker-punch to those enthusiasts here in denial about how to appeal to ordinary people... in high-volume... for a profit.

2-13-2019 **Facts.** Don't you love how people throw around facts, but fail to include any detail to actually support what they claim the fact represents: "*The fact people are abandoning Toyota hybrids in droves for the model3 says it all.*" I wasn't about to let that nonsense attract any thoughtless response: That "*fact*" omits vital information, providing a distorted perspective of the bigger picture. True, some owners of Prius are indeed trading up for Model 3. That's a very small percentage though, and they'd be really missing out on the opportunity by not taking advantage of the tax-credit. It's a low-hanging fruit situation, quite short-sighted. What happens when that $7,500 incentive is gone? RAV4 hybrid (second-generation is just rolling out now) shows a great deal of growth potential. What does that say? It's a compelling choice at an affordable price. That's what mainstream sales are all about. Corolla hybrid is in a similar strong growth position. For anyone who didn't like the look of Prius, there's no excuse not to seriously consider it. That's what product diversity is all about. Within the fleet, there will be a hybrid choice to your liking... and each is designed to take the step of offering a plug very easily. Remember, Toyota is investing heavily in battery advancement. So what if those plug-ins aren't offered for a few more years still. In the meantime, the platform to take advantage of the new tech will be establishing itself on a massive scale. Dealers & Salespeople will grow familiar with the system ahead of demand from showroom shoppers. So, what does that "*fact*" really tell us about the upcoming market?

2-14-2019 **Direction & Patience.** The smug is growing. Purity is changing to intolerance. It's getting ugly. Statements like this indicate a turning point: "*They reduce emission sure, but not enough, they are always burning fuel, that's not sufficient.*" Remember how Volt had an engine, but everything was done to avoid actually using it? That never made any sense to anyone other than enthusiasts, but it did serve as a bridge to reach ordinary consumers. That failed, but the reasoning of it appealing to mainstream consumers was an obvious point. They'd sell the idea of the engine only being used as an emergency backup, but promote the fact that it performed without sacrifice to power or speed when you used it. That mixing of messages is what ultimately killed Volt. Lack of agreement of purpose is even worse than not fulfilling a goal. Advancement in any direction is impossible without consensus. GM found that out the hard way by trying to please everyone with a one-size-fits-all solution. Thankfully, we can clearly see Toyota isn't doing that. We get a wide variety of hybrids for their wide variety of customers. That makes the direction to take with the technology very easy to agree upon. I pointed that out in my attempt to deal with today's smug post: A plug-in hybrid will dramatically reduce consumption & emissions. My Prime averages 80% EV driving, despite numerous long highway trips per year without a place to recharge. It's a technology we can deploy immediately, due to its affordable design. GM failed miserably with Volt due to the cold, hard reality that it was too expensive to produce. That made it very unattractive to dealers and made the sticker-price unreachable for ordinary people. Your "*not enough*" isn't constructive in 2019. You know quite well next-gen offerings will take battery-tech the next step to being realistic for the masses. In the meantime, the much needed infrastructure will be improved too. Most businesses don't have any chargers at all. The few that do only have a couple. How does that help anyone beyond early-adopters? Show some patience.

2-14-2019 **All-Caps Rant.** Wow! The response to Toyota's advancement of Corolla got intense. It's obvious why. Prius was an easy target. Enthusiasts will dismiss it as slow & fugly, then move on. They saw no reason to take it seriously. Even though sales were strong, it was easy to dismiss as just being a green statement. People were only buying it to show off their care for the environment, to portray an image of caring for all things green... as far as they were concerned. That served enthusiasts well too. It was their excuse to deny. Seeing the same technology rolled out to Corolla without any sacrifice whatsoever derails their avoidance tactics. How does one fight such a popular vehicle offering so much benefit for so little cost? MPG combined rating equal to Prius in a stylish body already proven very popular is a death blow so extreme, they have no logical response. So without any sensible next step, the inevitable happened. Someone posted a rant in all capital letters. It was hysterically long too, just a single run-on sentence a large paragraph in length. You can't help but to be amused by such desperation. It didn't work though. I posed the following to address the nonsense: Wanting it done quickly rather than done right has consequences. Look at GM's rush to market with Volt. It's production will soon end with no successor. That proved a massive waste of tax-credits. Toyota's plug-in approach is slower, but stands much greater chance of reaching mainstream consumers affordably and in large quantity.

2-15-2019 **6 Weeks Left.** Remember the hell some of those enthusiasts put me through? They fought for years in favor of a plug-in hybrid with no compromise, one that only used the gas-engine as an unnecessary emergency backup. They coined "*EREV*" to displace the original purpose of addressing "*range anxiety*". It supposedly worked so well, there was no reason to even discuss anything other than EV driving. That was how they chose to fight Prius PHV and Ford's Energi. That kind of worked, until BMW came along with i3. That exceeded performance & purpose of Volt to such an extreme, enthusiasts lost their way. That's what ultimately pushed them to all focus on EV competition instead. Nissan was the victim of that. Leaf's lack of an active thermal-management system left it vulnerable to spin attacks. To the dismay of Volt enthusiasts, that didn't work. They were losing the fight regardless of what seemed sound logic. It was the dismissal of facts they didn't like which caused their downfall. Every time vehicle price was brought up, they'd brush it aside, saying that was of no importance. Having a $7,500 subsidy to disguise that problem helped tremendously. They could shield attacks with that artificial barrier... which has since expired. Seeing that phaseout coming and the consequences there of, enthusiasts of Volt almost unanimously shifted loyalty over to Bolt instead. Remember how I pointed out the "*olt*" part of the name could later be exploited to mislead? That's exactly what we saw. The confusion was accepted as a misunderstanding, as if that's what everyone had been talking about all along. We saw that mantra spread like wild fire. As if overnight, Volt enthusiasts began saying the path to Bolt was planned all along. As soon as EV became "*affordable*", the switch would happen. Halting production mid-cycle was supposedly an expectation, even the part about people losing jobs in the process. Ugh. I reminded them of the rhetoric on what's left of the daily blog, pointing out no progress has actually been made in that regard: GM press-release October 2, 2017 stated: "*In the next 18 months, GM will introduce two new all-electric vehicles based off learnings from the Chevrolet Bolt EV*."

2-16-2019 **Constructive Coexistence?** Fuel-Cell technology gets brought up a lot as a form of diversion. Rather than deal with issues at hand, they attack Toyota with that nonsense. Pretending GM, Honda, and Hyundai don't have fuel-cell programs of their own is key. All you need is just enough to make people lose focus. It's like yelling "*Squirrel!*" with the hope it makes the person talking stop long enough for someone else to fill in the silence. It doesn't matter what is said next, just as long as topic changes. On rare occasions, I get to actually point out some facts with the hope of constructive feedback. It should be obvious that there will be a co-exist situation with hydrogen. That means of energy storage & transfer is practical for certain application. Getting people to consider the possibility of particular situations being more advantageous is a challenge. I keep trying though: Keep in mind that hydrogen will have a place in our society, but that will almost entirely be on the commercial side. The reach out via passenger vehicles right now is to stimulate support for that. Think about how practical they would be for large business fleets and the certain types of cargo trucks. Educating those who will fund those programs is difficult. Rollouts like this do a great job providing that information. Plug-In vehicles face serious challenges in the meantime. High-Speed charging is basically non-existent when you consider how rare those stations actually are. There cost for equipment and the physical space they occupy makes them a monumental effort to rollout. A variety of vehicles supporting a minimum rate of 150kW simply aren't going to be realistic for a number of years still. We are very much in the earliest stages of rollout. In other words, the doom & gloom and conclusions people are already drawing are complete nonsense. There's no reason to take any of that seriously. One thing you can count on though is there will not be a single solution. We are embarking on a multi-technology age where there will be a variety of approaches taken. The one-size-fits-all mindset is not constructive.

2-16-2019 **Charging Cost.** A problem most plug-in advocates tend to avoid is the cost to charge. Under some circumstances, it can be a good deal. Heck, at my local grocery store, it's free. Unfortunately, sometimes it can be really expensive. So, you need to consider all the factors a play. The very high-speed is where you have to be really attentive. A friend of mine tried it with has BMW i3 using a DC Fast Combo charger. He got 17.07 kWh over the course of 45 minutes. A slower charge (2.5 hours) for me overnight (for the off-peak discount) with my Prime is 6 kWh. That comes to $0.42 for the total cost of that electricity. My friend had pay $15.75 for his charging. That much faster speed at a more expensive rate (due to the higher draw during peak hours) made if far more expensive for him. Was that worth it? Depending upon the situation, perhaps. In terms of what that electricity equates to for distance, it's typical to get efficiency of around 4 miles/kWh on average for this time of year in the south. That's about 68 miles of travel. At 50 MPG using $2.50 per gallon gas, that would be equivalent to paying $3.40 for the same distance. So on the road if you really need electricity, it might be rather expensive for a rapid recharge. Less convenient is usually a better idea. For my commute, electricity is by far the better choice. For my long-distance trips, I'm much better off with just using gas. Eventually, infrastructure will make electricity favorable in far more conditions. That doesn't mean you should wait though. The choice of fuel available to plug-in hybrids can provide the best-of-both-worlds experience... if you pay attention to charging cost.

2-16-2019 **Attacking Others.** It's one thing when a troll becomes an antagonist who lashes out at you. But seeing it happens to others makes the effort to attack anything in opposition obvious. What do you do then? Today, it was this which brought the newest problem to my attention: "*I'm just really not understanding all this effort you're going through to point out the superiority of BEVs and the (frankly) marginal improvements in oil savings when tons of people are moving to hugely less efficient vehicles. You're practically preaching to the choir while (to extend the analogy) the church burns down all around you.*" It was directed at a long-time troublemaker, a person who would spread FUD for the sake of keeping conclusions from every being draw. Raising doubt can be an effective means of undermining. Fortunately, you can point out the pattern of repetition after a while. That's what stirred this anger. The other being attacked recognized the intent and wasn't about to put up with any more of it. I joined in with this to help out:

Oddly, preaching to the choir does have its place. It teaches everyone about goals.

I was called a "*troll*" for years due to my pestering of Volt enthusiasts for them to get their priorities straight. Individuals, like our troublemaker here, obsessed with range & power to such an extreme, they lost touch with purpose. It was all about fighting the other plug-in vehicles for superiority. What an embarrassment for those of us really trying to make a difference.

My mantra was repeating the "*too little, too slowly*" concern the GM bankruptcy recovery task force stated. They were worried the technology in Volt wouldn't result in the profitable high-volume offering GM was claiming it would become. So when I asked "*Who is the market for Volt?*" over and over and over again to point out GM wasn't doing anything to spread that technology to vehicles their own loyal customers would actually purchase, I got personally attacked by the "*vastly superior*" crowd.

It was brutal, a test of character remaining true to goals. But it paid off. We now see that all the rhetoric against Prius from those Volt enthusiasts really was an effort to satisfy want, rather than to fulfill need. GM was actually the laggard. They rested on their laurels and fell into the innovator's dilemma trap, despite so many warnings. Now Volt production is about to come to an end without any successor. All those tax-credits with the intention of establishing a mainstream vehicle were wasted. So much opportunity was missed... and they enthusiasts now recognize my concern was sincere all along.

Ironically, this topic of "*EV Mode in Cold Weather*" is what started all the rhetoric. Precisely 1 year before rollout of gen-1 Volt began, back when little was known about plug-in vehicle performance, I brought up this very topic. Armed with some Nissan Leaf mule testing data, I pointed out how much of an impact to range use of the heater had. Volt enthusiasts immediately got angry, claiming my effort was to undermine the "*40 mile*" range goal GM had set by making up FUD about electricity use. Now, we all see that couldn't have been further from the true. I was objectively stating a reality.

Recent rhetoric has turned to the state of panic GM enthusiasts are now dealing with. The abandonment of Volt came with the understanding that Bolt would be the replacement, that GM would aggressively deliver EV choices. It was all based on a press-release from October 2, 2017 stating the following: "*In the next 18 months, GM*

will introduce two new all-electric vehicles based off learnings from the Chevrolet Bolt EV." There are only 6 weeks left of that self-imposed deadline... and we still haven't heard anything from GM.

That terrible mindset of doing it quickly instead is something we must remind ourselves of and make a concerted effort to avoid. Toyota's approach of staying true to goals and taking the time to do it right is proving their wisdom of understanding the market. They know their audience. They study the entire system, carefully noting impact to every step of the production, delivery, and support process.

2-16-2019 **Enthusiast Hope.** The spin keeps coming: "*Can't wait to see all the EV's GM has claimed are in the pipeline.*" Seeing that, I was happy to point out the GM press-release October 2, 2017 on that thread. Including those words of "*In the next 18 months, GM will introduce two new all-electric vehicles based off learnings from the Chevrolet Bolt EV*" will obviously still. I also pointed out that April 1, 2019 is rapidly approaching and we still haven't heard a peep. Then I really let those enthusiasts attempting to stir hope with this additional bit of cold, hard reality: "*Following those two, at least 18 more EVs will launch by 2023. GM has already said that it expects to launch 10 electrified vehicles in China by 2020. The 10 for 2020 included plug-hybrids like the Cadillac CT6 Plug-in and the Buick Velite 5 range-extended EV, but some of those ten China-only models will likely be among the 20 EVs that are part of the announcement.*" Needless to say, I'm on the offensive now. They must present substance, something of merit. Their attempts to stir blind hope have had costly consequences. Allowing that to continue is unacceptable. They must acknowledge how the path they chose didn't work, they choose a new one. There's nothing wrong with a correction measure. You learn from mistakes, they try something else.

2-17-2019 **Closure.** We've come full circle. I got this in reply: "*You don't need to be an insignificant mosquito looking for a satiating blood meal.*" It was followed by a few personal insults. That invited me to post what I have been waiting a very, very long time for. In other words, patience does pay off:

You think analyzing a situation, sharing observations, then waiting 18 months for it to come to fruition is that? Talking about a complete loss of objectivity. After having to tolerate so many personal attacks, I am very much allowed to point out the hypocrisy unfolding.

This group went from spinning a term called "*EREV*" to set their favored technology apart, without substance to actually support any clear difference, to abandoning it entirely when those efforts fell apart. The choice at that point was to embrace EV and promote how rapidly GM would deliver upon new promises.

This group heavily endorsed those promises, pushing the belief that GM would build upon what Bolt achieved to bring about 2 new all-electric choices. The timeline was firmly established. We had to accept what was promised blindly. We were told to just patiently wait. That time is about to run out and we still haven't heard anything.

GM's reputation for "*over promise, under deliver*" is undeniable. The fact that it stings to find out it happened again is no reason to blame me for your decision to believe what was promised. I was sharing as much history as possible to get you to notice the pattern, to take a more objective view of what could actually be delivered.

The blood is yours and I am not the cause. I'm the one standing next to you with ointment hoping to finally get what I came here for all those years ago... an ally, someone else who understands what it really takes to get each legacy automaker to end production of their traditional vehicles.

GM's fleet is highly dependent upon vehicles which return a very large profit. That means a very large sticker-price, a situation that doesn't work in the age of electrification. Adding the cost of batteries is a very real challenge this group is only now coming to realize. 12 years later isn't too late, but there certainly is a lot of excess baggage to deal with.

What really stings though is the reality that Toyota doesn't have anywhere near the baggage. With Corolla, RAV4, and C-HR hybrids becoming well established in various markets, their preparation for introducing plugs to those particular hybrids is becoming an obvious opportunity... something GM has totally missed.

That lack of diversification effort is what will likely cause the very idea of Volt to abandoned entirely. Most of the early-adopters have already written off GM as having failed in that market. Remember all those requests for GM to finally deliver the Saturn VUE plug-in hybrid SUV they promised? Over the years, that turned into a focus on Chevy Equinox as the recipient of Voltec instead. Yet, people called me a Toyota troll, despite the blatant effort to push GM to capitalize on their own technology.

Ugh.

2-18-2019 **GM Hybrids.** Seeing the shift back to usual levels of rhetoric is interesting. This morning, it was yet again GM getting attention. It's the reason so much blogging focus is on GM, spin emanates from their social-media hubs. In this case, it was an article asking: "*Ford Escape Hybrid On The Way, How About A Chevy Equinox Hybrid?*" That obviously caught my attention. Would there be any mention of RAV4 hybrid? Turns out, the answer was a glaring no. The only mention of RAV4 was to combine sales numbers of both Equinox & Terrain together, then compare them to sales of only RAV4. How is that the slightest bit objective? What was most telling is when you look up the actual count for RAV4, which was suspiciously missing. It was 427,170 for last year. The count for both Equinox & Terrain together was 446,932. It was a blatant greenwashing attempt. The difference is tiny, only 4%. Imagine if they would have also included the count for Highlander to make it fair. Those extra 224,511 units make the difference massive. Instead, all we got was a compare of Ford engines with speculation of what a GM system could deliver. Pretending RAV4 hybrid doesn't exist is an dishonest effort to feed a narrative. RAV4 hybrid is now on its second generation. There is no excuse whatsoever for a claimed journalistic source to misrepresent the market like that.

2-19-2019 **Too Early.** It's both intriguing & annoying to have witnessed such an attitude shift. Volt was vastly superior, period. All others were "*laggards*" and Toyota was so far behind it would never catch up to GM. I heard that same sentiment for years. Prius Prime was getting attacked in every possible way. Then GM confirmed Volt production would come to an end sooner than anyone expected and without an successor. All of a sudden, the attitude changed. Rather than spinning the perception of a market Volt alone occupied, it was a new consideration that judging now was far too early. Really? I had been saying that for years! Subsidized sales don't represent mainstream demand, so all of the tax-credit related interest is nothing but early-adopter rhetoric. What that audience feels is in no way a reflection of what ordinary people will feel. That's why enthusiasts have gatherings and participate online. They are a small bunch of specialists... who unfortunately suffer from group-think. They have a very difficult time understanding how different the perspective of an uniformed showroom shopper. They simply cannot relate. Hearing so many finally comes to the realization that the situation they experienced is not the same in some way as what the masses will encounter is somewhat encouraging... though, very hypocritical. There's that frustration of having been accussed of trying to undermine their efforts, then having them abruptly change their stance and agree with what I had been saying all along. Ugh. At least I have extensive documentation pointing out my observations of the time. That level detail is quite valuable. With it, more accurate predictions about market response can be made. So, it's not wasted effort... however, the fact that I get attacked on a regular basis for staying true to goals and not giving into the temptation to draw conclusions too early is quite a mix of emotion. I guess being strong and remaining polite through even the most hostile of personal strikes is a credit to my character. I never gave them the satisfaction of fighting back on their terms. I just kept researching and publishing videos to counter their attempts to create misconceptions and spread undermine narratives.

2-19-2019 **Break-Even Point.** How many times in the past have we encountered someone "*doing the math*" to attempt to figure out the break-even point? It is always looked upon as the technology having to pay for itself entirely, and in terms of nothing but a saving in gas expenses. No value whatsoever is given in regard to reducing dependence on oil or reducing impact to the environment. There isn't ever consideration for those other factors, period. Whether that is appropriate or not, that is the reality we have to deal with. I obviously object to the blatant lack of objectivity, but I deal with it nonetheless... as does Toyota. Remember when RAV4 was first introduced? The hybrid option was only $800. That made the choice a no-brainer. Who wouldn't want an SUV that used less guess, whether the math worked out or not. With gas so cheap, it's much more difficult of an equation than one would expect. Toyota has embraced that reality too. This new generation of RAV4 is now offered in a variety of packages, making the math more of a "*value added*" situation rather than just a matter of saving gas. That's quite obvious when you consider the top package offering, which is hybrid-only. You want the best? It only comes as a hybrid. I'm not sure if Avalon will be taking that same approach, but that seems rather likely. The new-gen upgrade this year jumps from 40 to 44 MPG. An article featuring the hybrid naturally focused on ROI. That return-on-investment perspective is annoying, but the writer knows his audience. He simply stated the pricing difference was only $1,000 more. He also pointed out the real-world MPG results were observed higher than the EPA rating.

2-20-2019 **Temperature Influence.** It's not as simple as one would think. There are tolerances & circumstances to consider and most anecdotal observations don't provide enough information to establish a pattern. You can guess, but the detail can be illusive. This is what new owners find: "*The manual, and my experience says continuous < 14 degrees F will trigger auto HV start... The car has its own mind some days.*" That is inevitably followed up with a post online asking why that situation isn't always clear cut. Sometimes, the observed rule doesn't apply. They want to understand what else is happening. Even for me with detail, every scenario may not be accounted for and experiencing a specific temperature a specific way is very difficult. So, all we can do is share as much knowledge as we can. Today, from me, it was: Outside temperature alone is not what determines the behavior of when the engine runs. Most importantly, the battery-pack must be warm. If you didn't have it plugged in and the temperature within is below freezing, the engine will start regardless of degrees outside the car. The initial trigger is 11°F for outside temperature, with a warm battery-pack (above freezing). That's very easy to confirm if you have an ODB-II reader with aftermarket software (like "Hybrid Assistant" for Android). Following engine warm-up, that threshold changes to 14°F (after power off) or when coolant drops below the threshold you set (while driving), which is controlled by the cabin-heater temperature setting. That threshold for the coolant will drop too, as the vehicle warms up. Knowing all those factors at play and having a means to monitor them, it's easy to understand the car's mind.

2-21-2019 **Single Solution.** An interesting new bit of insight emerged from the endless attacks on Toyota for supposedly being anti-EV. Turns out, if you take a step back to look at the big picture, you see the self-deprecating approach GM took as a mindset of expectation. There's a group-think at play telling the narrative that all automakers must have a one-solution-for-all approach. The idea of diversification goes no further than whether you want a car or a truck. We've been brainwashed to the point that we aren't aware are choices have been limited. It's effective marketing when you lose sight of what could be offered. They have been forcing a belief that everyone embraced. In this case, it's that a single solution is all we have available. That's why the expectation for an automaker to commit to just one choice is so deep in our psyche. We aren't using our brains. We just follow that credence without question. Since when does such a position make sense? For example, why would a trait of a pickup have to also apply to a car? That sounds absurd, until you notice the pattern. This is why GM has gravitated toward only offering the SUV as a choice for mainstream consumers. They can't handle two entirely different audiences... in other words, show favor toward the strengths only a car can deliver. Understand the problem? It's so subtle, you don't realize you're being manipulated. Why did you give up the comfort of a large sedan to pay a premium for a far less efficient and less safe SUV? Put an entirely different way, how can an automaker promote the benefits of a hybrid while also promoting the benefits of a plug-in? Enthusiasts aren't open-minded enough to embrace a co-exist approach. We have overwhelmingly seen evidence of that with EV and FCV clashes. The problem with this is there's this thing called a plug-in hybrid. That represents the best of both worlds, for Prime... since it offers top-efficiency in both EV and HV modes without compromising affordability. Volt was quite the opposite, neither EV nor HV mode was efficient. To compensate for the shortcomings, GM added battery-capacity... which made the vehicle extremely expensive. Resulting from that came an army of enthusiasts spinning a narrative to persuade us that was the best solution available. Problem is, both Nissan and Tesla proved otherwise. They showed the choice could be EV, as well as the PHV from Toyota. And now that Toyota is also striving to offer a competitive EV, there's a chaotic mess for those attempting to market a single-solution perspective. How can Toyota show favor for both choices? This is where "*know your audience*" comes in. Toyota is marketing to entirely different customers. One type shows interest for hybrids. One type shows interest for electric-only. Either may consider a plug-in hybrid. That's called smart business. When you have over 10 million sales each year to consider, you must offer a variety of choices.

2-21-2019 **Tax-Credit Intentions.** I certainly enjoyed taking offense on this play: "*It has almost completely done what it was intended to do, jump start an EV renaissance. Don't reward the laggards...*" The opportunity to choose a fight with a well-known antagonist, spelling out his mistake with such simplicity, was a delight. I'm tired of the insults and there's no reason to allow such blatant attempts to mislead. So, I don't put up with that nonsense anymore: That was not the intent. It's easy to prove too. Had it been, there would have been an industry-wide limit instead of it being for each automaker. What those tax-credits were actually intended to do was help each of those automakers establish a viable (profitable & high-volume) product of their own, something appealing to their particular customers. GM squandered that opportunity, wasting their allocation of tax-credits on conquest... vehicles clearly not targeted at their own particular customers. Why would someone loyal to GM switch from their beloved SUV to a compact hatchback or wagon? Intent was not fulfilled. In other words, the label of "*laggard*" is grossly inaccurate and it distracts from the true problem. We shouldn't have to deal with rhetoric people spread without giving thought to origin or purpose. Automakers who saved their tax-credits for something they believed would become a product that could compete with their own vehicles on the same showroom floor should not be misrepresented like that.

2-22-2019 **Fanboy Instructions.** Volt production will be coming to an end soom and we still haven't heard anything at all from GM. No one has any what's in store. Heck, even the most hopeful have moved on... or so I thought. That old daily blog turned into a place for this & that posting. There would comments about the political stage and some environmental tech exchanges. It was pretty blah. What could they bring up that hasn't been beaten to death already? Turns out, I got an answer to that this morning. One of the troublemakers, a particularly nasty one known for posting lies about other automakers, started a "*how to*" for dealing with trolls. I was intrigued, since he chose Tesla as the automaker to attack this time. The quote that caught my attention the most was: "*Trolls are jealous about GM's thorough technical quality, even though they don't understand any part of it. So they undercut anyone that does treasure it and easily explains it.*" That ultimately revealed what was really being posted. It was really instructions for preserving that fanboy site. It was the final refuge for anyone still hanging on to the belief that an expensive solution would prevail. Volt never made any sense. They didn't want to hear that. For years, the denial persisted. They wouldn't give up, regardless of how evidence stacked against that. GM wasn't interested in pursuing something so unprofitable. Poorly designed for efficiency... resulting in low Miles/kWh for EV driving and low MPG for HV driving... there was no possible way to compete. Other automakers would deliver better plug-in choices and GM's own traditional choices would be a better buy. Heck, even the early-adopters showed their true colors as the $7,500 subsidy end drew near. No one is interested anymore. This is where that "*too little, too slowly*" concern seals the coffin on the technology. GM made no effort to diversify. The technology should have been spread to a more appealing vehicle years ago. Volt-2 should have been a small SUV, not another compact hatchback. Of course, that inefficient drive still would have presented challenges. But at least it would have been a step forward. Instead, GM will just let it be buried... and the fanboys know it.

2-23-2019 **Game Changer.** Yesterday, we found out production of Volt had actually ended already, the week before. No one knew the "March" target would come so much sooner. But then again, Volt was doomed right from the start. I had proof of that too, in a blog I had written way back then. It seemed very fitting to post that in the discussion topic on the EV site about this news. So with a short introduction, that's exactly what I did: People seem to forget the mess Volt was right from the start. Shortly after rollout began, that's over 8 years ago, I posted this reminder of how expectations didn't match what GM ended up delivering: Hype vs. Reality. What was revealed to us 4 years ago is quite different from what we actually got. Most just want to move on at this point, especially those who were responsible for allowing unrealistic hope to continue for so long. Anyone who studied the EV knew very well that demands of the heater reduce available range significantly. But enthusiasts absolutely insisted the "40 mile" promise took that into consideration. It obviously didn't... and they know that well, now. It's a harsh reality they're finally coming to terms with. Too bad they didn't listen to those sharing that information all along. Oh well. It's like the price target. That was totally unrealistic too. Yet, that hype remained right up to the price announcement. As for MPG after depletion, that approach never made any sense. So, Volt now faces a market rapidly filling with choices. It's a plug-in hybrid competing against both pure EVs and other plug-in hybrids... not the "*game changer*" they wanted.

2-23-2019 **Missing The Point.** Death of Volt has brought about a flurry of posts looking backward about mistakes (which were denied until very recently) and complaints about the tax-credits. That monetary incentive is now looked upon as a major disadvantage, even though other automakers don't actually have that many left. Think about how quickly they could be used up when ramp-up takes place. A sustainable approach must be established before expiration, something GM did not take seriously. For that matter, GM didn't even bother. They just let Volt die, shifting favor to Bolt... the very antithesis of what Volt was designed to compete against. Remember all that "*range anxiety*" nonsense? That's the problem with the single-minded belief. An automaker offering a variety of choices is unacceptable. Enthusiasts shot themselves in the foot... a problem originating from not understanding the point of the technology, as I continue to try to convey:

GM competitors? You've completely missed the point.

Volt's competition has always been other GM offerings, those vehicles sharing the same showroom floor.

I asked the question "*Who is the market for Volt?*" hundreds of times over the past decade. Enthusiasts didn't get it. Their contributions to a false hope helped to make Volt fail. They were their own worst enemy and never figured that out. It was always an effort to divert attention to other automakers, rather than taking any time to self-reflect. That's why "*Know your audience*" is what the mantra has changed to.

Early adopter purchases didn't lead to anything. Those owners were absolutely delighted with their choice, focusing so much on factors unimportant to ordinary consumers, their endorsements made the chance of GM diversifying the technology less and less likely. Volt became a modern example of "*Innovator's Dilemma*". It's a trap that could have easily been avoided by putting the same components into an Equinox or Cruze.

Instead, GM focused made diesel their recent focus for an efficiency choice in their popular vehicles. Both Equinox and Cruze got that instead. Meanwhile we see the "*competition*" offering their equivalent as full hybrids. Notice how Toyota, Honda, and Hyundai/Kia are all spreading their affordable choices to a variety of vehicle shapes & sizes?

Meanwhile, we see efforts to offer some hybrids with a plug too. None sacrifice cost (resulting in a very uncompetitive sticker-price) for the sake of range like GM did with Volt. What does that tell us?

2-23-2019 **Placing Blame.** There's a lot of that going around right now. Dependency on tax-credits still isn't being taken seriously either. You'd think after all that has already played out, that lesson would have been learned. Clearly, that isn't the case: "*Badly written legislation killed the Volt.*" Seeing the blame placed on government subsidies, rather than the automaker is pretty bad. Volt wasn't a good product. It targeted the wrong audience. No amount of artificial price manipulation will fix that. Correcting the problem means actually addressing the issue. Pretending the source of the trouble isn't the automaker is hypocritical too. I'm still seeing GM supporters attack Toyota on a regular basis for that very reason. Automaker choices is the problem GM chose to deliver a niche, not a vehicle for mainstream buyers. Their own loyal customers never expressed any interest. And after 8 years of denying that, it's time for the message to finally be acknowledged. Get over it. Stop placing blame elsewhere. Anywho, this is how I responded to that particular comment: Volt wasn't selling well even with the $7,500 tax-credit available. Looking at GM sales of their other vehicles overwhelmingly confirms that. Intended purpose of the tax-credit was to make that automaker's choice of technology competitive with its own traditional offerings, a means of moving beyond their product-line of just guzzlers. The belief of it to be a tool used for conquest sales against other automakers is a terrible misrepresentation of what such a subsidy was meant to achieve.

2-23-2019 **Unprofitable & Uninteresting.** That discussion topic addressing end-of-production for Volt sure has stirred a lot of opinion. Posting activity usually dies the following day. That's the nature of blogs. This one is different. Lots of people have lots to say. I homed in on this particular comment: "*Chevy has lost their minds. I have a Volt, it is a great car*." Could you blame me, especially after having dealt with an attitude of "*just trust GM*" for so many years? That blind faith has cost enthusiasts dearly. They lost the war. No many how many battles they won in the past, this final outcome says it all. Having endured so many insults along the way, it's quite vindicated for having remain polite and true to purpose. I let them know that in my own way too, keeping focus on what needed to be achieved:

Being so unprofitable for GM and so uninteresting to GM's own customers was good reason for ending production.

GM needed a popular vehicle using that technology, not a "*halo*" that only ever achieved subsidized conquest sales.

We all know GM shoppers want SUV choices. That is why GM introduced both Trax & Blazer to their product-line, neither of which with a plug or even as a hybrid. That disregard for the technology Volt demonstrated so much potential for was just completely abandoned. What a waste of opportunity, as well as tax-credits.

Think of how loyal customers shopping the showroom floor of a GM dealer will feel walking around looking for an efficient SUV choice. GM has nothing. Whether or not that person who has purchased many GM vehicles in the past is aware of what other automakers may be offering doesn't matter. They will be stuck with gas SUV choices of a 28 MPG Equinox, 28 MPG Trax, 24 MPG Blazer, 22 MPG Traverse, or 18 MPG Tahoe.

Think of how popular a SUV choice with a plug could have been.

2-23-2019 **Loss of Trust.** Consequence is becoming evident already: "*But I really don't believe much of anything from GM anymore.*" Everything related to Volt hinged on the belief that GM was committed to the technology. Evidence that GM was not became abundant. That's why I ended up blogging so much about the situation. Enthusiasts were expending an enormous amount of effort defending GM by attacking those who raised concern. That level of defense with basically no offense whatsoever meant the best outcome would be not losing any ground. Problem was, everything else was advancing. Even that Prius they loved to attack was drawing more and more near to the hearts of mainstream consumers. It was a simple matter of battery-technology improvement. Being able to deliver the same for less was that needed step forward. More range or power isn't necessary. Cost reduction was of the greatest importance... and a smaller capacity makes that easier. Neither GM, nor their enthusiasts, ever learned that lesson. Obsession with range & power blinded them from being constructive. And now that their gamble has proven a terrible choice, there's a loss of trust. Being able to take on new risk will be much harder. Virtually all of those holding the line have vanished. Whatever GM announces going forward will require new support. Those defenders of the past are gone. I still see some of them posting. Their attitudes have changed though. That quote above is a good example. To that, I responded in dismay about him being so out of touch: Any more? It's bad enough words of warning about how Two-Mode was handled and concern expressed from the bankruptcy recovery task-force wasn't taken seriously. But then GM disregarded advice about how to make the second Volt appeal to a wider audience. How many times will GM be given a free pass? Remember, it was enthusiasts who encouraged the disastrous course that was taken. Those of us who pointed out those details, noting observations to confirm the terrible choices being made were treated poorly (to put it politely) for our effort. And we were correct! It really did all fall apart... and for the reasons stated way back when it was playing out!

2-23-2019 **When Things Go Bad.** At the point an enthusiast realizes there is nothing constructive to post, they revert to personal attacks and name calling. This evening, discussion turned to "*anti EV*" for Toyota. That seems to make them feel about GM's struggle... and on a thread about Volt's death, such a turn was inevitable. Right away, I fired back: That narrative of an automaker only being able to sell a single choice is what messed up GM. Remember all their "*range anxiety*" nonsense? They embraced the one-solution-for-all approach, which resulted in abandonment of Volt mid-cycle in favor of Bolt. GM is missing so much opportunity. Reality is, a large automaker needs offer a variety of choices. That means they don't need to send a unified message in their advertisements. One can show strengths of an EV and the next can show strengths of a Hybrid. That's why a Plug-In Hybrid fits so well into the mix. Portraying Toyota... a 10-million-per-year automaker ...as a business that must choose only one solution to sell is just plain stupid. Diversity is an essential key to high-volume sales. Anyway, we know for a fact that there's a Corolla PHV coming later this year and a C-HR EV next year. More choices with a plug will follow. So, you can stop with the "*anti EV*" greenwash and show a little patience. Put it this way, because GM wasted tax-credits on conquest rather than focusing on delivery of a product their own customers would be draw to, you shouldn't be diverting attention to what happens with Toyota. It should be obvious GM needs to regain the support they lost.

2-24-2019 **Silence.** It is amazing to look back and see how much worthless noise Volt was actually making... all bark... no bite. Those declarations of leadership lacked substance at the time. Now, we see there was no merit to those claims. None are coming forward to fill the void. It is somewhat bizarre for such silence to come so quickly. Production ended. Without a successor, the technology is dead. Whatever "*EREV*" was supposed to represent, it doesn't anymore. The long-predicted collapse upon triggering of tax-credit phaseout happened. To have brought of concern of dependency on those subsidies, been attacked for doing so, then getting vindication afterward for proving to be correct. I was polite. The message was sincere. Reaction was to get attacked. They made it personal. What a waste... or so it would seem. Reality is, that history is documented in great detail. Their denial of facts and spin of news was noted while it was playing out. No level of recall afterward can compare to study of was written during the time those events were unfolding. There will be claims now of how market change could have never been predicted. Evidence proving otherwise is here. That is what has shut them up. It all turns to silence when you finally recognize your mistake. No amount of "*my bad*" will change this lesson learned, especially after seeing history repeat. I will use the knowledge gained from witnessing their errors firsthand to remind them.. Remember Two-Mode? Remember Volt?

2-25-2019 **Not Posted.** The blog about Volt's production coming to an end came to an end with a brief post about the terrible mistake GM is making. It came from an owner of 2 Volts, blinded by the technology. All he provided was praise for the vehicle. There was nothing else. That lack of consideration for the rest of GM's fleet perfectly illustrates how I knew of this demise so many years ago. I knew the early-adopter would obsess with the range & power, showing no care whatsoever to affordability or profitability. That's what turns a supporter into an enthusiasts. The attack anything unwilling to express praise for only their choice. That's why bringing up the topic of a second model of Volt long ago and an Equinox using that technology in recent years fell on deaf ears. They truly believed any type of diversification would dilute what "*EREV*" meant... which was only just a vague marketing term anyway. They didn't care about anything else GM could or should offer. They didn't care about dependency on tax-credits. They didn't even care about using electricity in an efficient manner. It was all just treated as a big joke, with Prius as the object of ridicule. Eventually, I pointed out how the situation resembled the story of the Tortoise and the Hare. They just laughed... which I found quite ironic... now that the Hare is no longer in the race. So, it doesn't matter how long the slow of the turtle takes... a winner is a winner, regardless of duration. The knowledge of pacing yourself and taking the entire race into consideration is a very important one to understand. They didn't care. So, I just stopped typing this response mid-thought, since it wasn't worth posting a reply to that blog message: Big mistake was not spreading the technology. That's what the "*too little, too slowly*" concern was all about. Worry was that GM would waste tax-credit opportunity on conquest sales, rather than focusing on actual change for their own customer base. Not having a plug-in hybrid choice in their product-line, like Equinox or Trax, meant nothing dealers would be interested in stocking.

2-26-2019 **Pricing.** We are getting very close to debut of the long-await Corolla hybrid. Detail is finally coming out. Though, this summary is all that most people will focus on, in addition to the 52 MPG rating: "*The 2020 Corolla LE Hybrid starts at $23,880 with destination, or $3,000 more than the non-hybrid LE.*" 46 Million Corolla have been purchased globally since introduction in 1966. That makes it the most popular vehicle of all time. So it being rolled out worldwide now as a hybrid marks a turning point in automotive history. There is nothing anyone can say anymore about hybrid potential... since that's as mainstream as you can possibly get. All those attacks on Prius based upon appearance didn't change the outcome. Joining Camry, Avalon, RAV4, and Highlander hybrids is now an even more familiar nameplate... with pricing to play a major role in the effort toward bringing traditional vehicle production to an end.

2-26-2019 **Omitting Detail.** This is the most effective means of being dishonest. You just leave out an important detail. That omission is quite often overlooked, allowing the person trying to persuade you of something an opportunity to deceive. Today, I heard a senator defending the president by leaving out the vital fact of duration. He claimed the president offered the democrats what they wanted by referring to it by title only. The reality that it was only an extension for 3 years, rather than the permanent change they were asking for was conveniently omitted. Not mentioning that bit of detail changes meaning dramatically. 3 years verses they rest of your life is how significant of a point? Ugh. That's the same kind of thing we've been dealing with in regard to green technologies since the very beginning. Heck, a decade into them, we got tax-credits... limited to just 60,000 per automaker. How can that possibly compare to the subsidizing of gas prices since before everyone reading this blog entry was born? Examples like that are disheartening. Just imagine how far a teeny, tiny increase in the price of gas could contribute to the building of infrastructure for charging cars. It's a transportation tax used specifically for transportation use. That's how investment in the future should happen. Sadly, we never get to talk about choices like that. The discussions never start... since even in just casual conversion, there's a bias from omitting detail. Whether it is intentional or not, it has a very be impact to outcome.

2-27-2019 **Incorrect Assumptions.** I found this comment quite intriguing: "*This is the linchpin: GM simply couldn't make a profit on the Volt, and so there was no incentive to advertise or sell it.*" The poster continued on, providing insight about how PHEV systems were "*designed to significantly increase MPG*". That really got my attention. Where would his thoughts take us? Sadly, it fell apart in the very next sentence: "*Volt on the other had was designed to be a full-time EV around town, and an ICE on the road. These are almost two different animals.*" My guess was that he really didn't understand what a plug-in hybrid actually was. That seemed odd, based upon his opening of: "*just about every plug-in PHEV out there has a very small battery and a very low EV range*". I wondered what the heck "*full-time*" really referred to. Thinking about the past, I recalled how antagonists would lead people to believe EV from all other plug-in hybrids except Volt would start their engine upon demands for high power. That isn't true for gen-2 of Prius PHV and was never true for BMW i3. Others make the distinction rather confusing to pinpoint if you don't know what to look for in the first place. That's how the deception works. Someone presents a misconception as fact, then it becomes an assumption without ever being questioned. Ironically, that is what helped to kill Volt. Never being well understood is good reason to avoid purchases. People won't embrace something they aren't quite certain about, especially with such a high sticker-price. Some of us knew the influence of enthusiasts could be that significant. They laughed off those words of warning. Who's laughing now?

2-27-2019 **Rule of Thumb.** This basic knowledge seems to be a really useful way to summarize need: "*8 hours on a 40-amp line will deliver 200 miles. More is nice, but not necessary. Remember, you'll be wanting to add additional chargers at some point... one for each vehicle in the household. So, consideration of maximum capacity from your service-panel is a factor.*" It's the type of simplification required to reach mainstream consumers. They need a clear & concise message. Understanding those terms is difficult when the concept is new. I'm hoping something that basic will catch on.... hence my push to repeat it over an over. Again, I see a need and a pattern. Let's hope this one sticks. Remember how "*stealth mode*" became an expected success? I didn't even realize the importance of such identification of operation back then. Now, it's rather obvious. We need clear understanding to get strong acceptance.

2-28-2019 **How We Got Here.** All I can say is: *Wow!* There are so many different spins on history at this point, it's easy to see how mistakes get repeated. Most online participants don't bother to research or even check the "facts" they do have. Recent posts have been a complete disaster from any historical perspective. They basically don't have a clue how we got here. Sadly, that's all too common of a problem. Making decisions based upon limited anecdotal evidence has become the norm. It is a consequence of letting anyone express an opinion online. They expect instant validation and will settle upon any source that will provide it. Whether or not that information is accurate doesn't matter. Heck, it doesn't even need to resemble anything truthful. We created a mess and haven't really come to recognize the situation yet. That makes dealing with it pretty much impossible. Hopefully, a glimmer of hope will emerge from Volt fallout. To learn from efforts being made and advance forward, something must acknowledged as not good enough. You can't just assume more is better... the very problem Volt experienced. Adding range & power didn't help deal with the problem of being too small and too expensive. It was an act of pure hope that such a senseless effort would provide the necessary fix. Optimism, rather than logic, is not a good way to run a business. GM really messed up and no amount of damage-control now will make it better. That's why looking back upon history cannot be a perspective built upon incorrect claims. Remember, there are some who spread misconceptions intentionally, so due diligence is absolutely essential. Any change of moving in the right direction requires careful consideration of how we got to where we are now.

3-01-2019 **$35,000 Tesla.** It has finally happened, but not really in a good way. The reveal of this "*affordable*" choice of Model 3 comes at the penalty of reducing overhead expenses. Many of the galleries will be closed. (Those were the "stores" where you could test-drive a Tesla vehicle, but not actually purchase one. They just served as delivery & service locations, not anything resembling an actual dealership). Employees at the remaining locations will not get bonuses and there is an expectation of salaries being reduced. It's an ugly form of attrition... a sour-the-milk approach to cutting cost. Knowing that Tesla's tax-credit has already been lowered by 50% (to $3,750) and that another reduction of 50% (to $1,875) is coming at the start of July, it's a step we all saw coming. But year-end, the tax-credit will be eliminated entirely. That $35,000 price must be enough of a draw to keep sales strong, all on its own, while also providing enough of a profit to sustain the business. Remember, the introduction of Model Y is still pending. Turning that into a rollout to grow the market won't exactly be easy, especially with legacy automakers struggling to find their own means of selling plug-in choices. While all that is happening, there is still the reality of battery technology evolving. Tesla uses cylindrical shaped cells. Pretty much everyone else uses prismatic. All still rely upon a liquid electrolyte. How packaging & solid-state changes will influence the upcoming market is anyone's guess still. We just plain don't know, especially on the scale of gigawatt production.

3-01-2019 **Extended Range.** It looks like BMW i3 will offer a 44.2 kWh pack for 2019. That translates to an electric-only range of 126 miles for the range-extended model. This is why GM's marketing of an "*extended range*" vehicle, or as the enthusiasts used the "*EREV*" identifier, never made any sense. How could Volt's range of 53 miles be considered the market leader compared to that? Nothing the enthusiast did to spin favor toward Volt worked anymore. All of their greenwash efforts fell apart, without any successor. It's the "*doom & gloom*" that was predicted from such heavy dependency on tax-credits. BMW understands their audience. That's why the REx model offered an ample supply of electricity, then supplemented by a small engine (2-cylinder 647cc) for power following depletion. It was the design for Volt that GM never actually delivered. BMW did. That's why enthusiasts focused so much attention of Toyota. That diversion of thought prevented readers from noticing what Volt really was, a plug-in hybrid. The definition of "*extended range*" never worked for Volt. It was a deception they worked hard to convince others to embrace. That's why I battled them so often, knowing that misleading wouldn't be enough for the war to be won. All they could do was hold a line for awhile. Fighting is over now. Volt has become a footnote in history, an example of what not to do.

3-02-2019 **Speculation.** It is always interesting to hear from someone who has no background whatsoever. Their history of Prius and knowledge of Toyota is limited to recent observations only. Knowing they were just introduced to this world I've known for over 20 years adds an element of fascination. It's all new to them. That adds a somewhat magical feeling to their perspective... that overnight success impression people get. You know, like when a musician achieves a smash hit and most people think "instant success" without ever coming to realize they worked hard on that for decades. That's simply a reality of working with mainstream consumers. They consider the product, not the history. So naturally, there's a look of guessing & assumptions. Today, I saw this: "*Just offering an opinion.*" It was in regard to what Toyota might have decided about Prius. The absence of history was obvious; so much so, I wanted to make sure my reply to that was to the point. It's easy to come across as insulting or condescending when you have extensive knowledge of a situation and the other person has no background. Hopefully, this did the trick: No need. Cosmetic changes are a very common practice for mid-cycle updates. We saw that with both gen-2 and gen-3 Prius, though on the subtle side. The gen-1 mid-cycle update was more like gen-4, rather obvious.

3-02-2019 **Sales Numbers.** They were always a contributor to trouble, especially when broken down by month. That helped to feed narratives. Rather than looking at the bigger picture, you could select specific data to present. Volt enthusiasts were notorious for choosing to focus on just the "*EV Market*" to allow them to completely disregard incentives & distribution. In that regard, anyone taking the time would notice that 200,000 is really a very small count. The same is true for availability limitations. They'd fight to make sure no one took the time to do that though. It was always an effort to mislead. I have hundreds and hundreds of examples documenting their attempts too. Some of those quotes are truly remarkable. Looking back, now that Volt is dead, you can see lack of objectivity rather easily. GM set a self-deprecating course. They were in denial. Automakers require diversity. Lack of choice was an obvious flaw for any long-term (big picture) expectation of profit & sustainability. Somewhat annoyed by their denial, but not in a teachable moment situation, I posted this on the thread discussing Volt's final sales:

Epitaphs for Volt have been interesting to read. They all tend to follow the same pattern. Praise is given, then there's a comment that follows about what GM should have done. When that very same comment was provided in the past, it wasn't treated as a suggestion though. The response was a narrative about how GM knew what it was doing and that comment was really just an effort to undermine GM progress.

Now, we all see the situation clearly. Concern expressed as "*too little, too slowly*" to draw attention about how GM still had not spread Voltec to ordinary loyal GM shopper choices, like Equinox, should have been looked upon as constructive discussion. Shooting the messenger was just plain wrong.

Volt has become a modern example of innovator's dilemma. GM focused on the wrong audience, accepting the voice of early-adopters to be that of mainstream consumers. That group-think contribution sent a message approval to continue on with what we all recognize after production has ended as a niche. It was a terrible path to follow. Warnings should not have been so easily dismissed.

Consequences of that are obvious. Tax-Credits were wasted on a very limited market. Rather than using those subsidies as a means of establishing dealer change, making the showroom a means of reaching GM's own customers, that opportunity was lost.

3-03-2019 **Used Import Purchase.** Every now and then, we'll get a post on the big Prius forum from someone who purchased a used import of a Japanese model Prius. Since their own country doesn't offer them, that's the best they can do. So when help is needed, we try to provide it. That's a challenge when English isn't their native language and photos or video are almost never provided. We just have to make a best guess at what they are asking. This one in particular was really difficult. The question was asked repeatedly, in a variety of different ways to help convey what was going on. This was the most understandable of what I could use to quote the situation: "*The button should lit up and turn off the EV icon on the screen, which it doesn't even do all the time under 5kph as well (Sometimes I press it will turn on or off the EV icon other times nothing). But above 5kph it doesn't respond like the button is dead or something.*" He wanted to know more about how the HC/EV button should work on a 2012 model PHV from Japan. His location was Pakistan. We really couldn't even figure out why he wanted to use the switch or how well EV mode itself was operating. Basic information, like the number of kilometers the vehicle had already been driven, wasn't ever included. There were also factors, like temperature, missing too. We simply didn't have much to work with, despite his many posts. After a number of others had contributed detail about how the system operates, I jumped into the discussion with: After reading through this entire thread twice, I get the impression you aren't aware of the required warm-up cycle. Once you push that HV/EV button, it will force the engine to start and will continue running until coolant reaches the necessary temperature for emission cleansing. If there is something wrong with your coolant (low, dirty, clogged) or your thermostat (unable to shut), you may not be able to get back into EV mode.

3-08-2019 **EPA Deregulation.** This topic just pops up in the news from time to time. Today, it was about yet another rollback. We fought so hard for years to get regulations & restrictions to help guide cleaner and more responsible transportation technology only to have this administration do everything possible to undermine and dismantle. Thank goodness the diesel debacle played out a number of years ago, back when the situation could be dealt with properly. There's so much FUD going on now, it's hard to even notice. People just dismiss without conscience. The efforts to promote consumption have been so constant, perspective has been lost. Goal posts were moved back (our expectations) and that was enabled by out society as a whole (our regulations). It's really sad.

3-08-2019 **Longer?** Ugh. Seeing this from early-adopters is getting annoying: "*How much longer can Toyota wait to start bringing EV models to the markets?*" The reason why is simple... no one else is making the same claim. The mainstream is perfectly content waiting a few years. They know that in the meantime early-adopters are helping to work out any details that need to be refined. It's a sensible view that enthusiasts just plain cannot see. Lack of patience is no surprise. That's a common problem. Today, I dealt with it using the following:

That overall environmental impact approach is the same *BIG PICTURE* mindset Toyota has had since back in 2003, when it was first discovered that the gen-2 Prius could deliver electric-only driving speeds up to 100 km/h (62 mph). I asked the top engineer why a plug wasn't made available. It wasn't due to the extremely low energy-density of the batteries of that time. His direct answer was due to how dirty the electricity was. We would have to patiently wait for cleaner sources.

Think about how much coal we still use for generating power for what we recharge. Thankfully, I live in a state that has seen explosive growth of local solar farms over the past few years. Watching small towns build those vast spans of cells over their otherwise modestly used land is amazing. It's quite a surprise too. That happens with little to no fanfare. It just happens. It's like the ramp I park at for work. All of a sudden, they are installing a massive solar-array on it's sunny side.

I understand the "*How much longer?*" anxiety the full EV supporters are dealing with, but I really don't appreciate the barriers they are erecting for ordinary consumers. My household already has 2 plug-in vehicles, each with their own 40-amp 240-volt charger. So what if both vehicles only average around 1,000 miles per tank of gas? That shift to using more and more electricity is already well supported. We have our infrastructure established and our current plug-in will feed the used market when we upgrade later.

Show some patience and consider the big picture.

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Toyota is very actively producing & selling components vital for EV deployment, in high-volume for a profit. Refinements to those components and associated software continue on with lots of real-world exposure. So while they wait for that next-gen battery, no time is wasted in the meantime. That setting of the stage also includes drawing of interest away from traditional vehicles. It's a win-win with immediate benefits.

3-08-2019 **EPA Deregulation.** This topic just pops up in the news from time to time. Today, it was about yet another rollback. We fought so hard for years to get regulations & restrictions to help guide cleaner and more responsible transportation technology only to have this administration do everything possible to undermine and dismantle. Thank goodness the diesel debacle played out a number of years ago, back when the situation could be dealt with properly. There's so much FUD going on now, it's hard to even notice. People just dismiss without conscience. The efforts to promote consumption have been so constant, perspective has been lost. Goal posts were moved back (our expectations) and that was enabled by out society as a whole (our regulations). It's really sad.

3-08-2019 **Longer?** Ugh. Seeing this from early-adopters is getting annoying: "*How much longer can Toyota wait to start bringing EV models to the markets?*" The reason why is simple... no one else is making the same claim. The mainstream is perfectly content waiting a few years. They know that in the meantime early-adopters are helping to work out any details that need to be refined. It's a sensible view that enthusiasts just plain cannot see. Lack of patience is no surprise. That's a common problem. Today, I dealt with it using the following:

That overall environmental impact approach is the same *BIG PICTURE* mindset Toyota has had since back in 2003, when it was first discovered that the gen-2 Prius could deliver electric-only driving speeds up to 100 km/h (62 mph). I asked the top engineer why a plug wasn't made available. It wasn't due to the extremely low energy-density of the batteries of that time. His direct answer was due to how dirty the electricity was. We would have to patiently wait for cleaner sources.

Think about how much coal we still use for generating power for what we recharge. Thankfully, I live in a state that has seen explosive growth of local solar farms over the past few years. Watching small towns build those vast spans of cells over their otherwise modestly used land is amazing. It's quite a surprise too. That happens with little to no fanfare. It just happens. It's like the ramp I park at for work. All of a sudden, they are installing a massive solar-array on it's sunny side.

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3-11-2019 **Rule-Of-Thumb.** I keep repeating it: Rule-Of-Thumb is that a 40-amp line will deliver 200 miles in 8 hours.

That basic formula covers the needs for most multi-car households. It's fast enough without becoming too expensive. Taking into account how much the typical service-panel has available for capacity, that idea of a continuous 32-amp draw (7.2 kW rate) of electricity from 2 plug-in vehicles at the same time may actually be pushing it. So, carefully consider plans for the future.

In my household, we installed two 40-amp lines connected each to 100-amp meters for Time-Of-Use discounts. The dedicated hardware makes tracking usage as simple as looking at the monthly bill. They break down the tiered pricing for each meter and show the usage in each category. Also, we choose to use larger-than-needed conduit. So in the future, we could pull higher gauge wire if there was the desire to beef up a charger.

Lastly, keep in mind that some people have their service-panel in or near the garage. That's quite convenient. Some have it clear on the other side of their house. That's quite expensive. So, the ideal may not work out. But even just sharing a 240-volt line works fine, since some chargers will allow you to set a maximum draw.

The key is to consider how many vehicles will need to be plugged in overnight.

3-12-2019 **Melting!** There's a lot of that happening now... to the point of flooding. Spring has arrived. Yeah! Of course, the chance of getting significant snow still is quite realistic. That happened last year in April. What a mess! We had near blizzard conditions. In the meantime, I'm able to take advantage of the warm for some outdoor work, including some cleaning of the car interior. Winter in Minnesota presents challenges at times, fortunately nothing related to the car. It worked fine even in the extremes. It looks awful though. Sprayed with the residue from salt & sand, you can't keep it clean for more than just a single drive. Oh well. Pre-Conditioning from the cord sure is nice. You come out to a warmed vehicle and a full battery that is also warmed. The thing to look forward to now is watching EV range increase. With warmer temperatures comes an increase in efficiency.

3-13-2019 **Apologists.** Now that other automakers are getting attention, as was with this thread about VW, there are GM apologists working hard to protect image: "*GM doesn't belong in your post. GM has been at the forefront with the Chevy Volt, the Chevy Spark EV, Caddy ELR, some other caddy, and the now the Chevy Bolt EV.*" More realistically, that's a damage control effort. Volt may have reached the forefront, but it didn't do anything in that position. Spark, ELR, and Bolt didn't do anything at all; they just rolled out without any type of industry draw. GM had potential, but chose to do nothing with it. I'm making sure that history is not overlooked. Allowing it to repeat without a fight to share information about what happened in the past isn't something I will tolerate. The time to take an position of offense has come. Playing defense made sense in the "fake news" time. But now that tax-credits are about to expire, the early-adopter stage can finally be seen with some clarity. Detail is key to moving forward. It starts though with point out the problem:

GM certainly helped in support of the technology itself, from an engineering standpoint. But the amount of collateral damage caused from their focus on a small & expensive niche pretty much makes their position a wash. Volt most definitely was not targeted at mainstream consumers and nothing became of that plug-in technology. Rather than actually being at the forefront of change, the status quo remained firmly in place.

Try arguing that those tax-credits made a different in their fleet. Notice all the guzzlers on the showroom floor? There aren't even hybrid choices. Why isn't there a SUV based on Volt after all these years? It's just a wide selection of traditional vehicles still. GM never diversified. Volt was the low-hanging fruit that early-adopters feasted upon, then moved on.

Notice how VW is trying to promote a variety of choices right from the start? Many people don't. After all, people obsess so much with Prius, they don't even notice the other Toyota hybrid choices available. Ironically, that tends to be a good thing if the goal truly is to electrify more with each generation. It's like phasing the variety of past automotive technologies, like the carburetor, power-steering fluid, and incandescent bulbs.

Changing the course of legacy sales requires far more than just token efforts. Those who judge based on just that aren't making an effort to consider consumers beyond the initial early market. Ordinary shoppers are considerably more difficult to appeal to... and it certainly won't happen as fast as you'd like.

3-14-2019 **Model Y.** The reveal was quite a let down. Tesla didn't move forward much. Everyone expected more. It's a just hatchback version of Model 3 and won't be available until the end of next year. It won't be affordable either. Looks like the lowest priced configuration will be $47,000. It's not at all what had been hoped for. The extremely long introduction, which spent quite a bit of time dwelling on Tesla history (about 30 minutes or so), ended up devoted just 4 minutes to Model Y itself. I expected the opposite, a brief overview of how the automaker got to that point, then a deep dive into what the newest vehicle would have to offer. There's seemingly so much more that could have been done, I think. My impression is morphing as I consider the choices available. It feels like that Y should have been rolled out side-by-side with 3. The only apparent difference is seating. What's wrong with that being a choice, like how other automakers deliver packages. You select the interior you want. Wouldn't that reduce cost? Too much variation without obvious benefit is a difficult sell anyway. Needless to say, this evening's reveal didn't stir much promise. The anticipation fizzled quickly.

3-14-2019 **Local Production.** Toyota just announced plans to begin production of RAV4 hybrid here in the United States, specifically in Kentucky next January. Capacity will be 100,000 of the RAV4. Starting this year will be 12,000 of the Lexus ES300h. Having both hybrids local is great news for everyone. The increase in employment is an obvious plus. There's the obvious benefit of not having to ship the final product as far too. Several other local investments for production were also in the same announcement. Corolla gets some for the Mississippi plant. Highlander gets some for the Indiana plant. There's the hybrid transaxle production in Virginia getting more money. And engine production in both Alabama & Missouri also get some. Note that Kentucky had a major investment for Camry & Avalon 2 years ago. So, long story short, anyone who calls Toyota a foreign automaker really doesn't have any clue what they are talking about. Toyota has a major presence in the United States. In fact, their commitment to new investment since 2017 will end up reaching nearly $13 billion in a 5-year span.

3-15-2019 **"Losing" Spin.** Now that Volt has been dead for an entire month, it's curious to see what will emerge. I posted this on a topic attempting to keep attention on Toyota: I find it interesting how much "*losing*" spin is being published. It's the standard rhetoric that comes from early-adopters who don't want to look at the big picture or want to distract from it. The recent news of Toyota investing heavily in hybrid production in the United States is good reason for those desperate to undermine to step up their efforts. Reality is, the plan for Toyota to offer a wide variety of hybrid choices is a very effective means to not only bring traditional vehicle production to an end, it also sets the stage nicely for high-volume plug-in demand. Getting a hybrid owner to upgrade to a plug-in hybrid is far easier than convincing someone to go straight to a plug. Other automakers don't have a transition plan. Their attempts to introduce something with a plug have been chaotic and with an uncertain message of commitment.

3-15-2019 **Slowness?** My attention was caught by an article with this title: "*Reasons behind the slowness of EVs adoption in US.*" Sadly, the thread pointing it out was almost immediately joined by our resident problem poster. It was the usual banter: "*30% of Americans polled will say they would consider an EV in their next purchase.*" I was quite annoyed with such lack of substance: What poll was it? How people were questioned? What was the question? Did those being asked understand what an EV could be? Were these people who had access to a plug? And what the heck does "*consider*" actually mean? For that matter, when was the poll taken? That type of vague statement is exactly where "*Know your audience*" came from. It originates with a small sampling and a meritless claim, just like that. Volt enthusiasts spread such rhetoric to the point of creating their own "*fake news*" source, way back before the term had been coined. I got mocked for pointing out the power of what turned out to be propaganda. Those observations shouldn't have been so callously dismissed. Now, it's a grim reality with widespread collateral damage. It's the face-value acceptance of comment without detail that feeds group-think. People endorse the greenwash simply by passing it along without question. Just look at the outcome of Volt. Expectations were set that were based on want, not need. That fundamental disconnect confused the market and prevented progress forward. It's a trap that's easy to fall into, started by spreading a vague statement. Now, we wonder the reasons why there's a slowness to adopt EV here.

3-15-2019 **Trolling, part 1.** There is a well-known antagonist who relentlessly provokes to stir discussion. He just plain doesn't care about the bigger picture or the longer term. It's all about getting attention. He likes to participate. So, the routine post like this is an expectation: *"It's there because the press, market research, and gen1 owners said they wanted a middle seat.*" I rarely respond, but today's was rather enticing. Teaching moments can be useful. So, I took his bait. In this case, it was related to Volt and how the lack of a 5th seat applied to Prius Prime. Pointing out his spin by distorting & misleading the perspective to confuse the topic is something I've had to deal with routinely anyway. Sadly, it's easy to greenwash simply by being selective about the information being shared, especially if it is just vague comment. My sharing of what was learned went like this: Listening to them was a fool's errand... the fundamental mistake "*know your audience*" draws attention to. GM played tax-credits and early-adopters ignored signs. Those wanting to purchase a vehicle for family transport didn't want a compact hatchback anyway. It should have been obvious the technology would need to be in a larger vehicle. That is why Camry hybrid, RAV4 hybrid, and Corolla hybrid are all better PHV choices here. So what happens in Europe, may not be what happens for this market. In other words, understand who you ask.

3-16-2019 **Trolling, part 2.** I was rather surprised that his response was just a load of greenwash, something very easy to disprove: "*The new Corolla shrank; it has less passenger and cargo space than the Volt*" Why would anyone make a claim with undisputable evidence available to reveal intent to mislead? It only took me a few minutes to look up the specs for each, to confirm every one of the dimensions in question were wrong. He lied, plain & simple. There's no way around it. I caught him in the act. How will others respond to the obvious effort to troll? Causing trouble brings down the integrity of the forum. Yet, there is rarely a moderator response when such posts are spread. Sadly, the proliferation of fake news has become so bad, people may be getting burned out... tired of fighting battles the cannot possibly win, due to the quantity. Stumbling across efforts to mislead is easy. You can find them everywhere; nonetheless, I keep fighting them: 2020 Corolla Hybrid: headroom = 38.3/37.1 in; legroom = 42.3/41.4 in; cargo = 13.0 cu-ft. 2019 Volt: headroom = 37.8/35.8 in; legroom = 42.1/34.7 in; cargo = 10.6 cu-ft. Why are you spreading such blatantly false information?

3-16-2019 **Trolling, part 3.** That same post with the lie also included this: "*Where, oh where, can one get a PHEV version of a Camry or Rav4?*" He knew the possibility of getting caught should include something to distract with. He'll just attempt to avoid the callout by shifting focus. I wasn't about to let that happen either: You know all too well Toyota has been focused on getting TNGA-based platforms out to as much of their fleet as possible. The goal is to convert roughly 80% by the end of 2023. That's an aggressive pace for such a major undertaking, but the results are enormous... lower cost, improved performance, and reduced emissions. That's a mammoth goal for a 10-million-per-year output. What other automaker is pushing that hard to advance what they produce overall? You also know that Toyota is starting with Corolla PHEV, which is why that was conveniently left off the list. It's the best selling vehicle worldwide, so it makes sense to choose that. And since the new Corolla hybrid is only just this month starting wide-scale rollout, expecting a PHEV already is clearly a lack of patience. Keep in mind, the new RAV4 hybrid is only now just rolling out too. You aren't taking into account the most important part of Toyota's timing either. It's affordability. Everything they do is fundamentally planned around delivering something that will appeal to both dealer & buyer. Both are important customers. Both what a good price.

3-16-2019 **The Race.** Discussion topics about Toyota falling "*behind*" have a new "*losing*" label. We see various sources attempting to stir online comments, but with mixed success. Posts like this help to obscure the reference: "*I don't think Toyota is losing the BEV race; they're not entering that race!*" They are an effort to get people to think about the bigger picture. The nightmare created by Volt enthusiasts about supporting a niche is beginning to raise awareness. Why did Volt fail? It's a good start to constructive consideration of what really needs to be done. I gladly contributed to that:

The race hasn't even started yet. What has been done so far that would qualify as mainstream penetration? Thinking these warm-up laps taking place now (sales subsidized by tax-credits) are what count as efforts to compete directly with traditional vehicles... the actual race... is just early-adopter rhetoric. How many ordinary consumers are actually that gullible to believe such nonsense?

Media outlets posting such dribble are taking advantage of hype to draw traffic to their publication. The knowledge of "*there's a sucker born every minute*" is just as relevant now as it was when back when that phrase was first coined. Think about how much easier it is to fool people now that anyone can post a comment online.

Look around. We are surrounded by guzzlers running on cheap gas and outright denial of their impact. That harsh reality is something "*EV Market*" spinners don't want you to notice. They direct focus on just the plug-in offerings to avoid addressing what really matters... change of the status quo.

Legacy automakers have a massive undertaking required to get their own loyal customers to embrace greener choices. Focus on the low-hanging fruit people are eating right is such a waste. Whomever wins the warm-up laps doesn't matter. In fact, that competition to follow isn't just a single 500-laps around the track either. There will be many races. Consider how many models of vehicle each automaker must implement battery-powered technology in.

3-17-2019 **Vague, Divert, Dismiss, Restrict.** That troll attack continued. It's like I had to revise my old greenwash-awareness guide. Ugh. Oh well, a refresher for everyone isn't such a bad thing. What he selected for the source of antagonism was interesting anyway. So, I punched back: We all know how this works. It's usually either post a vague reference or divert with a red herring. I'm not the one doing either. The other tactic commonly used is dismiss the issued being raised. People complained about Volt-1 head room. So when GM did nothing about that with Volt-2 (in fact, head room was slightly reduced), the problem was just dropped as no longer a concern. Head & Leg dimensions have overwhelmingly been the focus of seating size discussion, so that's what the response included. With respect to "cargo" discussions, you must list the actual height/length/width to address transport capability properly. Lastly, there's an obvious effort to restrict scope. If it isn't available here or now, it doesn't exist. That's just plain wrong. Toyota's expansion of plug-in offerings by diversifying their "Prime" enhancement is exactly what GM had been pressed to do for years, knew it needed to for business success, but chose not to regardless of the consequences. Toyota choosing to spread their technology to a variety of choices is a wise move. So what if Corolla PHV doesn't fit a family of 5 well. That's what Camry & RAV4 are for. You want a larger interior, you purchase a larger vehicle. That is also why Avalon & Highlander are offered as hybrid models. Toyota is preparing for large-scale electrification. What's happening here is quite different... vague... divert... dismiss... restrict.

3-17-2019 **True Change.** I like when someone helps out by interjecting a constructive comment to take attention away from the troll. This was a great example of that: "*You mean we need to wait for the government to mandate EVs? Good luck with that. Too much oil lobbying for that to happen.*" I was delighted to indulge that initiation to discuss what really matters too. So, I added to the topic with:

That's why early-adopter sales shouldn't be taken in any way as representative of mainstream penetration potential. All those heavily subsidized sales do is prove out the technology... which is great... but nothing worthy to gauge demand upon. This discussion of a 5-seat Prime is a highlight of Toyota testing the waters. Just like the intrusion of cargo-space by the battery-pack, it is pre-mainstream real-world study. They have learned the value of research-by-trial.

So when certain people here raise a big stink about a configuration during these early-market rollouts, they need to be reminded about perspective. Toyota is extremely aware that no government funding or mandate should be counted upon for help with sales. It is up to each automaker to find their own way to appeal to their own loyal customers. For Toyota to retain their 10-million-per-year sales, they must do what works for them.

What I find most interesting about a particular thread like this is how newbies are introduced to what those of us with many years of observation have witnessed many times now. Toyota will respond to customer feedback. They take online comments seriously and respond in a constructive manner. Rhetoric is filtered out to find a high-volume solution. Watching the challenge being addressed is fascinating for those who truly want to change the status quo.

3-17-2019 **Antagonism.** Some people have a bridge to burn: "*nah, toyota blew it...*" Basically, he just thrives on the attention. So, choosing to provoke Prius supporters has become a pastime. He seeks out something to argue, then posts a provoke to stir attention. Yes, it's trolling. But as a regular poster and a Prius owner, he just blows off anyone who sights issue with his activity. I don't bother. I do look for opportunities to provide exposition though. The provokes provide an invitation to do exactly that. For example: That's not how the early-adopter market works. This is why you get the "*know your audience*" every time you complain or try to prematurely draw a conclusion. Knowing goals is the second part of that wisdom to share. An automaker can only be losing if they fail to achieve their goal. Notice how others are placing their statements in front of Toyota's to make it appear as though Toyota is struggling? That's how spin works. We have been watching Toyota set the stage for very wide-spread acceptance of electrification, offering a variety of choices across their entire fleet. The dealer's showroom floor will have diversification no other automaker has achieved. Though, we do see Hyundai/Kia working toward that same goal. Kudos to anyone genuinely working toward the phaseout of traditional vehicles. It's not easy and there will be a lot of people who will declare blowing it prior to even having finished the early-adopter phase... which is very clearly defined as the time when government subsidies (both federal & state) are offered to help establish those new choices.

3-17-2019 **Cycle Attack.** Now that plug-in hybrids are getting more attention, constructive discussion is emerging as a result. A big part of this is the death of Volt, since it was always a barrier to progress. That senseless EREV labeled confused the entire industry. It was an obvious effort to obscure PHEV offerings. It was marketed as superior without any explanation why. Details were intentionally suppressed. So, topics like how cycling of the battery-pack in various plug-in vehicles came into play. Efforts to keep focus on only range & speed was the mantra. That is no more, because Volt is no more. Other plug-in hybrids are now getting attention. That's putting the up directly against electric-only vehicles... hence today's attack. It was a misrepresentation of how the battery is used. I was quite annoyed. The thread was filled with blatant attempts to mislead, all by one particular individual. I saw that as a great "teaching moment" opportunity, ignoring him entirely by posting this information stand-alone: Cycle... Cycle... Cycle... Cycle... Cycle... Notice how many times that reference is used in this discussion and not a single comment uses it correctly? The definition of "*cycle*" is when a battery is fully discharged, then fully recharged. That's not something which actually happens with a PHEV. Avoiding those extremes is what greatly improves the longevity of the pack. Look no further than Toyota for a Prime example (bad pun). A full charge is only 83% capacity, not 100%. A full depletion is only 13% capacity, not 0%. That's very similar to what other automakers do and the advice given to anyone wanting to keep their battery-pack from getting stressed. So when you see a post referring to how many "*cycles*" a battery can handle, keep in mind that doesn't apply to the PHEV systems designed to prevent extremes. The result is a battery-pack that lasts longer.

3-18-2019 **The Wait.** There's a calm before the storm. GM is approaching their own self-imposed deadline. That promise to deliver news within the next 18 months is nearly 18 months old now... and still not a peep. 2 new vehicles based upon Bolt were supposedly to be announced for our market. With the death of Volt and no successor to the technology, the belief has been that GM will indeed just embrace EV and allow their "*EREV*" technology to die. Knowing that just 2 weeks from now the $7,500 tax-credit... which Volt was so heavily dependent upon... will be reduced by 50% is good reason to expect some type of vague announcement. It will be ambiguous, of course. That's who GM operates. They release something lacking detail with the hope that hype will stir interest and distract from their problems. In this case, that reduction of the tax-credit to $3,750 is good incentive to yell out "*Squirrel!*" Ugh. This was inevitable. Volt lacked safety features that Toyota offers standard (like dynamic-cruise) and you had to pay extra for the features enthusiasts really want (like faster charging). So, GM waited out the clock, rather than making any type of next move. That's their biggest obvious missed opportunity. Rather than taking advantage of the transition period from quantity-based credits to time-based, GM didn't do anything. Tesla did quite the opposite. When they hit the 200,000 limit, they took full advantage of the unlimited quantity period. It is a 6-month span where the full $7,500 is available for the automaker to sell as many of their product as possible before hitting the 50% reduction time. Tesla most definitely capitalized on that. GM rested on its laurels, doing nothing at all... just letting Volt die on the vine. All the low-hanging fruit people wanted was picked. The remainder now sit on dealer's lots. No more will ever be delivered and there is no word of anything "*EREV*" on the way. We have the impression GM will drag its feet, but not "*kicking & screaming*" as Toyota is portrayed by their enthusiasts. Instead, it's silence. We haven't heard any plans. All we have been told is that EV sales from GM aren't expected to be profitable until 2021. That puts the wait of these last 18 months into perspective. No much of anything is hoped for. GM lost its supposed "*leader*" position... exactly as predicted.

3-19-2019 **Success or Failure.** The antagonists certainly are enjoying this time of wait: "*My point is that outsiders, and likely many insiders, can say why the Volt was cancelled, and not knowing the why means we can't call the model itself a success or failure.*" They see it as a chance to spin new history, to distort facts about the past simply by stating their own narrative. Sadly, this is rather effective when a void is left behind... exactly what the death of Volt has created. Stating vague references and misrepresenting timelines is all it really takes. Casual readers of forums & blogs (lurkers) won't have any idea they are being feed fake news. Manipulation of facts has become so common, it is especially difficult to debunk the assumptions emerging. In fact, that's why the mindset of success or failure has become so prevalent. There's a polarization at its peak... thankfully, one that about to fall. We'll see a variety of plug-in hybrid and electric-only configurations hit the market. That diversity of choices will open up some closed minds, reaching those who didn't even realize they had fallen into that trap. That's the goal, to have a narrative so effective people have no idea they are being manipulated. This is why I strive to deliver a collection of detailed videos. That type of simple-to-understand presentation serves as a powerful empowerment tool. You learn more than it would at first seem, simply by paying attention to what was offered without bias. In the meantime, I'm still dealing with this type of crap online: That load of rubbish isn't fooling anyone. We all knew the goal of Volt long before it was even rolled out. By the end of year-2, sales were expected to reach 60,000. For year-3, production capacity would be capable of delivering 120,000 annually. That failed to such a degree, GM scrambled to revive the struggling effort by slashing prices. It didn't work. Focus shifted to what the second-generation could deliver instead. That turned out to be even more of a sales disappointment. Cancelling a product mid-cycle, without any successor, is the epitome of "*over promise, under deliver*" ...something we know GM all too well for. Had a Trax or Equinox been rolled out using Voltec, that would have been a different story. But all we see now is a tree will all the low-hanging fruit picked and an automaker not interested in climbing.

3-20-2019 **$13.8 Billion.** That level of investment is clearly stirring executive anger. We have been witnessing the president attack GM for plant shutdowns and the loss of jobs. His pride & ego are focused on bringing jobs back to America. Seeing the opposite happen, where production ends here and resumes elsewhere is really bad for him.... especially when Toyota makes it quite clear they are investing heavily in the opportunities here. Toyota sees the profit-based decision making will lead to trouble, again. That's how GM fell into bankruptcy last time. They were desperate for money, which is how the highly-profitable Pickup & SUV focus came about. Watching the production of their sedans come to an end is far more than just coincidence. It is evidence of the same thing happening again, but this time out in the open. It's obvious what they are doing. GM claims that's just a move to align with market demand, but the lack of investment in efficiency offerings says otherwise. Had we seen a Trax with Volt technology, that would have been a different story. Why would a new offering like that not include at least hybrid technology? Claims of leadership make no sense when a small SUV is nothing but a guzzler. That should have been what replaced the plug-in hatchback. Why not? Of course, the all-new Blazer being built in Mexico makes any such argument of "*investment*" difficult. What is being done to retain production here, to prevent bankruptcy and rebuild employment opportunity? Toyota is doing it. Why not GM too? Remember the "*too little, too slowly*" concern?

3-20-2019 **Bleeding Cash.** It was intriguing to just finish blogging about the problem GM has created for itself, then stumble across this: "*Sedans a cash bleed*" It was a section of an article published explaining that very problem. It proceeded on to state: "*GM is discontinuing many of the products built at those five plants, which are mostly sedans, saying U.S. consumers prefer SUVs and pickups. But GM has faced a backlash for opting to build other new products, such as the Chevrolet Blazer SUV, in Mexico.*" That is exactly what I said. The link for that article came in a post including this comment: "*So, I am not surprised that GM's lackadaisical support for plug-in sales is evident in their customer lack of demand.*" It was in a thread complaining about GM providing no support for their plug-in vehicles. Exactly as I argued many times in the past, the true customers of GM are their own dealers. That is why I asked the "*Who?*" question so often. It was to point out that Volt buyers were only conquest sales, enthusiasts just taking advantage of a good deal. Evidence of that was the lack of loyalty. They'd just abandon Volt when the next opportunity came along. They didn't care. Most had never owned a GM vehicle prior to that purchase. So, moving on to another automaker later was no big deal. That stems from the dealer they made the sale with never expressing any interest. After all, they don't want to be bleeding cash too. This is why inventory is almost entirely just Pickup and SUV choices. Heck, I see something similar happening at Toyota. The difference is seeing strong growth opportunity for the hybrids, especially the newest choices: RAV4 hybrid & Corolla hybrid. Competitively affordable with traditional counterparts makes them a compelling advancement forward for dealers. They will be willing to carry some inventory like that. It shows Toyota's commitment to them... rather than GM just expecting their dealers to find a way to survive with expensive choices.

3-21-2019 **Ford Investment.** Talking about building pressure for GM: "*As part of an $11.1 Billion investment in emissions-free cars, the Dearborn, Michigan-based company's Flat Rock Assembly Plant will manufacture the next-generation battery electric flexible architecture.*" Hearing from both Ford & Toyota recently about their plans to invest and carry the industry forward makes you wonder when the long awaited announcement from GM will finally come. With the March 31 deadline rapidly approaching, it's getting rather dramatic. Of course, the expectation is the same old game play. GM will have a press-release that tells us virtually nothing. Most are so horribly vague, you don't even have enough detail to sight concern of vaporware. The spin will be obvious. An expectation of "*next-generation*" promotion is a given. There's always some type of "*new & improved*" hype, without anything telling us what that actually means. GM's goal with any type of distraction like this one coming is to build hype. That creates a sense of hope few question the merit of... knowing anyone who questions the absence of clarity will get publicly shamed. The internet continues to be cruel like that. Constructive discussion is still unwelcome. That's sad. As with this announcement from Ford, it will get buried in rhetoric. Ugh.

3-22-2019 **GM Announcement.** Sure enough, we got exactly what had been anticipated: "*This new Chevrolet electric vehicle is another positive step toward our commitment to an all-electric future. GM will continue to invest in our U.S. operations where we see opportunities for growth.*" That was the highlight in the press-release today. It tells us nothing whatsoever... except the fact that 2 new electric vehicles were the expectation GM had set. That only mentioned 1. Sadly, that was literally all we were told about plug-in investment. The statements made primarily focused on GM's investment of $1.8 Billion to take place. That's a far cry from Toyota's $13.8 Billion and Ford's $11.1 Billion. The assuming part, since there is always something, was the mention of and "*advanced version*" of Bolt this new EV will be based upon. Of course anything new will be advanced. What else would it be? Nothing else was stated. It simply concluded with: "*Additional product information and timing for the new Chevrolet EV will be released closer to production.*" Talking about stirring the pot without adding any substance. We literally got nothing. The certainly is an effective means of avoiding the problem of over-promise, under-deliver. Not setting any expectation whatsoever or even hinting at a plan is par for course. We really didn't think substance of any sort would actually be shared. So close to the reveal of Q1 sales and the 50% reduction of tax-credits, the mood is grim. Anything providing a glimmer of hope is welcome. I await the rest of the industry to take advantage of this leadership fall. GM's claim to "*game changer*" was nothing but an exploitation. Evidence of choosing to support the status quo is overwhelming.

3-23-2019 **Server Down.** I posted a brief response to an antagonist yesterday, just as I was packing up to leave work. It was in reply to GM dropping the ball. I wanted to get it out there right away, since the evening was about to be filled with things having nothing to do with the automotive industry... though, our drive there would be with electricity. We watched a performance of a play our good friend's daughter was a part of, both as a performer and writer. It was a great too! She's got a lot of potential, a talent I really admire. Anywho, that was followed by a nice late dinner with my wife. It wasn't until this morning that I attempted to follow up on the many notifies I had received from my post. Unfortunately, the server is down. I suspect routine maintenance, since this is the start of the weekend. That means having no clue what was posted. All I know is several well-known antagonists had something to say. Sadly, I didn't save my own post to quote. It simply as priority. We'll all have to wait. The forecast for today is 58°F. Yeah! Yesterday was the first time we saw a temperature over 50 in over 4 months. Minnesota had a proper Winter. Now, we welcome Spring. That doesn't mean a huge storm with lots of snow won't still happen. It just means the mess afterward will melt quickly, now that most of the ground-cover is gone. This time of year is quite welcome. So, I'll gladly enjoy it. The server will be restored by this evening, after the sun has set. I'll get back to those posts then.

3-23-2019 **Impressive.** That was his assessment of current sales. Unfortunately, such a perspective requires absolutes. I begged to differ by posting my own: "0% purchased without tax-credits is not impressive. Don't be fooled by only paying attention to the low-hanging fruit." That stirred exactly what I anticipated for a response: "*So you really think EV sales will totally go away once the tax credits do?*" That's absurd. There will always be some type of niche market. The point though is to get the technology into the hands of mainstream buyers. This is why I called out his limited scope. It's easy to manipulate be simply cherry-picking data. In this case, it was misrepresenting the market. I provide a does of reality: Absolutes are no way to form a constructive query. We know that there will be some winners and some losers. Dependency on subsidies will confirm weaknesses. For example, today's disappointing announcement from GM (basically no plan and a small investment) seems to indicate a lack of interest. We figured something would happen as the 50% reduction approached.

3-23-2019 **Background & Purpose.** The timing made attacks like this inevitable: "*Then don't allude to it.*" Those troublemakers of the past will mislead & imply to make their narrative what gets the most attention. That requires a disregard of the past. For those paying attention, it's obvious. For others, you need to directly point out what's really going on:

No amount of "*totally go away*" spin can evade acknowledgement of my years and years of expressing concern that only affordable choices will survive the expiration of tax-credits. There were many short-sighted people who focused exclusively on the tax-credit dependent sales, absolutely refusing to recognize how few 200,000 actually is with respect to ordinary business-sustaining profitable sales. I most definitely was not part of that group-think crowd. I spoke out loudly against them... and you know it.

I was one who said Volt would die if GM didn't spread their plug-in hybrid technology prior to the approach of tax-credit phaseout. I kept posting "*too little, too slowly*" over and over and over again, warning of the consequences of inaction. For that, I got attacked relentlessly. Vindication now from having correctly spelled out that situation is bittersweet. Supposed leadership from GM didn't actually change the status quo. Something not dependent upon tax-credits still needs to be delivered.

Seeing Toyota have to deal with rhetoric for taking their time to do it right is annoying. How is rushing into a money-losing approach going to get dealers to embrace the idea of stocking & selling inventory that necessitates a subsidy? That never made any sense and GM's colossal screw up with Volt overwhelming concerns how terrible of a choice that was. GM violated basic business principles to push an expensive compact hatchback, something that stood no chance of actually appealing to their own Pickup & SUV wanting customers.

You know all too well that Toyota's effort to always focus on affordability and finding a way to spread their technology across the entire fleet at minimal cost has always been the better strategy for a legacy automaker. Is the effort to distribution a hybrid platform capable of plug easy augmentation to a wide variety of vehicles sizes & shapes prior to actually offering a plug that slow? Can you honestly claim that their long-term goal of achieving that diversity by 2020 was a waste of time & resources?

I'm tired of dealing with the nonsense of not taking market reach seriously. That smug from enthusiasts can finally end by us not feeding them with material like "*allude*" when you know quite well that wasn't the case. You are well aware of my background and my purpose.

3-23-2019 **Breaking the Deadlock.** I'm really starting to push now. There are several individuals who like to play the game. Hitting reset every time they begin to lose influence. They try to keep you from drawing conclusions from pushing a misleading narrative or raising doubt. I get really annoyed by the obvious efforts to divert discussions and the effort to repeat the same questions. They hope whomever challenges them won't have the ability to push back hard enough. I have earned the rank of a senior participant though. After having whether so many battles in the past, resulting in several wars being won, it's time I take advantage of that experience. Turns out, it's very difficult to argue with someone who has an extensive history to share that's so well summed up. I hadn't realized all the blogging would develop the skill to see past rhetoric so well. You learn to keep focus, regardless of how much of an influence the current hype is having. It all comes down to having established concise goals. That clarity is key... exactly like I theorized way back when... but since has been confirmed. Phew! This means I can come down rather intensely on particular individuals, intentionally making it personal. It works when you stay focused on why. It's not vengeance or malice. It's the effort to find allies. You don't try to destroy your enemy. You work to find compromise. Showing them a way forward can be that. Extending a hand to move in a direction unfamiliar, but with a shared objective, can be very effective. I intend to break the deadlock by showing force. Remember how effective that was ages ago, when I directly confronted a diesel antagonist?

3-23-2019 **No Spin.** This came from that antagonist who just kept asking the same question over and over again. Now, he's basically becoming a troll: "*We will have to wait till then to see what John's next spin will be.*" I'm not sure if he's just getting lazy or realizes there's a chance of getting called out. Eventually, others will notice the behavior pattern. That's why they try to put the attention back on you. Anywho, I responded to that with:

You know all too well I was correct about Two-Mode, correct about Volt-1, and correct about Volt-2. Each of those technologies had a fatal shortcoming... being too expensive. Each time the evidence became so abundant that their shortcoming could no longer be denied, something else came about to fill the void. Now for GM, that's Bolt.

In other words, there hasn't been any spin from me. It's the same old argument. I say the technology must be affordable, period. GM is the one providing spin. I could point out some old posts about me getting complaints for repeating the same old argument over and over and over again, like a broken record. You know that isn't necessary though. You too are well aware of my background and purpose.

I want a wide variety of affordable choices for consumers. They must be capable of competing directly with traditional vehicles, so those new clean & efficient choices can become the replacement. That means none of the activity so represents the change needed. It paves the way, but subsidized sales are sustainable... hence the concern about tax-credit dependency.

As for your obvious attempt to divert attention away from discussion of legacy automaker approach, that's disappointing. We need well informed people like you to help with the effort to get those traditional sellers (dealers) to embrace change they can actually influence. They won't ever have a business model like Tesla, so it makes no sense treating them that way. In other words, I reject your spin. Legacy automaker finances & distribution are quite different.

3-23-2019 **Common. Ordinary. Boring.** The transition from niche to ubiquitous is what early-adopters have a terrible time dealing with. Ironically, their exposure & understanding of the technology makes them blind to what mainstream consumer don't see. So neither group recognizes how each is interpreting the situation. What is obvious for the one is often be an unknown for the other. That's why a vehicle like Corolla is pretty much never mentioned by enthusiasts but is the first consideration for someone wandering around on the showroom looking for what to buy. There's the difference between want & need too, seen from perspective that are far from the same in any respect. This is why I face so many barriers getting those early-adopters to recognize what's important for an audience quiet unlike them. Often, they'll just dismiss what I say, claiming I've lost tough with reality. That's another irony, for me to be one of the few forum & blog posters who is more in touch with your typical shopper than any of their own peers online. They still don't realize that even just the basic act of posting participation sets them apart. It's why cars labeled as "*common*" or "*ordinary*" or "*boring*" get so little attention, despite being the top-sellers and the fundamental basis for business sustainability. That necessary profit comes from those vehicles, not the niche they endorse with such praise.

3-23-2019 **Already.** I was annoyed upon getting this: "*What will Toyota do when the $4,500 federal credit goes away?*" It was a sign that he either wasn't paying attention or simply didn't care, since we had already addressed the topic multiple times. Well... there are some who remain clueless, not wanting to accept information. So, that's a possibility too. Whatever the case, I was annoyed but took the opportunity to explain yet again:

Toyota is doing it already. They are spreading their hybrid technology as widely as possible, striving to establish a customer base readily acceptable to change by offering a variety of affordable choices... each capable of offering a plug later. Making Prius into Prius PHV was basically just a matter of introducing that one-way clutch. We're about to see the same upgrade play out with Corolla PHV.

It's easy to see how RAV4, C-HR, Camry could all follow the same path. That's how successful economy-of-scale cost-reduction is achieved... exactly what's needed to overcome any type of subsidy... which Toyota has already demonstrated with the MSRP for Prius Prime.

The problem with your perspective is that you're treating the market of 2 years from now, when the tax-credits are used up... as if it is still 2018, not acknowledging how much change that's about to happen as a result of seeing so many new plug-ins on the road. It's that big curve upward we are about to hit in the product life-cycle that will introduce a market you are quite unfamiliar with. That's an exciting time to look forward to if you are *NOT* an early-adopter.

Remember that sales in high-volume to ordinary consumers are profoundly different. Far too many here assume mainstream appeal is just a matter of delivering enough capacity at a reasonable price... hence the technology being affordable. If it isn't, all those other purchase priorities people have can't also be delivered. Early-Adopters are willing to compromise. Buyers on the showroom floor are not... which is why Toyota is already working to deliver a variety of choices.

3-24-2019 **Spinning Stance.** The most common response to my posts has been to spin my stance. Someone will either twist what I say, take it out of context, or just totally make something up. I always wonder if that is intentional to provoke online activity or they simply aren't paying attention. For those troublemakers whom I have known years, it's especially bewildering. There are posts where I wonder if they make assumptions based what they can only remember in part or they are actually remembering someone else. That's why I'm taking the forceful stance now. Being very direct eliminates most of the uncertainty. We'll see if the nonsense continues or if I'm able to break the pattern. It stands a chance of progress forward. After all, the market itself is changing.

3-24-2019 **Antagonists.** There are some who are obvious trolls, more politely referred to as antagonists. You get the point. Their purpose is to provoke you to reply: "*I believe john's argument was that batteries are too expensive so small batteries will be better once tax credits end. Of course Nissan and Tesla have already proved this argument completely false.*" Options about how to reply are limited. I chose my reply carefully:

You've know me for how many years? That has never been my stance. I have always said we need a variety of affordable choices. Not at any time have I stated a relational between PHEV & EV with respect to tax-credits.

As for Nissan & Tesla proving it, you've lost touch with the big picture... the market as a whole. There haven't been any non-subsidized sales yet. So far, all we have seen is early-adopters taking advantage of tax-credit opportunity. The stage where mainstream consumers make the choice on the showroom floor with traditional, PHEV, and EV all there as part of the decision with none getting special government incentive hasn't even begun yet.

PHEV will have a place for many, many years to come still. Our infrastructure (all locations: home, work, businesses, public locations, and roadways) is only in the earliest stages of building and becoming green for transportation. So, the very idea that all could be served in the near future by just EV isn't constructive in any manner.

It isn't just the expense of batteries either. There's the problem of production-capacity and energy-density as major holdbacks. Overcoming that still leaves us with the liquid-electrolyte limitation. It will all happen, but claiming "*completely false*" already is absurd. What has been proven is being at the "*lots of potential*" point with a great deal of effort required to achieve all those goals.

3-24-2019 **Continued Provokes.** He didn't let up: "*There is a good place for the <40 mile PHEV like the Prime, but these designs are better from the ground up. By the time Toyota gets its battery production together with Panasonic my guess is they will be able to produce 30 mile PHEVs with battery packs that are lighter, smaller, and cost less than the 25 mile one in the current Prime.*" It's interesting to read that, since arguments expire after awhile. You simply cannot use the same reason endlessly, especially when the circumstances change. In this case, the market is rapidly approaching the end of tax-credits... which will dramatically impact the situation. In fact, the death of Volt makes that blatantly obvious. Toyota clearly planned ahead. He just doesn't want to accept the evidence. So, he takes offensive by trying to spin perception. I'll have none of that:

Use of "*from the ground up*" doesn't actually mean anything. People have come to recognize it as representing only a first-generation model. Why? Anything built upon with the original intent there from the start is dismissed. Again, why? Upgrades are an expectation with other technologies, why not with automotive design?

Looking at Prius, we see the design way back in 2003 offering up to 100 km/h travel in EV mode. It was pressed for power with batter-technology of the time; nonetheless, it was indeed built from the ground up. Potential from the system has always been limited that way. The most recent generation, we know as "*Prime*", was clearly it was configured to fit 4 stacks nicely inside the cargo area. The choice to add a 5th just prior to rollout for more range & power doesn't change the propulsion system. All it did was cause a loss of interior space.

Toyota's approach of a drop-in battery-pack means they will be able to take advantage of lighter, smaller, lower cost later. No where does it say they have committed to older cells. Newer will be used as the technology improves. Those cells will be arranged in the stacks to create battery-packs for newer models of Prime. Their design is already capable.

3-24-2019 **Yet Another.** The troublemakers are appearing in from all over. You can tell they fear what's to come a week from now: "*Toyota is not even in the game, for some reason.....*" In his case, he has chosen to raise doubt. Attempting to get people to second-guess their conclusion is an act of desperation, especially at the last hour like this. But knowing this individual has been a particularly nasty Volt enthusiast who has gone out of his way to spread misconceptions, it was inevitable we'd have to deal with a return on the big Prius forum. With the 50% reduction of that tax-credit Volt was so heavily dependent upon about to become a reality, it's easy to see his motive to divert attention from GM back to Toyota. I wasn't about to let that happen:

What good came from the game GM played? Upon using up their allocation of tax-credits, nothing viable for the masses came about. They have an expensive plug-in hybrid that only appeals to enthusiasts.

Why would Toyota want to do the same? The choice for Toyota to refine their underlying electric-tech while waiting for battery cost to reach a tipping point sure makes a lot of sense. They are setting the stage for high-volume sales to a very wide audience while learning from real-world data they collect. That certainly sounds like a very good reason.

You mention Kia, Hyundai, and Nissan. Notice how none of them have anything in large quantity yet here. For that matter, how many have you ever even seen on the road? Do you consider the "*game*" they play better? If so, how?

Think about where we currently are on the product life-cycle curve for plug-in vehicles.

3-25-2019 **More Attacks.** This was quite predicable: "*Refine?? You mean like the cheap, inadequate TMS workaround that is in the Prime?*" I kept my reply to that short. There's no sense arguing with someone who simply doesn't care, but it can be helpful to lurkers now and the curious later to leave behind evidence explaining what the situation truly was at the time: Understanding the difference between want & need comes from seeking a balance. Your insistence upon the battery-pack requiring liquid-cooling, knowing it will never be DC fast-charged, shows a lack of understanding. Adding expense & complexity to a system that doesn't reveal the need makes no sense. Toyota's observation of real-world data from forced air-cooling will help identify what's truly necessary. It's ironic how some claim Toyota is unwilling to take risks, then turn a blind-eye to them when they do exactly that.

3-25-2019 **Forcing Perspective.** Rhetoric most common among those attempting to appear constructive comes in a form like that: "*Sure. Build all the PHEVs that you want. But don't pretend it is the fastest or only path to a highly electric future.*" They are actually the ones who see the "*fastest*" and "*only*" perspective. It's called "*projection*" when someone accuses you of the very act they are guilty of. It's confirmation they recognize the problem, but mistakenly identify the wrong party of that act. I see it on a regular basis. Reading it gives me a bizarre feeling, every time. Most continue on forcing their message of reversed perspective without ever figuring out their mistake. You become familiar with their aviator after awhile. This is why I often end my response to them with a question: Automakers lived in the present for decades, promoting whatever was big at the moment. Now that there is a need to look forward, why must there be a comprehensive look to the long-term. You're setting a dangerous precedent. Think about how unrealistic that can be. Automakers can spin whatever future they want with no accountability... and some have already exploited that opportunity. We've seen things get very messy in the past. There's reason for caution. What do you really expect from an automaker touting a fully electric future, but still sells millions of guzzlers annually for years to come?

3-25-2019 **Limited Perspective.** That forcing of perspective can sometimes be broken by presenting options. People sometimes draw incorrect conclusions based upon assumptions due to lack of information. If they simply don't know to what degree something is available, they'll believe options are limited. I try my best to provide that missing information when I notice the problem. This caught my attention in that on-going rant: "*Yes, this makes it easy for the consumer. They can just at home, just using 110v overnight and they need no new infrastructure at all. If they forget to charge, no problem.*" That overly simplistic response made me wonder if he just lacked a full understanding of potential. So, I pointed in out:

Evidence of the desire to upgrade after getting a taste of EV is absolutely overwhelming. Whether it is the want to recharge faster or simply the need to plug in a second vehicle in the household, there will be pressure which naturally occurs simply from that first PHEV purchase. The owner will seek options, discovering incentives from local electricity providers for them to use more electricity.

Keep in mind of the potential. SAE-J1772 can deliver a charge-rate as high as 19.2 kW. Most households, even with EVs already touting large battery-packs, don't have anywhere near the 100-amp dedicated service to support that currently. So, there will very likely be upgrades for everyone in the years to come anyway.

Toyota is well aware of this power to build a customer base. Their focus on reliability & affordability now makes sense. Higher capacity can follow without consequence of not being available now or even being promoted now. Upgrades are already an expectation. We have come to expect continued improvement.

Know your audience.

3-26-2019 **Push.** Bouncing between several different attacks all at the same time is interesting. I knew this day would come, when the panic from Volt enthusiasts would stir discussion about topics rarely addressed with anything more than just a brief mention: "*PHEVs do not ever, IMO, push that long term infrastructure...they kick that can down the road.*" That in particular caught my attention. It was an effort to spin perspective. That doesn't work when you've misidentified audience. He kept dwelling on the consumer. Overlooking another player involved is a surprise common problem. We see that all the time with respect to dealers. They are almost never treated as a customer to the automaker, even though that is exactly what they are. They choose how to stock & sell the product. That is a vital bit of knowledge to not notice. With regard to this topic today, it's the lack of recognition from whom the electricity for charging comes. Why would you equate infrastructure to an automaker? Since when are they expected to do things like influence the location & quantity of gas stations? In fact, that's an absurd idea to even suggest. Yet, that's exactly what is being forced. Ugh. I replied to that nonsense with: You're looking at it backward. Again, know your audience. There are electricity providers all around the country gearing up to do the push. As a PHEV owner, it's just a matter of taking them up on the upgrade opportunity. They want you to use more electricity, to get on their time-of-use programs, to want your next vehicle purchase to rely on electricity even more.

3-27-2019 **Push Back.** Eventually, he may catch on. Until then, it's dealing with stuff like this: "*Why would someone install a 19kw charger at home in order to take advantage of time-of-use rates? You are making no sense. The idea of charging at night is that you have 8 or 10 or more hours to charge. With an ~6kW L2 you can add enough miles for 95% of commuters.*" That brings us back to the limited perspective, conclusions draw upon without having all the necessary information available. My guess is the idea never crossed his mind. Options that aren't ever thought of can sometimes result in a reconsideration when presented. I'm not sure that will work in this case. He seems dead set on incomplete facts being enough. Ugh. I pushed back anyway: You are repeating what I already pointed out, the rule-of-thumb: a 40-amp line will deliver 200 miles in 8 hours. You also sighted a situation when a person with the available capacity could take the most advantage of time-of-use rates. Think about this. It's mid-afternoon and you have a low battery. You want to avoid the dinner-time rate. The fastest charger possible is how you would achieve that. So what if a person has the ability to rapid recharge at home for opportunity charging but also overnight charges. You have the choice of when and how much. For that matter, you can even choose charging speed.

3-27-2019 **First Sighting.** I saw a 2019 mid-cycle refresh Prius this morning. It looked very new, no plates yet. That first sighting caught me by surprise. I hadn't heard much about shipments elsewhere yet. Living in the middle of the country, it's quite normal for reports from the coasts to become common before there's even a chance of it happening locally. So, I was happy to see the dealer-tag while driving by it parked on the road. With the market so screwy right now, it's difficult to set any type of expectations. Once the uncertainty of the tax-credit phaseout passes, then we should return to some sense of normal. For now, I'll just chalk this first sighting up as a moment to remember.

3-28-2019 **Reasons Behind The Slowness.** The discussion topic about EV acceptation & adoption on the big Prius forum has stirred quite a bit of participation. Here's my add to it:

It has been quite helpful to hear from the regular antagonists about EV adoption, especially upon the death of the biggest "*vaporware*" failure in the industry. Remember Volt? That promise of an efficient & affordable plug-in hybrid never materialized.

The biggest shortcoming was price. We were provided with a "*nicely under $30,000*" target. It made a lot of sense why GM would set a goal like that. Supposedly, it would be achieved upon initial rollout. That didn't happen. We were told to be patience, the wait for gen-2 would address pricing. It was a let down for many, but fine. Unfortunately, the necessary cost reductions weren't taken seriously. That pricing never materialized... hence, the vaporware label... and the confirmation of price importance. Tax-Credit phaseout push so much pressure on that aspect of competition, the effort was abandoned. Volt production ended without a successor established.

Efficiency played an important role as well, but it was far more subtle. A system requiring less electricity to travel the same distance wouldn't require as large of a battery. That would contribute directly to a smaller, lighter, and less expensive pack. That would require reduce the time & electricity to recharge. It was a factor if design rarely focused upon. Importance of electricity consumption was just ignored. Displacement of gas got so much attention, concern for efficiency was recklessly treated as rhetoric without regard to source or quantity. It was evidence the situation would eventually become a clash of image verses truly being green.

Ultimate, it was the "*green*" messaging that caused Volt to be trapped in the early-adopter stage. Dealers had no interest in a "*EREV*" when no one knew what the heck that actually meant. Fights even among Volt enthusiasts made that marketing term a self-destructive concept. The definition continued to change, each time a new plug-in hybrid offering rolled out. That positioned Volt against the entire line of EV choices as well as all of the plug-in hybrids. No one ever really understood what purpose it served. Even the message from GM itself was bewildering. Volt wasn't the intended "*range anxiety*" solution as promised; rather, it was abandoned shortly after gen-2 rollout in favor of Bolt.

Everyone saw what was happening, but enthusiasts fought hard to evade addressing it. We witnessed propaganda efforts all over online to distract & mislead. How is that ever an effective means of promoting a technology? Needless to say, a massive amount of opportunity was missed as result. Nothing came about to help raise awareness about charging infrastructure. You'd think with that much attention and 150,000 vehicles sold, some message about plugging in would have come about.

Toyota saw this coming... as did I. We saw the value of simply continuing to study & refine while waiting for the GM disaster to play out would be a fruitful endeavor. Patience does have merit. Now, just 3 days before the 50% reduction of GM tax-credits and production of Volt having ended 6 weeks ago, there's a wide open field to play in. None of the other plug-in hybrids presented the unrealistic expectations hyped by GM and their fanboys. In fact, they were the ones who spread the "*slow*" narrative.

Stepping back to consider the bigger picture (the legacy automaker market as a whole), what reason is there to claim Toyota as being slow?

3-28-2019 **Distorting Purpose & Timeline.** That's what you do when things go horribly wrong. Here's the spin: "*Volt owners - jumping ship, consider the Chevy Bolt to be the Volt's successor. ie, a Bridge car. Isn't that what we keep saying? A plug-in is just a bridge before getting rid of the ice?*" Comments like that are often looked upon as damage-control. That outcome is clearly not what had been hoped for at this point in time. I responded to it with:

GM's fundamental problem with Volt was failing to attract its own loyal customers. Those who already owned a GM vehicle couldn't care less about a compact hatchback with a plug. They desired a SUV of some sort. That left it to attract only conquest sales, those early-adopters seeking opportunity in the form of incredibly low leases or a substantial tax-credit.

GM made that worse by listening to enthusiasts about how to make the next generation better. It was the classic "*Innovator's Dilemma*" business mistake playing out right before everyone's eye. They listened to the wrong people... hence asking "*Who?*" on a regular basis...which ultimately ended up becoming the lesson learned: "*Know your audience.*"

Volt being abandoned early in its product-cycle is a costly. No automaker ever plans an abrupt stop like that. Calling Bolt a successor makes that already troubled situation even worse. It suffers the same fundamental problem. GM's own loyal customers don't want a compact wagon, especially without tax-credit help.

Toyota gets routinely accused of resisting the EV market by "*kicking & screaming*". We know that's not true, since their push to phaseout traditional vehicles by offering a wide variety of compelling hybrids is on such a large scale. They are undeniably trying to change the status quo. For those watching carefully, they notice those doing damage-control for GM spinning that situation to draw attention away from GM not even going slow anymore. That previous progress has since come to a complete stop.

This discussion thread about EV adoption has been overlooking that history playing out at this very moment. Those reasons are far more important than quibbling about a past long ago or looking beyond the bridge. We must deal with what's unfolding right now.

3-29-2019 **Omitting Detail.** Reaction to my distortion callout didn't surprise me at all. It was a typical mislead by omitting detail: "*...but even if we look at recent sales - the Volt / Bolt (w/out the largest incentives any more) & Prime are all pretty close in sales.*" His attempt ultimately had an expectation of taking attention off of GM. I took the bait anyway, figuring his trolling had a motive of stirring discussion. So, asking his point may result in something to derive a construction exchange with. You never know, especially at such a critical junction. So close to that tax-credit reduction none of the Volt enthusiasts ever took seriously is a harsh reality none can escape. The nightmare they tried to dodge will smack them head on... production has already ended and the heavily depended upon subsidy is in the phaseout stage. I hit him with: Wow, that's a pretty lame attempt at whatever you're trying to convince us of. The incentives are still available for Volt & Bolt. That $7,500 tax-credit doesn't get reduced until next month. So if anything, there should be a jump in sales for those wanting to take advantage of that final opportunity. As for attempting to compare a nationally available vehicle to one with almost non-existent inventory in the center of the country, that reveals the opposite of what was claimed. What was your point? We can speculate endlessly about GM's point, but it always comes down to wanting to out Prius, Prius... something that breaks the status quo... which didn't happen. Realistically, slow is just fine if it gets the job done. That's why it doesn't matter whatever each legacy automaker does, as long as they actually do something to get their own loyal customers to change.

3-29-2019 **Charger Upgrades.** This crazy moment in automotive history here isn't all about GM's fall and Tesla's aspiration. We often talk online about establishing infrastructure, but rarely is there mention of improving upon it. But now that so many years have passed since those original efforts began, it is time to address their progress... or lack thereof. In the case of where I park for work, there's very good news. 4 of the 6 chargers there (2 dual-plug units) lost communication with the network. I don't know the detail of what happened, but the decision was made to swap them out with new models. While at it, the 2 other units will be too. Both dated back to 2012. Only one L2 connection was available on each. But since they from long ago, each also had a L1 connection. Neither was ever used (as far as I know), but parking spots were allocated. So, they will now become L2. The newer duals will bump the count that can all L2 charge (usually a 208-volt commercial connection delivering up to 6.6 kW sustained) to 8 vehicles at the same time. That's a nice setup, especially when you consider the really nice location the chargers are at. Sometimes, you get really lucky.

3-30-2019 **Volt Epitaph.** There was a new topic posted on that old daily blog for Volt. It was an attempt to paint a rosy picture using this title: "*With Tax-Credit Cut Looming, GM Promises New Incentives for the Chevrolet Bolt*". I found it especially intriguing, since no other news source I had come across had made that claim. In fact, several of the green websites I frequent had posted quite the opposite topic. Those discussions were stirring quite a bit of participation too. I noted how the usual antagonists were almost entirely absent. They wanted nothing to do with such an obvious admission to mistakes made. I felt quite welcome to post an epitaph for Volt as a result, waiting until yesterday's stir had settled to post the following... on that daily blog, which even after a wait of 23 hours hadn't resulted in a single post:

Back in July 2013, the price of Volt was dropped by $4,000 to help clear out the 2013 model-year pile up inventory. In August 2013, pricing of both the 2013 & upcoming 2014 model-years were dropped by an additional $1,000. It was a strategy to stimulate the market. But having a new base-price of $34,000, it was still far too expensive to be competitive without subsidies against traditional vehicles.

Back then, enthusiasts were confident the target of "*nicely under $30,000*" could be achieved prior to tax-credit expiration. Many of the meritless claims about sales challenges were difficult to address; so much so, some of it became mindless rhetoric. That's what contributed heavily to mistakes made with the second-generation design. Those enthusiasts became the voice of misleading design suggestion.

Limited initial rollout of that next Volt and the reveal of Bolt prior to it were clues that something had seriously went wrong with the "*Game Changer*" plan GM had committed to. Sales remained a struggle and much greater investment was being made to traditional SUV offerings. As a result, enthusiasts turned a blind-eye to GM's fleet and directed focus entirely on the "*EV Market*" instead.

Now, with only 1 day remaining (0 in states that don't allow sales on Sunday) of the generous $7,500 tax-credit, we see an abandonment of GM. There's simply nothing to draw attention anymore. Volt production has ended. There's no word whatsoever of an upcoming plug-in hybrid. And the price of Bolt simply isn't competitive with at $32,870 (the $36,620 MSRP minus $3,750 tax-credit). If GM compensates with a $3,750 price drop, how would that help? Sales will remain far below expectations for an ordinary profitable vehicle on the sales floor.

This outcome was predicted. Concern in the form of "*too little, too slowly*" was expressed countless times, only to be returned with an everything will be fine. GM's own loyal customers were never interested and enthusiasts are moving on to other automakers.

3-30-2019 **Game Changer, part 1.** My post from the night before was responded to with a link for this article: "*Better Late Than Never: Chevy Volt Sales Finally Hit 100,000 Mark*" It was from a Detroit publication in August 2016, a positive spin on Volt's history to help gen-2 rollout along as its first full year of nationwide availability was about to start. The prior was a strange mix of limited features and distribution to only select states. There was also the uncertainty surrounding gen-4 Prius rollout about to begin, followed by rollout of Bolt. It was an interesting time. This is the opening of that article I was about to comment on: *Chevrolet is marking an important milestone, General Motors' biggest brand taking an order for the 100,000th Volt plug-in hybrid-electric vehicle. The Chevy Volt has been one of the world's top-selling plug-based vehicles ever since its launch in December 2010, but tempering any celebration is the fact that the Volt hasn't come close to meeting the brand's once-ambitious sales targets. At one point, GM officials were hoping to deliver as many as 40,000 of the vehicles annually in the U.S. alone. "Not only is the Volt a class-creator, it serves as the foundation of a Chevrolet electric family that will soon add the first long-range, affordable EV available to customers across the U.S., the Chevrolet Bolt EV" said Steve Majoros, director of marketing Chevrolet Cars and Crossovers, in a statement. Few would argue with the fact that the original Chevy Volt was a game-changer.*

3-30-2019 **Game Changer, part 1.** This is the comment I posted in response to that "*Few would argue*" claim:

It was that sentence in the article's open which made this thread the one to stir the topic of GM's fall. Today is the very last day (for states that don't allow sales on Sunday) before the tax-credit for GM gets reduced by 50%.

Volt never actually changed the game. Now 6 weeks after its production ended, saying the status quo remains intact should be a statement made without contradiction. Sadly, we see GM's fleet flourishing with traditional SUV choices, including the newly introduced offerings: Trax & Blazer. Their concept of a plug-in hybrid died without a successor. Their contradictory shift to EV instead has floundered to compete. It's a disaster about to get worse.

The reason to bump this particular topic this way was to attract discussion about it. Sales are the measure of change. All we saw come from Volt was subsidized conquest and an impediment to other efforts. The natural progression for Prius to become more and more electrified became a confused message by those hoping to undermine Toyota's long-term effort to transform their entire fleet... the true game-changer.

It's time to argue. What should the next step for GM be to actually deliver something that changes the game?

3-31-2019 **Closure & Record.** I pointed that same epitaph on the big Prius forum. The introduction for it was as follows:

The point of stirring discussion here is both for closure and to leave a record with the hope of history not repeating, yet again. Awareness is key.

Sadly, most people are entirely oblivious to GM's first attempt to seize the efficiency market following their EV1 debacle. Those who know something likely have a distorted history of what actually happened, simply from only hearing about or remembering highlights. It's the detail that really makes a difference. Influences along the way are easy to overlook and dates are commonly incorrect. Lacking such information, those same mistakes can be repeated... and were, as I witnessed firsthand and had to deal with some rather hostile responses when pointing out the pattern recognition.

We saw that repetition with Volt. It was supposed to save GM from their sales disaster with Two-Mode, which ironically, actually had a plug-in prototype... the very solution they should have continued pursuing all along, something clearly needed from them now. Abandoning that technology for large guzzlers made no sense for an automaker who heavily favors SUV offerings; nonetheless, that happened anyway.

Since Volt is basically dead in every regard starting tomorrow, I posted an epitaph elsewhere yesterday, seeking feedback from that audience about what (if any) future the technology itself holds. That reflection of major past events started with the point when the sales struggle became undeniable.

3-31-2019 **Disruption.** Limited scope has become so pervasive, it's an everyday battle. Some have no clue they aren't seeing the market as a whole. For example, today I got: "*For the game changer, they are the only company in the world that has seriously disrupted the fossil fuel personal transportation paradigm.*" It was supposedly a summary of the industry, with Tesla as the "*disruption*" in the simplistic of terms. I disagreed with:

You're missing the bigger picture. It's is the same problem GM enthusiasts had. Watching Tesla support aim in the same direction should be reason for pause, a warning to be taken seriously. That's why I do so much to share history. We don't what a repeat of the same mistakes, yet again.

Volt was also a serious disruption. What it failed to do is the same thing there should be concern about with Tesla now. The influence didn't result in lasting change. Unless that disruption is permanent, people lose interest and move on.

GM failed because the "*know your audience*" suggestion was dismissed. They didn't acknowledge the reality that DEALERS were their customer, not CONSUMERS. That fundamental misunderstanding doomed their cumbersome & confusing technology to challenges unlikely to be overcome. And sure enough, lack of stirring interest to stock & sell that inventory contributed significantly to Volt's death.

In fact, this lesson is a big reason why Toyota is taking its time with the rollout of Prius Prime. Why push a technology with great potential in a market unwilling to accept change yet? Putting that kind of hope on dealers somewhat reluctant to even emphasize hybrid models of Camry, Corolla, and Rav4 simply isn't realistic. Waiting doesn't result in much penalty. Just look at the industry as a whole for that reality check... the bigger picture.

In other words, disruption isn't a simple as it seems.

3-31-2019 **Clueless.** He refused to accept my disagreement: "*Volt was never a serious disruption, and nothing even close to what Tesla has done and is doing.*" It brought me back to the beginning of that GM disaster, remembering how clueless those supporters were. It's hard to believe some stuck with it for over an entire decade... only to discover in the end they had made a fundamental mistake... the same mistake this individual is making now. It's bizarre how simply not understanding what the outcome should be messes how everything plays out; yet, few take the time initially to verify facts. It starts with an assumption, then builds to hype on such a scale they completely lose touch. Seeing it on a regular basis make it easy to recognize. Clearly, they don't pay attention. Oh well, it's not like I don't keep pointing out my observations and ask questions:

There it is, the pattern repeating. That dismissal of the past and looking forward with rose-colored glasses is exactly what I recognized back then... and now see again. The easy confirm is an assessment of the market requiring an assumption of mainstream reaction mimicking subsidized sales to early-adopters. Lack of any clear direction forward validates it.

For Volt, it was the obsession with speed & power. We kept hearing over and over and over again how that technology was "*vastly superior*" even though there was an obvious dismissal of both other purchase priorities and business objectives. Enthusiasts turned a blind-eye and convinced GM to do the same.

All you have to do is ask what the goals are. Lack of clarity is the first red flag. Efforts to evade is a dead giveaway. Seeing an effort to direct focus away from legacy automakers by vaguely claiming Tesla is responsible for changing something but not stating what or how is good reason to call for clarification.

What specific expectations are you trying to set? What should the goals be?

4-01-2019 **Nothing Constructive.** The start of a new stage, one that's difficult to accept, is unfolding right before our eyes. That misguided tax-credit with unintended consequences has triggered phaseout and the 50% reduction is in place. GM exploited the opportunity with Volt and now that supposed "*vastly superior*" technology is facing the reality of not actually being the leader it was portrayed to be. It clearly wasn't a "*game changer*" as hoped. That's very, very easy to see now. People are buying more guzzlers than ever. GM is thriving on their SUV sales, having introduced 2 now vehicle choices to their showroom floor. The outcome federal subsidized purchase was nothing. That technology just died. It had a focus so heavy on niche preference, there wasn't anything to appeal to ordinary consumers. GM's own loyal customers replaced their aged traditional vehicle with a brand new guzzler. Sadly, posts online don't want to address that outcome. I'm not seeing anything constructive. Today clearly marks the end to that particular rhetoric. To think, we had to endure all that nonsense about how GM's plug-in hybrid technology... with that meaningless "*EREV*" label... for it to result in a morbid fizzle. The worse nightmare of those terrible antagonists is playing out today. This is an intriguing time to witness.

4-02-2019 **Reality.** That reputation of "*over promise, under deliver*" has moved to a whole new level of disappointment. Enthusiasts of Volt who had moved onto Bolt were anticipating an 11th hour announcement. They dismissed warnings of GM ambiguity, a problem arising from intentionally vague press-releases. That practice of lacking clarity allowed the automaker to mislead about intentions and evade being held accountable later. That was definitely the case this time. Supposedly their announcement from 1.5 years ago with a deadline of yesterday was about here, this market in the United States. It was implied that the new vehicles would be something those reading the press-release would actually be able to purchase. Now, we are being told that was just to keep us informed about activity overall, that we may never get some of the GM vehicles offering elsewhere in the world. That worldwide perspective is crushed when hope of even an export the other direction becomes impossible. Nothing will be available here, end of story. It's a bitter pill for some to swallow. Being let down on that scale is going to have some interesting fallout. I have no idea what to expect. I suspect silence at first, denial so bad, no one wants to talk about it. That may result in new hope & hype, the way Two-Mode's collapse resulted in Volt... or perhaps not. GM may have burned too many bridges. The automakers heralded as legacy leader just 6 months ago may be facing abandonment, with literally nothing of appeal. It's not easy being green, especially when you don't heed warnings about the challenges to come. I summed up the situation this way: Try some prescriptive, something actually appealing for this market. It's time for a dose of cold, hard reality. GM promised we would be told about 2 new vehicles based on Bolt for this market within the next 18 months. That was 18 months and 1 day ago. 25 miles is amazing compared to the nothing we got from GM. All they did was kill Volt without a successor.

4-02-2019 **Toyota Patents.** A lesson learned long ago, forgotten by pretty much everyone, is the necessity of having allies. In fact, that wisdom is what compelled me to seek partnership with those supporting Ford and GM. With recognition of shared purpose, you can advance beyond the enthusiast market. That's the key to extending reach outside of a niche. It was quite ironic when I pointed out such a requirement to the "*vastly superior*" attitudes for Volt and they pushed even harder to resist exactly that. Today, we got an announcement from Toyota that a large collection of their hybrid-related patents would be offered for use royalty free. Obviously, there's a financial benefit to the spreading of technology when your push effort is to make it ubiquitous. This is especially true when the underlying control is retained in an open manner. Think of other standards, like USB and JPG. They have become open use, but how they implementation is applied remains that of individual businesses. They simply share the technology without restraint to approach. Toyota will be the owner, but does that matter? It ensures a strong standard, like Apple did for decades. Heck, it's what Tesla hoped to achieve in some manner with their superchargers. Some sort of share is how you advance to whatever comes next, as well as growing the market itself. This is a clear effort to move forward; however, there's no good way to really predict how the rest of the industry will respond. We'll see.

4-03-2019 **Promises.** There are some voices of reason beginning to emerge: "*GM isn't the only company to make promises on press releases and hope people forget about them when they come to fruition.*" Most will never remember the big promise Ford made about changing their fleet, the big promise to embrace hybrids. When the deadline was reached, overall efficiency had actually gone backward. MPG averages were worse. All the hype we are getting from VW now resembles that meritless hype. The potential seems real, based on technology available. It's quite feasible what's being promised. But the automaker making those assertions is not one to trust. So what if Toyota gives the impression of moving slowly? At least you know there is movement forward on a massive scale. We see little with regard to changing the status quo from others. Each rollout is basically just a demonstration of potential, not any actual progress forward... since the back end never changes. Basically, it can be thought of as a dog on a rope. The stake never moves. All we get is really loud barking at times and an impressive display of running & jumping. The dog never gets anywhere. Watching from the sidewalk, nothing ever happens for you... from automakers like GM. Considering a dog analogy about Toyota, it is instead on a leash, the owner walks right by you with a pleasant welcome, and you are offered the opportunity to pet. That's quite a difference.

4-03-2019 **Expected Announcements.** Just like Toyota, we see that Ford was waiting for GM to fall before making any type of statement. It makes sense. Why risk getting pulled into what could be a massive wake from that sinking ship? I didn't realize the wait would be so brief for expected announcements. My anticipation was subdued, a sense of patience strengthened by the knowledge change was inevitable. The industry was an entity with a chronic impediment about to become just a really bad memory. Sure enough, it happened. Today brought about a reveal of the upcoming new hybrids we've known about for quite awhile, but never had any detail. There was only a sense that Ford was working on big change. That is indeed the case. We learned there will be an all new Escape (known as "Kuga" in Europe) which will be offered in mild, full, and plug-in hybrid models. That's exciting news. The plug-in battery-pack is expected to deliver 50 km (31 miles) of EV range from it's 14.4 kWh capacity. Not much else was revealed, though the addition of charge-mode was nice to hear about. Ford is finally making its move... or at least announcing production intentions. It's far more than the nothing we have heard from GM. To think, the technology in Volt could have been rolled out years ago to Equinox or Trax. Instead, there was just a lot of barking. Ugh.

4-03-2019 **Denial.** Sure enough, someone stated exactly what I had just blogged: "*I still can't believe that GM has had this technology for a DECADE and is going to let Ford beat them to market? Crazy.*" I knew that would happened, but wondered how long it would take. Turns out, things can happen very fast. All those claims of leadership have fallen apart and the dogs barking suddenly gone. That vanish effect is remarkable. When trying to be constructive, you get attacked relentlessly from those blinded by hope. It goes on for was seems an eternity. Day after day, the endorse a technology with questionable potential. Nothing ever happens though. You express out "*too little, too slowly*" concern and get attacked for your trouble. Then one day, those in deep denial just vanish. Not a single Volt enthusiast from that nasty daily blog can be found anymore. It's almost surreal. Their absence isn't the slightest bit missed though. Ford is capitalizing on that predicted outcome. Reaction to their announcements have been very well received. News like that is a very, very welcome change.

4-04-2019 **Hybrids.** Speaking of denial, this particular comment caught my eye: "*I can't see any way but down for Toyota sales if they carry on like this.*" It's that one-size-fits-all mentality having transform to a narrative passed along so well, most have completely lost perspective. The technology used for hybrids has become so well proven, it is dismissed as obsolete. That's an interesting place to be when you realize that's confirmation of having arrived at a mature status. It works well... so well, it isn't given any thought anymore. That's great! The advance of combustion engines reaching that point took how long? Remember how unreliable they were in your youth? Look at how that approach become so well accepted, we think nothing of using the technology. It's everywhere and works remarkably well. That's exactly where Toyota strived to get hybrids. Unfortunately, the rest of the industry wasn't able get to the same point... hence the absence of royalties now. The lifting of that aspect of a patent means opportunity for those interested. Not everyone will want to embrace that level of diversity though. Simply offering Traditional and EV choices may be a logistical challenge maxing out their resources. The idea of hybrid or plug-in hybrid models added to the mix is simply too much for those unable to take on that much variety... so, they dismiss it as realistic. That presents serious challenge for legacy adaptation to a world necessitating change. Taking a major step all at once means taking on a whole lot of risk, something automakers will find very difficult for their dealers to accept. That's a very real problem. Seeing hybrids bridge the gap was a realistic solution many automakers decided to avoid. Not embracing the obvious next step could have serious consequences. How will they address the fear? I pointed out the situation by asking a loaded question: The one-solution-only narrative from those afraid to address diversity is falling apart. Show us proof that people beyond the group-think here actually care. It simply makes no sense to not offer a variety of choices. When you see a truck commercial, do you really believe that automaker is sending a message that is all they care about?

4-05-2019 **Ramblings About PHEV.** Discussions of plug-in hybrids are rapidly growing. Despite limited availability of Prius Prime still, it's a sales leader in the category. That's getting attention of everyone. More are looking at the technology as something to co-exist with EV. That narrative from Volt enthusiasts... which is now easy to see as a damage-control effort... was that PHEV was only a bridge to be abandoned as quickly as possible. It's the their way of explaining GM losses. So much was gambled upon a niche offering somehow becoming a strong seller. It never made any sense. Although that helped to prove the technology viable, the approach itself was terrible. More finally see that. It's a bittersweet reality though. Hope was put upon cost falling far faster than it actually did. Hope was also put on the belief that an automaker staunchly endorsing SUV growth would somehow embrace a compact hatchback without sacrificing either of their premiere sport cars.... Camaro or Corvette. It never made any sense. Volt was doomed from the start... hence "*vaporware*" concerns. That lack of desire to truly commit made the lofty goals difficult to accept. So now, after all that time wasted and so much intentional diversion, we are finally getting so proper attention. Phew! That was a painful journey.

4-06-2019 **More Ramblings.** This was a collection of thoughts I ended up posting in one of those recent discussions about PHEV: In terms of appealing to both the wallet of consumers and the inventory of dealers, much lower MSRP is key. That vital purchase-priority is how automakers will be able to reach beyond the early-adopter stage (tax-credits available) to achieve sustainable high-volume sales for a profit. Toyota has that aspect nailed. Transitioning from Prius from no plug to plug would inevitably cause a disturbance in demand. The important part is that it's happening, not the means it took to get there. Keep the goal in mind. Toyota is pushing to electrify without causing chaos for their dealers.

4-06-2019 **Doing It Right.** There's a lot of rhetoric still being stirred. Expiration of tax-credits for GM resulted in the disaster predicted an entire decade ago. There was a dependence on subsidies to such a degree, the technology could not survive without. And sure enough, that's exactly what happened with Volt. That concern for "*too little, too slowly*" was dead on. The situation wasn't taken seriously. All those hostile responses, attacking the massager relentlessly, become a collator waste. Now, it's time to finally address the problem. Some are trying. I chimed in today with:

The tax-credit didn't include criteria requiring the vehicle to be something that would actually force phaseout of that automakers traditional vehicles. In other words, there was no clear goal. It was just a vague endorsement of electrification.

We all witnessed GM take advantage of that legislative shortcoming. Volt was not a vehicle targeting it own loyal customers. In fact, GM eventually confirmed they had only delivered a niche for conquest. Had there been intent to change the status quo, those 200K sales would have had an end result of a technology the automaker could utilize for profitable sales throughout their fleet.

This is why a "*STAGE 2*" recommendation is the next move our government should take. To qualify for a secondary round of tax-credits, the automaker much achieve more demanding criteria.

For example, GM clearly didn't care about making their choices affordable. Had they, there would have been an effort to deliver a second model of Volt or Bolt that actually had an affordably sized battery-pack, rather than trying to persuade us that more range is truly necessary. The narrative was spun that smaller capacity was seen as the automaker being a laggard... and much of the EV community got suckered into believing it.

Taking the time to do it right, by delivering a technology which could easily be spread to a variety of vehicle choices in a profitable manner, should be rewarded. Carelessly offering more subsidies without forcing the automaker sour appeal of their own guzzlers in the process would be such a waste.

4-07-2019 **Toyota vs Tesla.** The mighty GM has fallen so fast, it's like dieselgate was to VW. All of sudden, no one cares what happens to GM. It will be interesting to see what attention Ford gets in the meantime, since they won't have anything to actually purchase for awhile. Their new offerings are 2020 models. Toyota on the other hand is aggressively working to get their hybrid fleet in place. I rarely mention Avalon hybrid & Highlander hybrid or any of the Lexus hybrids. Already having them in place means focus on the premiere 5 offerings is realistic. That long-term goal of offering the choice across their product-line is progressing well. That schedule played out nicely. So, it should be undeniable Toyota carefully plans out their moves well in advance. That's a fantastic example of preparing the stage for significant change. Anywho, there are some well known antagonists who strongly disagree... which made the topic of Toyota verses Tesla an irresistible draw. I posted the following right away, quite curious how it will be responded to:

Comparing Toyota to Tesla doesn't really tell us much. One is a well funded start-up that made the tax-credit opportunity an impressive means of gaining an audience. The other is a legacy seller required to take a dramatically different path & timeline to get to the same destination. Think about how an entire fleet can be converted, offering a wide range of choices.

Comparing Toyota to GM is far more telling and clearly the constructive means of judging that market they share. Toyota watched GM squander their tax-credits, wasting precious opportunity in conquest rather than focusing on their own customers. That resulted in a disastrous dependency on government subsidy. Volt died as a result without a successor established.

It simply makes no sense for Toyota to not put a lot of effort toward diversification while they wait for the market to settle. So, that's exactly what they are doing. RAV4 hybrid, Corolla hybrid, Camry hybrid, C-HR hybrid are all well positioned for plug augmentation. Each can undergo that upgrade and still be profitable. Isn't that the point?

4-07-2019 **Some Perspective.** This new chapter we have just begun requires reminders that the past is the past. Some are treating the "*game*" as if nothing has changed. It's the drawing a conclusion problem. They don't want to start over with findings, even though so much is now different. That's why knowing audience is so important. Toyota's newest hybrid offerings are now targeted at the same consumers as in the past. So, treating them that way isn't constructive. In fact, it could be considered misleading if you try. I provided some information to hopefully enlighten those who actually take the time to consider it: Look at the sales of RAV4 hybrid and Corolla hybrid for some perspective. Toyota simply sells them with a brief mention that a hybrid model is also available. The subtle approach is working well too, just enough to point out there's another choice offered. The meaning & reputation of "*hybrid*" from Toyota is so well established, the idea of inducing fear or uncertainty doesn't hold much... if any... merit anymore. It's become so ubiquitous, Toyota will be able to quietly phaseout their traditional models without disruption to their true customers... dealers who stock & sale that inventory. In other words, look beyond the misconceptions fading away, toward the plan to get the entire fleet electrified in some manner. Hybrids like RAV4 and Corolla are key to making that happen. Reaching mainstream consumers is far more difficult than the early-adopter (tax-credit dependent) market most are still focusing on.

4-07-2019 **Omission Misleading.** We've seen this before, lumping everything into all one category: "*Hybrids are losing share to BEVs...*" I remember having to argue "*not the same*" countless times about hybrids, but that was more of a technical/operational topic. In this case, it's whether or not the hybrid has a plug... which makes a profound difference. Yet, that is blown off as inconsequential. Grrr. Not wanting to listen is bad enough. But this forced narrative is frustrating. I made that clear by posting information to show everyone else his intent to mislead: Omitting the category of plug-in hybrids create a perception that doesn't reflect the actual market. In other words, it endorses the narrative of polarization. In reality, the PHEV is a great bridge to EV that will co-exist for many, many years to come. In fact, we're seeing strong growth potential for them. Those commuting to work in a Prius Prime enjoy the full EV experience. So what if the engine gets used from time to time. A technology which dramatically reduces oil consumption without disruption to consumer or business is a win-win outcome right away. The fact that it also sets the stage for more EV later is an extra win. It's ironic how some portray "*disruption*" as the desired state right now without taking into consideration the negative impact that would have to the current market. We don't want to encourage that by sending the message of it being the desired immediate state. Rapid transition away from traditional vehicles won't happen if EV is the only choice available.

4-07-2019 **Disagree.** I found the response to my post rather amusing. He disagreed. That's all I got, a contradictory stance without anything else. That total absence of any substance made my reply quite simple: You cannot disagree without stating a position of your own. A statement of "*continually improving*" doesn't actually tell us anything. Being vague about what you expect to happen leaves a massive gap of uncertainty. Toyota sells over 10 million new vehicles every year.

4-07-2019 **Osborne Effect.** Most discussions don't take the bigger picture into consideration. Arguments are worse, forcing the scope to just a single vehicle within a specific span of time. There is some change though. The recent stir from tax-credit loss is breaking the grip on narratives. We don't get much for answers though... not even speculation anymore. The fallout is rather obvious. So, I just keep posting information to keep everyone aware of the situation and asking about what comes next: Volt was an expensive compact hatchback. With Trax, Equinox, Blazer, and Traverse all starting at prices under $30K, there was simply no possibility of overlap for GM post tax-credit availability. They would remain mutually exclusive. Any announcement of a plug-in hybrid SUV though, even at a more expensive price, would get their customers to take notice. They are willing to pay extra for the pointlessly large vehicle. They would delay their purchase for that choice. Sales would drop in the meantime. At least with Toyota, they are already offering a 219 hp SUV hybrid that delivers 40 MPG. Build up of its reputation, combined with the proven reliability of what the "*Prime*" model of Prius is establishing, makes the choice of a plug-in model much easier to accommodate. It's not a profound redesign like an EV requires. Toyota's design only requires the addition of a one-way along with an increase of battery-capacity and the plug itself. That's it. Having a clear path to the future is vital. Detriment of the Osborne effect is something to take very seriously. How will the other legacy automakers, like GM, handle that situation?

4-07-2019 **Disappointment.** Whenever an argument goes bad or the poster gets called out for misleading, the response ultimately becomes a pivot. We've seen the antagonist change the subject to hydrogen and fuel-cells. It's happened so many times, it's basically pointless. The act of trying to divert attention has become even more obvious with the debate of tax-credits becoming so intense. You know they are desperate when they attempt to treat them as the same. They have virtually nothing in common. The timeline & objectives are so different, it makes no sense in any type of comparison. But being objective is not how online exchanges work. They hit hard & fast, hoping for reward from being quick & clever... rather than thinking things out and providing detail to support the claim. Oh well, that's how it goes. Fortunately, the lack of critical thinking on their part ultimately catches them in the end. We saw that with the extremely drawn out "*vastly superior*" hype for Volt. We'll see more of the same from others later. Some people never learn. I try to provide guidance though, sharing wisdom with the hope some will take it into consideration: Fuel-Cell will co-exist with EV, a reality that some simply refuse to accept. With both, there are applications which it makes sense and applications it does not. Starting with personal vehicles is the easiest and most flexible way to evolve the technology, in addition to having a wider source of real-world data to collect from. It wouldn't be as effective starting with commercial vehicles. Just look at Tesla, who also started with personal vehicles. In the meantime, refinements to electric drive benefit both in the long-term. Heck, we have even seen the tech trickle down to Prius already. Basically, the reason there's so much resentment toward Toyota is a combined lack of patience and the mentality that one solution must fit all. It's a recipe for disappointment.

4-08-2019 **Damage.** It is interesting how some double-standards never get challenged. Whether there is a true similarity or not, the choice to disregard without consideration is obvious. For example: "*When they finally produce an EV, I will remember the damage to the BEV transition and avoid buying or leasing their vehicles.*" This is where knowing your audience pays off. First, it is basically pointless arguing with someone who's poorly informed. Second, understand that anything they argue in third-person will likely not come to fruition anyway. It's that old idiom of "*garbage in, garbage out*". If what they are claiming has weak or no evidence supporting it, odds are quite good their prediction will be inaccurate. We've seen that outcome far too many times now. Noticing that pattern is easy. I don't even have to provide an analogy anymore. I have the real-thing to sight as an example now: So all the "*range anxiety*" campaigning from GM, their anti-EV efforts to promote Volt didn't cause damage? Realistically, GM caused so much harm to the plug-in hybrid market, you have to question the impact it had to EV. Think about the confusing & contradictory messages they sent. Now consider how there has been basically zero influence on mainstream consumers. Those ordinary showroom shoppers that most legacy automakers depend upon for business sustaining profit won't know of this history playing out now. For that matter, they have an expectation of continuous improvement anyway. Look at the studies about consumer awareness. They overwhelming confirm the point-in-time advertisements are limited scope and have a very small influence on future sales. There are much bigger issues... like bankruptcies & safety... that people pay attention to.

4-08-2019 **The "Behind" Narrative.** We haven't even emerged from the early-adopter yet and we are still far from a tipping point. So, the attitude toward Toyota doesn't hold much merit. Pointing that out is... well, pointless. All you get in return is: "*The idea that they can "leap" into BEV is foolish.*" They see the current narrative of being "*behind*" isn't working, so there's a re-emergence of the leap-frog mentality again. Rather than focusing on mainstream buyers, it's always that attitude of more. Faster, further, and fiercer is that same old push we got from enthusiasts long before the emission & efficiency revolution began. Simply offering something modest & affordable is so unacceptable, all you get is a maniacal response. Returning your attempt at constructive discussion with such callus disdain is quite telling. Some people just plain don't care. That's why it can be best to keep replies to that short & revealing, as I did today: Prius Prime already delivers a massive amount of real-world data, clearly showing how to best squeeze out speed (84 mph) and power from a smaller battery-pack. Mirai already delivers a delivers a massive amount of real-world data, clearly showing how to best squeeze an EV drive from a 113 kW (152 hp) electric traction-motor.

4-08-2019 **Uncaring Attitude.** From time to time, you'll encounter someone who outright lies. In this case, it was so untrue, that quote isn't worth including. They aren't worth that. I will post my response to the desperation to undermine: Greenwash at it's best, just making stuff up that can easily be disproven. Ugh. As for protecting Toyota, against what? All this early-adopter bickering is simply an effort to divert attention away from the struggle to advance beyond the subsidy-dependent stage. The supposedly "*vastly superior*" Volt wasn't able achieve any type of volume sales, the obvious necessity for growth beyond being stuck in a niche. Hope that speed & power would appeal to the masses failed. So what, move on. Focus on another priority instead. The obvious is that target GM set all those years ago, back when Volt was first being developed... a price "*nicely under $30,000*". Attacking Toyota for having focused on price from the start is pretty bad, but to mislead about the other development Toyota is also pursuing at the same time reveals an effort to undermine. Notice how most here are fiercely against Mirai but absolutely refuse to acknowledge the 152 horsepower EV drive it provides? That's because they fear the same setup could be delivered in a future electric-only model of Prius. Think about what that sales scorecard really tells us about the uphill battle legacy automakers still face. Shooting the messenger is an act of denial.

4-09-2019 **Online Death.** All posting activity for that old daily blog halted a week and a half ago. It was quite abrupt. The only posters left were the antagonists looking for trouble to stir. I watched as a lurker, wondering what they would come up with undeterred. Without an audience though, that was going nowhere. Topics weren't about Volt anymore anyway. It was just random content at random intervals. A new discussion finally popped up, it was about GM's fate with the tax-credit cut looming and supposed promises of what was to come. My post to that has been in a "*waiting for moderation*" status ever since. Clearly, the website is advancing its prolonged death. Online entities like this can persist for a long time though, even with the homepage feed being abandoned over a year ago and now the blogging no longer allowing posts. There's a small forum there that never really caught on. The old-school format of daily blogging with an anonymous avatar and no accountability beyond just a few days, this death was a long time coming. Reputable websites wishing to retain any type of integrity stopping allowing such activity awhile ago. This one simply lived on because it was an inexpensive branch of a much larger parent entity that would just repost the same content. Becoming a source for fake news was what convinced many to leave on their own. They didn't want to be associated with greenwashing that's so obvious to recognize now. Back in its day though, most didn't have a clue they were contributing to an effort to mislead. They became enablers and didn't even realize the greenwash endorsement they were contributing to. I'm sure glad that ugly chapter in emission & efficiency history is finally over. What a relief!

4-10-2019 **New Tax-Credits.** Efforts continue for some type of renewal. I don't see how something so vague, counter to the rollback efforts of this administration, could ever stand a chance of getting approval... or even recognition. There are some who keep trying. In the meantime, I keep pushing for improvement. New tax-credits should come with improved requirements, as I stated today: It's the response that's flawed. Discussing the point of tax-credits is far more effective than name calling. Each automaker was given an allocation to come up with a means of making their product reach a state that where subsidies were no longer needed. Extending poorly written legislation isn't a good idea. Requirements to be eligible for the tax-credit should be addressed. In the past, they were exploited because the goal was so vague. Why would we want to renew that? Eligibility for the additional quantity shouldn't just be based on participation alone. There should be qualification spelled out. In other competitions you must qualify. That next level of subsidies should be earned. Reward those that push hard to actually reach ordinary consumers.

4-10-2019 **Growing Trouble.** Watching the greenwash grow worse is troubling. His simple-minded view of the world, clearly expressed in his abundant very short posts, resembles that of a troll now. It was just annoying in the past, making constructive posts difficult to find. You know, just innocently diluting content and taking attention away from those who usually don't participate much. Anywho, today it was this: "*I would prefer to see one total number of credits, and first come first serve, instead of wasting 200,000 each on mfgs that don't care, or may show up some time in the future.*" That was frustrating to read, but understandable how someone could take that stance. The sentence that followed, concluding his statement, was not: "*But this is better than nothing.*" When some posts that often, yet claims to not know of any alternative, it's the sign of not even trying. He's just there to give himself some sense of purpose. Really annoyed, I fired back with: Advocating for a rush to market, rather than show support for taking time to do it right... Ugh. It's really unfortunate that narrative of "faster is better" has penetrated our society so much, most people don't even realize there is a worthy alternative available. Other markets are aware; sadly, we still haven't learned that yet. Think about the example no can deny anymore, Volt. That turned out to be a huge waste. Why invest so much toward plug-in hybrid technology only to abandon it entirely midway through its second generation? GM didn't care enough to implement what they originally pursued, with the aid of that subsidy money, on a platform their own customers would be interested in. Punishing automakers who avoid rhetoric and take some time to rollout something with wider appeal and greater potential in the future is quite backward. Allowing that to go unchallenged is a terrible next step. Your preference has been called out. What do you now suggest instead?

4-11-2019 **Round Two.** Talk of an extension of the tax-credit for plug-in vehicles is heating up. There have been several, but this newest one seems to be drawing more attention than the others. It's not because there's anything impression about the proposal. It's simply the only one with one Republican and one Democrat. That's all. No committee. No well thought out plan. Nothing more than just a suggestion to extend from a representative of each side. With such a weak approach, it's no surprise the rhetoric has stirred. We almost immediately fell into that same old nonsense again. I sounded off about it, which should be no surprise: It's the response that's flawed. Discussing the point of tax-credits is far more effective than name calling. Each automaker was given an allocation to come up with a means of making their product reach a state that where subsidies were no longer needed. Extending poorly written legislation isn't a good idea. Requirements to be eligible for the tax-credit should be addressed. In the past, they were exploited because the goal was so vague. Why would we want to renew that? Eligibility for the additional quantity shouldn't just be based on participation alone. There should be qualification spelled out. In other competitions you must qualify. That next level of subsidies should be earned. Reward those that push hard to actually reach ordinary consumers.

4-11-2019 **Stage Two.** At least I'm getting some kind of dialog: "*So would a car that hundreds of thousands pre-order without seeing it qualify as having appeal? What is your criteria?*" It's really unfortunate though that after so many years, all that comes from this topic is a generic question. Never really giving the topic any thought is no surprise. Many make assumptions without bothering to consider anything beyond a basic anecdotal observation... hence the advice to know your audience. Somewhat annoyed, while at the same time a little encouraged, I posted a lead into my stage-two suggestion: This is basic economics, the 101 first-day intro stuff. Toyota sells over 10 million vehicles annually. Those subsidized sales of "*hundreds of thousands*" only equates to less the 4% of their production alone. Worldwide, the total comes to almost 60 million. That perspective clearly shows us the initial sales are only low-hanging fruit... especially when you try to consider what they would have been without tax-credits through legacy channels.

4-11-2019 **Progress?** I'm not sure how well that went. This was the response after a number of short exchanges: "*Define ordinary.*" Not recognizing how early-adopters differ from ordinary consumers is troubling. You'd think that would be obvious, especially when there's a tax-credit involved. My guess is some people never really give the process of purchasing a vehicle much thought. So, you have to start at the beginning and see how productive some exchanges are. Perhaps I'll make some progress with this: That also is basic economics. It's whatever represents a majority of customers. In this case, that's people who go to the dealership of their favorite brand and simply just shop around. They have a general idea what they would like and want if from the source they've grown to trust. Looking at inventory & sales numbers, it's easy to see the outcome. Whatever plug-in is offered should target that same pattern. This is why each automaker was given the discretion of how their tax-credit allocation could be used.

4-11-2019 **No Cap.** In the middle of my attempt to invoke some critical thinking, a well known troll jumped into the topic and posted: "*There shouldn't be a cap. Just a set date on when the incentive starts declining for everyone.*" It was only a matter of time before that happened. Those mindless, vague suggestions only serve to stir trouble. It is especially bad when the individual knows the reasons why such a generalized approach is a bad idea. But that is how he provokes posts and fulfills his need for attention. That's unfortunate. Oh well, at least it gives me a chance to slip in a little background information: Turn a blind-eye to what has already played out and just allow the exploit of tax-credits to continue. Ugh. We all witnessed GM miss opportunity after opportunity. Rather than using the knowledge & experience they gained from subsidy aided sales of Volt by rolling out that technology to vehicle types & styles their own loyal customers would prefer, it was wasted on appealing to enthusiasts. That lack of effort to actually change what legacy automakers sell should not be encouraged and you know it.

4-11-2019 **Understanding Purpose.** This could be promising: "*Without specifically designing and picking winners it allows a diversity of solutions to be tried...*" It shows an effort to recognize need. The problem is, it doesn't serve as any type of encouragement. Incentivizing a goal requirements stating some type of desired outcome. How do you know who wins? For that matter, is it a pass/fail situation or will the result be graded? There are consequences of being vague. We have witnessed missed opportunity and wasted resources. That's why I propose some type of next step. Now that introduction has been achieved (the first round of tax-credits), what should the next step deliver? Some type of threshold should be defined. Leaving it open-ended is like telling someone to "make it better" without explaining what you had in mind. What do you hope will be accomplished? Needless to say, I get quite frustrated with the lack of critical thinking. Maybe this will be helpful: That's great for stage 1, but offers no suggestion or justification for stage 2. GM never rolled out their plug-in hybrid technology to anything beyond Volt. Their approach died, no successor. Missed opportunity is what the next round of tax-credits should address; otherwise, there's more waste appealing to niche interest. Remember, the goal is to find a way to reach beyond just early-adopters.

4-11-2019 **Not Paying Attention.** The effort fell apart: "*Not every company is going to pick a stage 1 technology that leads directly to a stage 2... they may need to backup and try again.*" I've posted the idea of secondary requirements several times now. Clearly, that isn't being recognized as such. This twisted perspective back on the automaker though, forgetting the topic was about tax-credit renewal. I was concerned that the entire effort would fall apart, that the topic was too complicated to address properly online. I hoped for the best anyway, with this response: Please read posts carefully. That's not what stage referred to. Try again. STAGE 1 is the first allocation of tax-credits, that initial 200,000 for each automaker. STAGE 2 would be the next level, which would require meeting new criteria to be eligible for. In other words, if you waste opportunity with the first, you'll have to find another means of qualifying for the second.

4-11-2019 **Across The Fleet.** It's very difficult to assess progress of a discussion, especially when you encounter something like this: "*And the average mpg is dropping. This is basic economics. They are going the wrong direction.*" It implies a step back, attempting to consider the larger problem. But then again, that's what you would do to undermine a specific point. Whatever the case, it did present the opportunity to share more information about how to interpret data of that nature:

Basic economics must include a timeline. You cannot just disregard that part of the equation. Ironically, that "*Losing Ground*" article is a great example of feeding the narrative of shortsightedness. People read something like that and take the contents at face value, without bothering to consider the larger picture and the time involved.

For those who do bother to research, they'll discover Toyota is taking the time to do it right. The are striving to offer hybrids across their entire fleet. Despite the slipping popularity and small profit-margins of sedans, we get a Avalon, Camry, and Corolla hybrids. At the same time, they upgraded both Prius and Prius PHV, while also rolling out a RAV4 mid-cycle update to introduce it as a hybrid. Then just 2 years later, we get a full generational upgrade to both RAV4 and Camry hybrids. Next year, there will be a generational upgrade to Highlander too. Don't forget about the variety of Lexus hybrids either.

Think about how cost-effective it will be for Toyota to augment their RAV4 & C-HR hybrids to also offer a plug. Like Prius, it's basically just a matter of adding that one-way clutch, since the hybrid system in place already has everything else it needs. This is the stage Toyota is setting as they wait for battery prices to reach an affordable point. They are carefully using their tax-credits, while learning from other automakers along the way about what not to do.

So what if there's a slip backward on that journey? Toyota still remains well in front of the old Big-3 automakers, with lots of potential to come from already being well into their effort to phaseout non-electrified vehicles across the fleet.

4-11-2019 **Expectations.** Nope, things fells apart. He reverted back to trying to judge the progress of legacy automakers to Tesla: "*And yet the last 10 years of incentives gave us what, model X and...and...what?*" They have so little in common with one and other, it would be hard to believe anyone would take such a comparison seriously... until you reflect upon hybrid history. Remember how the 2-seat, all-aluminum, manual-transmission Insight was considered direct competition with Prius? Even without taking into consideration how fundamentally different the 2 types of hybrids were, it should have been obvious how drastically different the vehicles themselves were. Yet, we got countless direct comparisons anyway. That's the same problem with this situation now... lack of anything else to compare. That mindset limitation leads to all kinds of trouble. It's how the hope for Volt transformed into hype. Group-Think thrives on absence of critical thinking just like that. Expectations grow out of control without any means of validating information. Meritless claims become facts... hence, fake news. Seeing beyond that rhetoric is quite a challenge. I keep trying to push online readers beyond the crazy though, attempting to interject some sense into the chaos: Toyota, Nissan, and Hyundai are all pursuing affordable choices with variety prior to reaching tax-credit phaseout. Assigning an arbitrary deadline serves what purpose? Again, forcing doing it fast rather than doing it right doesn't make sense for legacy automakers. That's more economics 101. Think about how long it takes for other changes that actually altered the status quo. That history informs us a lot about setting realistic expectations.

4-12-2019 **They Don't Listen.** It got worse, rather than better. Comments like this are how you know the audience has given up: "*Just few years ago hydrogen was the future. And flying cars before that.*" Signs of really never having paid attention are confirmed when you that. It wasn't just a few years ago. It was 15 and that was never what the industry stated. It was GM attempting to divert attention away from hybrids. Remember that bizarre State-Of-The-Union address making the hydrogen claim? Even then, most people were scratching their heads trying to figure out what such a vague statement actually meant. There was no detail whatsoever. Lack of any substance made it nothing but greenwash... and we certainly knew that audience. The administration was strongly opposed to hybrids, going to the extreme of pushing guzzlers. Remember that "*good for the economy*" nonsense and the $10,000 tax-credit available for Hummer? I was definitely annoyed by having such a comment to reply to. When they don't listen to anything leading up to that point, how do you find a way to reach such an audience? I keep trying: If you listened to the rhetoric... In reality, hydrogen was always a complimentary tech. There are some applications in certain localities where it would work well. Starting with small test vehicles with a diverse set of users still makes sense. The narrative of one solution for all never did. This is why looking at the bigger picture is necessary. EV and FCEV will co-exist, just like other tech of the past... for example, diesel was primarily for commercial use and gas for personal transportation.

4-13-2019 **Discussion Distractions.** If you stick with a topic long enough, and the trolls to undermine its purpose, the distractions will eventually fade. In most cases related to plug-in vehicles, those distractions are Telsa and Fuel-Cells. With the discussion related to raising the eligible quantity of tax-credits per automaker, we finally got this: "*These are the vehicles that consume the most fuel, so improvements there save the most fuel*." Comments like that bring us back to fundamentals. That's how you become constructive. It offers material to build upon, rather than distract. I was delighted to respond in detail:

That is how "*Know Your Audience*" came about, from similar statements 14 years ago... way back when Two-Mode emerged as a technology promoted as far superior to Prius... complete with a plug-in hybrid model planned for 2009.

When Two-Mode was finally rolled out, the targeted audience didn't care. Mainstream consumers were not impressed. Large savings of gas in terms of a few MPG improvement wasn't a priority for them. Sales floundered from the very beginning. Rollout was such a disaster, the next-generation design intended for a small car platform was disassociated with the one for large vehicles, showcased as a fresh start. Despite that, it turned out to be a sales disaster for the very same reason. Volt didn't appeal to mainstream consumers either.

Knowing your audience means understanding how to appeal to them. Lesson learned was selling the idea of "*most fuel*" to someone who drives a guzzler with no concern for guzzling simply won't be interested. Gas is cheap and they are unwilling to try something new.

This is exactly why some of us knew from the start tax-credits would be wasted by a legacy automaker like GM. We saw from the early days of development that Volt was being created for the wrong reason. Those that wanted to save the most fuel were not their own loyal customers. That compact plug-in hybrid hatchback didn't target the right audience. It was opportunity missed, intentionally.

It was obvious that a smaller battery-pack would reduce cost, weight, and complexity of Volt without much of an overall loss of MPG. That electric-only drive could reach a much larger audience and could more easily be ported to other vehicle platforms. GM simply wasn't interested. Whether GM was just resting on its laurels or being afraid of the paradigm-shift, outcome is undeniable... tax-credits didn't result in a shift of their basic offerings at dealerships.

That's why this topic of raising the limit for tax-credits is such a hot discussion. Why would we want more of the same?

4-14-2019 **Greater Than 50%.** That magic point of hybrid interest was reached in the first quarter of 2019 for Europe. 51% of the 279,000 sales for Toyota (that's 143,300 vehicles) were hybrid there. This was a goal targeted for 2020. Meeting that already, prior to anticipated by an entire year, is fantastic. Unfortunately, not everyone sees it that way. The spin today was "*Over 50% Of Toyota Sales In Europe Are Hybrids: PHEVs Not Even 1%*". That's the rhetoric I've come to expect. Rather than looking at the market as a whole, they chose to cherry-pick by focusing exclusively on the plug-in vehicles. That selection of only a specific choice is blatant misleading, which I strongly resent. That's exactly how Volt got on its course toward disaster. Enthusiasts couldn't care less about tax-credit dependency or mainstream interest. All they had any interest in was conquest. I'm so glad I took time to document that attitude, as it played out. It's a history of short-sightedness and focus on want, rather than need. I asked "*Who is the market for Volt?*" over and over and over again to draw attention to their own self-destructive nature. They destroyed themselves anyway, shooting the messenger as much as possible to feel better about their mistakes. It all came down to market reach. You don't endorse something with such a limited market potential. So what if Toyota's technology doesn't get a "*vastly superior*" label? That's not the point. You want the masses to purchase the new technology. They are the ones who couldn't care less what happens under the hood. They just want something reliable, practical, and affordable. That's why Toyota's recent emphasis on safety doesn't get much attention, yet helps ensure strong sales. The same is now proving true for efficiency & emissions too.

4-14-2019 **More Rhetoric.** I don't even need to quote the post anymore. They desperation has become so extreme, there's no denying it. Volt is dead. Tax-Credit dependency is obvious. Toyota's choice to take the time to address the status quo, making an effort for real change, is starting to show. It never ceases to amaze me how people get drawn into hype & hope. They loss common sense. They become out of touch with their own surroundings. It's a dangerous disconnect they just plain don't see. That's why more and more of my posts focus on the bigger picture now. Being trapped on spin is a thing of the past how. What a relief. Phew! I'll take this over that any day: Know your audience. Claiming "*defect*" is rather disingenuous. They are early-adopters taking advantage of the tax-credit opportunity. Why now? It's a good deal and that has no bearing on whether or not their next purchase will go the same direction. Toyota is in it for the long-term. That loyalty isn't being challenged, it's actually helping to establish the industry. We need customers all over for the next stage to take place. Alone doesn't work. Toyota needs allies. Toyota is well aware of this and working to appeal to their future shoppers, not early-adopters. Notice how affordable Prius Prime is, even without any government subsidy? As for claiming under-powered, my Prius Prime merges just fine onto the highway using EV mode. You want more power, you buy something like the RAV4 instead. Heck, even Mirai with its 152 hp motor would make for a nice all-electric model of Prius.

4-15-2019 **New York City.** I arrived today for a conference, taking a cab from JFK to Times Square. What an unusual experience. Traffic really was as bad as the stereotypical description would lead you to believe. It was bumper-to-bumper with some very tight & aggressive lane changes. Whoa! I certainly wouldn't want to deal with that, especially on a regular basis like I driver did. He handled that chaos just fine. Stranger though was the sea of SUV within that flow. They are all over the place! With such tight conditions and so much waiting in stopped traffic, it was surreal seeing so many giant guzzlers like that. People who don't understand the draw of size & power really need a wake-up call like that. The supposed logic I have to deal with on a regular basis shows being out-of-touch with what's realistic. That doesn't hold any comparison to what's unrealistic, what I'm seeing right now. The craziness looking down on those streets below is truly amazing. It's remarkable to see how disregard for environment or resources can take you.

4-16-2019 **Highlander Hybrid.** Exactly as anticipated, the reveal of next-gen Highlander coming late this year was a short & sweet announcement. 34 MPG from such a massive vehicle is incredible. With such a massive interior and lots of power, this will be the hybrid SUV that quietly crushes other automakers. RAV4 hybrid will get lots of attention, but this is the one to cause fear in the hearts of Detroit backers... especially since it will be produced here in the United States. It's nice to see such efforts to offer a diverse set of choices. This is what both GM & Ford were expected to do ages ago. Remember, it was well over a decade in that they were gloating about how Toyota would be crushed by their high-efficiency monsters. That never happened. They just kept making larger guzzlers without any concern for oil dependency, clean air, or environment impact. For that matter, they weren't even concerned about their own long-term survival. That live-in-the-now attitude can be quite detrimental... and sad. Thank goodness some of that is finally changing, with Toyota setting a good example of what can be achieved. Ironically, I'm reading news of this coming from the New York International Autoshow while being in New York City... a place where SUV traffic is abundant. It's amazing how such vehicles became people movers in a place where their off-road & power abilities are completely worthless.

4-16-2019 **C-HR EV.** Exactly as anticipated, there was a reveal of an EV model of C-HR for the market in China. It's becoming more and more difficult for the die-hard enthusiasts to portray a narrative of Toyota being anti-EV. Being compelled to seek out an enemy is normal. It's commonly how troops are rallied and teams pepped up. It's needs some sort of basis in reality though. For early-adopters who took advantage of tax-credits, but denied that was a primary motivator, are now challenged with explaining how their choice will be appealing to a topic consumer without that generous incentive. Toyota never catered to that audience. GM thrived on it, milking that opportunity without regard for consequence of missing others. Now, we see GM struggling with no audience and Toyota setting the stage for wide-spread appeal. The difference is so drastic, I'm fascinated to find out what comments will result from this reveal. There will be some outright hate, but that's easy to look past. There will be some efforts to undermine, but those are the same old tired posts that stir very little feedback. There will be some sense of optimism. That's what I'll be looking for. Detail will be scarce though, especially since this isn't for the United States and Toyota tends to withhold reveals until close to rollout... quite the opposite of GM. My guess is focus will be on the one-size-fits all narrative. That claim of anti-EV belief feeds on the "*self-charging*" advertisement. I find that quite telling. These same people turn a blind-eye to all the SUV promoting we get from GM on a very regular basis. They desperately attempt to lead you to believe an automaker must only represent one offering, that focus on a diverse set of choices involving a wide variety of appeals is impossible. It's so hypocritical, it's embarrassing at times. The rest of the world wonders how bad complacency of people here will become. It's sad. Fortunately, we have Toyota doing their rollouts elsewhere and well disguised. C-HR is getting attention now, but hiding their EV tech in plain view here is what really blows my mind. Mirai is right there for all too analyze; yet, most only notice the fuel-cell part. The electric-only drivetrain part is getting quite the real-world testing & refinement without anyone taking notice.

4-17-2019 **Air Cooled.** Final efforts from antagonists don't seem to be making any difference. I'm watching their influence fade. Much of that comes from a new chorus of interest, people who were never part of that past rhetoric speaking out with messages of their own to share: "*Toyota said in the past they use batteries in the Prime designed specifically for heat...*" When they make the same information conveyed in the past part of their own statement of fact, it really makes a difference. Antagonists attacking me relentlessly as a scapegoat makes no difference when someone else passes on the same message. There's where knowing your audience makes a difference. Breaking the problem of group-think only takes a few individuals to stop listening. I'm happy to contribute to that, by providing other detail for them to consider: Better chemistry & design is the preferred approach. Necessity of liquid cooling is a complexity & cost that doesn't make sense beyond early-adopter sales. Remember, the sales pitch for EV is simplicity. Avoiding coolant, piping, a radiator, and maintenance is a vital step toward ending the reign of traditional vehicles.

4-17-2019 **What Data?** It's quite vindicating when you see something like this posted: "*Sure, it's cheaper to build a car that only attempts to cool by hot air, but the industry's history already shows..."* I know what the real-world data shows. You can manipulate the message of history by cherry-picking, to present a false narrative. But when looking at the bigger picture and taking realistic goals into account, the story changes. This is especially easy to confirm when dealing with data that becomes outdated quickly. I know that. They know that. The hope is to not be called out on it. This is why I ask for detail... and rarely ever get any. Not getting it is an implied confirm that they really didn't have anything of substance to make their claim with. This time, I asked: Shows what? Where is there data with newer chemistry and forced A/C cooling? Think about how primitive the chargers themselves were back then too. You couldn't sustain a 7.2 kW draw, but that is now becoming realistic.

4-18-2019 **Recent?** This was a delight to read: "*...and that's where the market has headed recently*" Most people don't pay close attention to the automotive industry. In fact, even when they make a purchase, it only represents a tiny research effort. There's no extensive study or on-going monitor. The typical mainstream consumer is just an ordinary person who wanders into a dealer and starts looking. They do some basic looking at specifications and do some simple calculations. That's it. There's no big picture. There's no waiting. There's only a consideration of immediate impact... usually in the form of, can I afford gas & payments? Hope that consideration for environmental or politic impact is a futile expectation. It doesn't happen. That's why we have had a endless growth of vehicle size & power for decades. It's not recent in any regard. So reading about someone commenting with regard to the shrinking sedan market is maddening... though, quite understandable. Know your audience. Don't get on them about not being attentive. Don't make them feel bad in any regard. However, do let them off the hook either. Ignorance is not an excuse. Make sure you convey a clear message of the true situation, especially when you confirm they really didn't notice what has been happening over all those years: That's the history I'm referring to. Some of saw the "*recent*" trend begin back in 1994, then a massive push into the mainstream back in 2004. What is happening now is that has become the norm, with everything else now an exception or holdback.

4-18-2019 **Central Park.** I got to spend some quality time with my wife today. We took a stroll through Central Park. What an amazing part of a truly unique urban environment. It's quite beautiful. We really, really lucked out with weather too. There was a light rain in the morning, which provided a nice sense of exclusiveness. Most people weren't out wandering around. We got to enjoy the sections & trails mostly alone. Early spring made it even more inviting. Anywho, it provides a great opportunity to reflect. The clouds parted. We saw others come out. In fact, after a nice lunch at a local restaurant, there were lots of people to share that great setting with. By the time we got to the other end, crossing somewhat in a diagonal manner, we got to see where the nice location was to watch a sunset on the massive building from that tranquil jungle of trees. To my surprise, right there at the southeast corner was a long line of plug-in vehicles, plugged in. They had setup chargers for city vehicles along the roadway. It was a sweet sight... in a quite unexpected location. There was about a dozen vehicle there... all with charge-ports on the wrong side, requiring the cord to stick out into the street. Fortunately, Prius Prime has its access on the passenger side... but I digress.

4-19-2019 **Prius Taxi.** We got a taxi from Times Square to JFK for our flight home yesterday. What a crazy experience... in a Prius V cab. The cab trip my wife had in Rome a number of years ago is no longer her favorite cab story to share. This driver was all over the place. If anyone ever questions the driving dynamics of that car, just express an interest in wanting to get to the airport quickly! The weaving through traffic was remarkable. I would not have been thrilled about seeing him approach in my mirror or watching him merge into the lane opening I wanted. Whoa! It sure was a testament to how well the lower gear-ratio for the bigger Prius combined with the power of an electric-motor can really make a difference for providing small boosts of thrust. What a contrast to the next taxi we got a few hours later. It was a guy with an Iconic model. His Prius had a little over 209K miles on it and had been working great as a cab. Since it was his vehicle, rather than a commercial service as before, the driving & conversation was quite different. He was intrigued that we were both Prius owners and had never heard of the plug-in model. So, we indulged upon arriving at home. I actually showed him my wife's Prime, demonstrating how it was plugged it. That blew his mind. It was an incredible confirmation of how even a well-informed owner who uses his Prius to earn a living, knew virtually nothing of the technology. He simply trusted Toyota's reputation for affordable, reliable, and responsible transportation choices. btw, while in New York City, we saw quite a few Camry & RAV4 hybrids used for taxi service too. It's obviously an excellent choice for that type of driving.

4-19-2019 **Posting Comments, change.** It will be changing on the website that has become the authority on all things plug-in. It was starting to become a troll creator, where points-of-view could thrive as propaganda. Moderators were well aware of the growing problem. The owner electing to change the posting format, but remain within the rheum of blogging. That obviously didn't work. People could still hide their identity and easily cover their tracks along the way. As a result, topics would die quickly and construction follow-up remain hopeless. Change was needed, something significant enough to sour the milk. And sure enough, right after today's announcements we got some goodbyes. It was always quite clear that enthusiasts were diligently working to retain the status quo. Fighting efforts to grow beyond the initial rollout stage (early-adopter, which was identified by subsidized sales) became increasingly more difficult... because they stopped caring about being constructive. More and more activity recognized as trolling emerged. Thankfully, they drew the line. In few days, yet another resource online will attempt to establish a voice of integrity by pushing out those who were just enjoying a moment in time at the cost of others.

4-20-2019 **Posting Comments, perspective.** I was quite happy to join into the discussion topic addressing the way comments will be posted. That website was really struggling for awhile there, not having a good idea how to objectively promote both EV and PHEV for both start-up and legacy automakers. The idea of diversity is compelling. Actually achieving it is quite a struggle though. Fighting to retain the status quo comes from some you would hope would be more open minded. Discovering they really didn't care about the greater good is disheartening... and also a difficult barrier to overcome. I added some perspective with a post of my own: Understand that this next step is necessary as the reach of plug-in offerings grow beside the obvious enthusiast group currently active here. Though many don't see the group-think that's rather blatant from the perspective of someone who just happened to stumble across this site, but it's there and a very real problem to address. Continued improvement efforts like this, are a clear attempt to ensure integrity of postings. Over the years, I have watched the pattern of attacks meant to enforce a narrative. Wanting to witness it for yourself, watch what happens when affordability (discussion of vehicle pricing without tax-credits available) with regard to high-volume and profitability is brought up. You'll see the usual bunch of individuals promote their rhetoric of power & range attempt to undermine those who simply want everyday plug-in... nothing special... just basic electric travel for their daily driving. I welcome this step they are taking to overcome rhetoric and provide a most useful tool for discussion participation. Features like ignore & notify will be improvements many will really appreciate.

4-20-2019 **Posting Comments, resistance.** I should have expected a gross over-reaction to my post. There's a sense of panic about how comments will be changing, one stirring fear... Recognition of the situation's magnitude should have clued me into the nature tendency for FUD to be used. Responding with Fear, Uncertainty, or Doubt is extremely common. Rather than rationalize or trust, they revert to instinct. Ugh. Anyone, in this case in was in the fear of suppression. To the individual I responded, there was a belief that adding controls will create limitations. It's easy to see how that assumption comes about, but it simply isn't true. I know this well already simply from having observed the same thing already play out elsewhere. It's not even pattern recognition this time. It's a repeat of the same issue. I kept reply to that on the shorter side: Empowering people by giving them a means of discussion participation with expanded abilities is quite the opposite of limiting freedom of speech. Notice how people can currently hide behind just label? Putting a control in place to prevent that lack of accountability is a benefit to everyone. Notice how websites unwilling to require some type of identity have disappeared over time? They lacked integrity by allowing an anything-goes policy and they lost their audience as a result.

4-21-2019 **Dishonesty & Misdirection.** That's the description rising to the topic of that report about our president's activity coming from his own party. Sound familiar? That's exactly what I dealt with on a regular basis coming from the Volt enthusiasts. It's what set them apart from being true supporters. They'd think anything of saying whatever they thought sounded convincing. That's how I got so detailed with my blogs & video. Their acts to deceive were relentless. They simply didn't care. It was all about feeding hope with hype. Stunning is how I can best describe my thoughts of how blindly optimistic they became. With only a vague press-release, they would spin an incredible wave of false expectation. It was so obvious too. Without any supporting material, they'd make too-good-too-be-claims. It was on a regular basis too... to the point where people would lose touch with reality. The narrative took over, becoming what would be perceived as normal... a con job on an enormous scale. They know at some point the dishonesty & misdirection will eventually catch up with them. That doesn't matter, since their want is to do as much damage along the way as possible. It's an effort to undermine, to keep the status quo from actually changing. Seeing parallels between business & politics is saddening, but not at all a surprise. Power corrupts. That's why I give so much respect for Toyota not giving in to the temptation. They remain true to their values of focus on the mainstream. They build reliable, affordable products that are also responsible.

4-21-2019 **Continued Attacks.** I read through a forum thread about the now completely dead daily blog. Comments posted there included a variety of thoughts. Most have simply moved on, not caring about it no longer allowing posts, despite new articles being published. What I found intriguing were the attempts to stir rhetoric. It was obviously a venue attempts to cultivate attack approach... because sure enough, one of the individuals there jumped on the chance to try out his material on the big Prius forum today: "*What's your new ride going to be? Probably not an EV, because Toyota is now poo-pooing that idea. (probably because they are so far behind the ball on that tech...)*" His choice of where and how made that interesting. It was on an innocent thread where people were posting comments about what they owned prior to purchasing a Prius. I decided to go all out in response. My post was as follows, complete with a nice photo of each of my Prius selected from my album:

That rhetoric is becoming shallow & desperate. We all know Toyota has chosen to avoid the tax-credit game, deciding instead to focus on delivery of choices capable of reaching a very wide audience in a manner not disruptive to their true customers, the dealers. That's why claims of enthusiasts don't matter. They simply feed innovator's dilemma, making the challenge of profitable high-volume sales more difficult. Not only do I applaud that sensible business approach, I also support it.

My first Prius was a Classic model, among the initial rollout here in the United States way back in September 2000.

I traded it in to be among the first to get the next generation, the Iconic model. It was a pioneer package too, so I could easily identify it (in addition to the very unique dent I put on it). And sure enough, I saw it in a parking lot a few months ago, after all these years!

That was the Prius I owned for the longest duration. I had it 118K miles for 5.5 years. It got traded to again be among the first to get a next-gen upgrade. This one, like the others, demonstrated a strong commitment to refining the technology.

That 2010 model got replaced less than 3 years later with a mid-cycle update, the first offering here to include a plug. Since I had driven a prototype of for a few days years before, it was solid assurance that Toyota was striving to deliver a product for the masses.

That first Prius PHV was a great opportunity for Toyota to explore the market, choosing to rollout mid-cycle to limited regions. Seeing how effective that approach was at avoiding the tax-credit game, Toyota continued with the limited rollout. I jumped on board yet again.

This latest Prius confirms Toyota is striving for that wide appeal target. The technology in Prime is an adaptation to the hybrid system allowing it to enjoy the battery-pack with a full EV driving experience, one that China will be seeing as a Corolla PHV. China will also be seeing Toyota first EV offering, a new model of CH-R. Meanwhile, watch how Toyota is quietly road-testing their 152hp full-electric system in Mirai. Wouldn't that make a nice battery-only setup for a next-gen model of Prius? I need something to set my sights on for another upgrade opportunity.

4-21-2019 **Label Arguments.** I was pleased to see that the forum isn't able to fuel the fire of labels. A few tried to renew efforts to push "*EREV*" as an indication of superiority, but it all fell on deaf ears. Things like "*top speed*" and "*certain threshold*" were used to no avail. The even more generic "*extending the range*" reference made no difference. Ultimately, the attempts to stir ended with: "*Describing the difference between a EREV and a PHEV seems pointless.*" That was all nice to see. But what I found most informative was this statement: "*But this is NOT how the Volt works.*" When you encounter that on a Volt forum, odds are quite good they know even less about the supposed competition. I ran into that a lot over time... hence all the videos. They served as proof the label arguments were questionable. They'd attack me claiming I'm bias. I'd reply back pointing that making it personal doesn't change the fact that their information in wrong. Ultimately, it always came down to Volt enthusiasts trying to portray me as anti-GM, when in reality I was just against the approach. It made them absolutely crazy that I would endorse parts of the design stating a new configuration could appeal to a wide-array of GM customers. The idea of diversification messed up their vague definition of EREV. That label wouldn't mean as much spread onto a second model of Volt and an Equinox that could also use both gas & electricity. Most learned from their mistakes and moved on. The few that remain have lost their audience. Remember asking: "*Who is the market for Volt?*" They didn't understand who EREV appealed to. Know you audience.

4-21-2019 **Spinning Lies.** Our new resident troll is pushing harder and harder. After attempting to mislead about profit by pretending there's no tax-credit dependency and volume doesn't matter, he moved on to: "*While I generally agree with this statement, it doesn't justify lying to try to persuade 'who'? I'm not quite sure who Toyota is trying to convince.*" It was an obvious effort to disrupt the discussion any way he could, to the point of even frustrating the moderator. Seeing an end coming from such desperate acts, I summed up the situation with: Know your audience. The perception of lying comes from listening to spin and not recognizing who is being targeted. We saw this done extensively by Volt enthusiasts attempting to portray their vehicle as something for the mainstream, a high-volume profitable seller intended for a GM's own loyal customers. That couldn't have been further from the truth; yet, it was the mantra accepted by those spreading a message of change. That was a false hope, just like the demise of Toyota. Reality is, this publication is exploiting the opportunity to draw attention to itself by milking the spin. They directly benefit from the online activity their articles stir. If you take the time to really consider what buyers of each automakers own vehicles seek, you'll see that Toyota is doing exactly what they should to deliver a reliable, affordable, and responsible platform in large quantity... without disruption to dealers... a vital component to change of the status quo most enthusiasts refuse to address. Again, it's important to understand who.

4-21-2019 **Intelligent Debate.** The moderator stepped in when bait from that troll got out of hand. He posts so frequently, often without actually quoting what he's responding too. Sadly, many of his claims are misinformation derived from snap conclusions draw on little to no actual data. Like most trolls, that identification comes about simply from the desire for attention. That's why facts make no difference. It's act of participation he seeks, not constructive dialog. So, I have to carefully watch what the moderator desires for next steps, to get us back on track. In this case, it was spin about lies. He never bothered to do any research or even try to derive how the quoted value came about. I immediately understood what the "*average*" comment was referring to and how it translated to a monetary value. I shared that detail:

Intelligent debates would require actually reading for context. In the case of that quote, notice how everyone just blew past the word "*average*" without even bothering to consider what it actually represented?

Think about the capacities for an "*average*" vehicle. They have a 15 gallon gas tank and deliver about 30 MPG. That's a range expectation of 450 miles... which most of us would recognize as quite typical. More of a guzzler would have a larger capacity to compensate, to deliver roughly the same range.

Think about how big the battery-pack would have to be to match that expectation of 450 miles. Knowing the "*average*" vehicle is much heavier and much less aerodynamic than a Prius, you have to use something like Outlander as a somewhat practical measure of EV efficiency. Ratings of 45 kWh/100mi are about what a vehicle like that would deliver. Anyone else see the problem?

45 kWh * (450/100) = 202.5 kWh

202.5 kWh * $150 per kWh = $30,375

Then when you add in the longevity capacity buffer, since you won't be stressing the battery-pack by charging to 100% and discharging to 0% to achieve that 450-mile range expectation, the value easily matches up with what had previously seemed a wild estimate of $34,000.

So much for intelligent debate.

4-22-2019 **Ask Again.** One effective way of confirming you really are dealing with a troll and just not someone poorly informed is to watch other thread. If you provide an answer on one thread, then they ask again on another, you have your confirmation. That repetition of questioning the same thing over and over is a dead giveaway. They don't like what they got in return and hope somehow stirring the same pot again will result in a different outcome. Yes, that's the definition of insanity... but online posts can resemble that type of being out of touch. I find the repetition annoying, but it can be tolerated. You find ways of being short with responses and getting others to participate in something constructive. In other words, don't feed the troll by denying them an audience. Remember that daily blog? Loss of an audience helped kill it. That website went from being a premiere "*fake news*" source to a collection of mistakes which had a profound influence on a history most people won't ever be aware of... hence not ever allowing questions to be asked again and again. Those lessons learned should be shared, once you've confirmed you really are dealing with a troll. Take advantage of those teaching moments.

4-23-2019 **Not Realistic.** It's somewhat bizarre how the death of Volt has turned into what is basically a push of the reset button. It failed to move beyond niche. No successor means something else will fill the void. What that will be isn't obvious though. My pointing out of the "*450 mile*" expectation has blown some people's mind. Their attempts to explain why such a large range isn't necessary has fallen on deaf ears. Mainstream consumers have come to expect more, period. Not realistic isn't a consideration. They have that much now and see absolutely no reason to settle for less. That's how we got into this mess with the SUV obsession. More was always promoted as better. Whether that makes sense or not is irrelevant. Vehicle purchases are more often than not based on emotion. It's that want verses need problem. That never goes away. Denying it only makes the situation worse... as the Volt enthusiasts learned in a very painful manner. They dismissed clues, refusing to take the situation seriously. It cost them dearly. Now, the rest of us try to figure out how to overcome collateral damage caused by that denial. Conveying the situation is a challenge. I'm keeping my effort to that affect short & sweet: Agreed; however, that's the way it is. Automakers could easily save money & weight by simply using a smaller gas tank. They don't though. Explaining why less is better won't change that. You're fighting the status quo, which isn't always logical.

4-24-2019 **Who?** Watching the lack of excitement for Earth Day this year has been compelling. Financial struggle for Tesla and the absurd self-inflicted problems GM now faces has setup the market for lots of uncertainty. Supposedly, we'll be getting a variety of plug-in choices from both VW and Ford within the next few years, but all that's been shared are snippets of plans without any detail. It's all so vague, there's no real sense of progress actually being made. That's not stopping those who see Toyota's actual progress as a force to fight though, which we do our best to counter: "*No matter what Toyota produces some people will still see negatives: "CVT gearbox, "self charging" hybrid nonsense, not fun to drive.*" Unfortunately, most rebuttal posts are long and drown out. They tend to go no where as a result. Much of that struggle in the past was due to the trolls forcing a Prius narrative. No matter what you posted, they'd spin it to be about Prius. I got quite a kick out of that. Post after post would be nothing but GM. Someone would inevitably change the topic to Toyota and blame me. I always found that desperation both reaffirming and tantalizing. It validated their lack of evidence to actually prove their point. Mine was always simple. I asked who. Knowing that a business could not thrive on a single product, the doom GM would face with Volt was only a matter of time. No diversification prior to tax-credit phaseout being triggered meant it would die... and, that's exactly what happened. Seeing Toyota strive to deliver a variety of choices means a very different outcome. They know their audience. Who is their entire fleet, that large collection of very different buyers are pleased with their own particular purchase. It's not just about Prius. It never was. They refused to accept that. I keep reminding them: With the Corolla and RAV4 hybrids so non-Prius like, who would that be?

4-25-2019 **Tesla Trouble.** Yesterday's financial report painted the picture most fanboys feared. Tesla's gamble to stay in front of the massive risk being taken isn't working. Profitable quarters turned into the most recent posting a massive loss. The planned 35 GWh capacity from the Gigafactory in Nevada is only at 24 GWh. Ramp-Up isn't financially realistic either. It looks like a deal with Panasonic to ship cells from Japan is the plan now being explored. That compromises the "*Made in America*" promotion and faces possible import tariffs barriers. Ugh. Another possibility for elevating production bottlenecks is to move vehicle production elsewhere. Building a Gigafactory in Germany is an option now being explored and construction of the one in China continues. Negative net of $702 million for the first quarter of this year makes those efforts easier. Pain of growing beyond niche is a sign of progress for Tesla that will either establish a true foothold in the industry or bring about surprises. Acceptance of EV is an achievement we all benefit from already regardless. This is yet another reason why Toyota sees no reason to rush to market. Rough times from having to grow beyond initial market are never easy. Trouble confirms you are still in the game.

4-26-2019 **Ford Announcements.** It was interesting to hear Ford strike an partnership agreement with electric truck startup Rivian... after finding out GM turned down the chance. Ford was happy to provide a $500 Million equity investment to make that happen. It will add to the growing portfolio Ford has for new choices on the way. It's odd to hear there will be 16 full EV vehicles and 40 electrified vehicles coming worldwide through 2022. Many could be limited market and limited volume; nonetheless, Ford is being given a nod of approval while Toyota is getting attacked. So what if Toyota is planning fewer choices? They stand a better chance of being widely available and more affordably priced. Enthusiasts don't want to hear that. They are enthusiasts because that are not mainstreamists. Endorsing something for the common person goes against the very nature of being a fanboy... which none of them will admit to being. It's a fundamental flaw in their approach... which they hope no one will ever call them out on. Thank goodness Ford has been able to avoid most of that rhetoric. We're expecting to see some new hybrid and plug-in hybrid choices. That will be great... and not "*late*" as so many attempt to spin. Timing & Technology is coming to a point where the choice will be realistic for the masses. I'd say, that's just right. So, these announcements we are getting now seem to be a good plan.

4-27-2019 **New Audience.** Realization of just how much of a barrier enthusiasts of Volt had created is becoming quite clear. As the dust settles from the end of its production, that death reveals an entirely new audience. These are the smaller, quieter voices of mainstream consumers... which are drawn to Prius Prime, exactly as Toyota had predicted. In fact, we even now have evidence of just how closely they were monitoring that early-adopter market. I always said the replacement of the unused-by-most middle seat in back with a nice armrest & bucket seats was to test appeal. It's undeniable now that the shift to SUV platforms as family-mover vehicles is well into the final stages. Sedans are vanishing and hatchbacks are needing to evolve. What did that mean for Prius Prime, which is now a bit more upscale to keep it relevant? Not much, apparently. That middle-seat will be coming back. Toyota took the risk, quite contrary to claims of antagonists. The 2020 model will bring that layout back, along with the much hoped for (including by me) visor-extenders. I simply bought a set online. Next year's will have them built in. Switches for the seat-heaters will be moved to a more predominate location as well. It's all about listening to potential customers, not enthusiasts. Toyota isn't dumb enough to fall into the trap GM did. Innovator's dilemma is a well known business conundrum that a legacy automaker as experience as GM should have been able to avoid. That's why Toyota was willing to also take risk with the battery. The original gen-3 prototype had a 5.2 kWh capacity. That pack size was large, making the floor taller... exactly as it is now with Prius Prime. The decision back then was to reduce it to 4.4 kWh to make it fit better. Toyota decided with gen-4 to try the larger. Since a mid-cycle update provides opportunity for change, we may be seeing that floor drop to provide more cargo capacity. That would keep Toyota's mission true to staying affordable and targeting mainstream consumers... who may prefer that over increased capacity. That's why so much real-world data is collected during the first 2 years of rollout... giving Toyota key insight to what the more favorable configuration would be for the new audience... the one that much be profitable without tax-credit dependency able to achieve high-volume sales competing directly with traditional vehicles. That's a tall order, but realistic if you understand who. Based on my observations of recent posts from new Prius Prime owners, we seem to have reached the point of non-enthusiast interest. I had no idea the problems Volt had created for market interest would fade so quickly upon its death.

4-28-2019 **Co-Exist.** Every time an article comes up about the delay of EV rollout, someone brings up conspiracy theories about fuel-cell vehicles. They absolutely refuse to acknowledge the reality of economics; instead, it's always turn a blind-eye to token efforts giving them unending forgiveness for selling at a loss. It's no wonder that their short-sightedness would stir cries of lobbying and market manipulation for the sake of killing EV efforts. They just plain don't want to accept a world where many clean solutions could exist side-by-side. It's really sad when so many lose sight of goals. Have they really forgotten what we want to achieve, for who, and when? Unwilling to put up with more of this nonsense... the endless bickering that doesn't achieve anything... I just punched right back with: Are you so naive to think that the oil industry could simply be shut down, that battery-only vehicles will dramatically just end our need for them? That's as gullible as the one-solution-for-all chats we keep hearing. It's not going to happen. Breaking the status quo on that magnitude requires compromise. Deal with it. The best way to get them to stopping fighting change is to give them something else to produce. Taking advantage of the infrastructure they have in place is key. So what if the conversion to hydrogen isn't as efficient as storing electricity in massive battery-banks? At least it is both carbon neutral and clean. Fleet & Commercial vehicles can exploit that opportunity to get us off the dirty, non-renewable fuels. Why do you have a problem with your Amazon delivery coming from a truck using fuel cells?

4-28-2019 **Dead.** Sentiment over the circumstances was posted as follows today: "*Volt is dead and they don't seem to care much about maintaining a good relationship with Volt buyers anymore.*" That turn on GM from enthusiasts was found on the dedicated forum for Volt. I have been watching the shift take place, observing change as the final sales wrap up. There's a limited quantity available and no hope whatsoever for a future plug-in hybrid offering. Even the future of the Volt antithesis... Bolt... remains uncertain. It was always a strange offering. Gross overkill for speed & power from a compact wagon certainly was out of character for anything normally offered by GM. It's easy to see how some dealers simply didn't want to bother. What message did it send about GM's future or their commitment? This is why Toyota's dedication to hybrids was so important. So what if it wasn't bleeding-edge technology? Mainstream consumers don't want that anyway. Their interest is something of good value, meaning it was safe, comfortable, and reliable for an affordable price. Volt died because it failed with that vital criteria of being affordable. It was far too expensive... but didn't need to be. Remember all that suggestion made by so many all those years ago? It was to offer a configuration of Volt that had a significantly smaller battery-pack. That would have greatly reduced cost, while at the same time free up interior space and lighten the weight. It was a viable solution. Sadly, what seemed a winning combination was never tried. GM never tried to spread the technology to an ordinary vehicle either, something their customers would actually purchase, in Equinox. Remember all that same suggestion for Prius? Remember how Toyota did exactly that, rolling out both Highlander & Camry models using the hybrid system? That later got spread to quite a variety of other vehicles too. It was a winning formula that proved successful. Yet, GM never tried. Many now feel that lack of effort in their sentiment. Why didn't GM try?

4-29-2019 **Compliance Car.** Attacks from within continue. It's been a persistent message for years, passed along by a few Prius owners who absolutely refuse to accept the idea that time isn't vital. So, we get: "*Prime is a compliance car*." It comes from the mindset of having to deliver something as fast as possible. That message our society sends of needing to be first as the measure of success can have terrible consequences. You are being taught that not being first means you lost. Second place is not a winner as far as our highly superficial beliefs instill. That's really unfortunate. Taking the time to do it right should be the mantra; instead, the need to rush is perceived as necessary. Ugh. That makes drawing conclusions, like compliance, difficult to avoid. Many don't see any other option. You either go all out or you don't. When balance is no longer viewed as essential, problems arise. That's why the crazy attitude toward Volt was accepted as normal. Enthusiasts didn't see themselves as pushing an extreme. GM sacrificed too much to deliver something that wouldn't be looked upon as a compliance car. It proved a disastrous choice. Just imagine how much better things could have proceeded if an incremental approach had been taken instead. Small steps forward is progress. So what if it appears to just be an act of complying at first? I stated the method of advancement this way: That's just spin for those who don't like the concept of phased rollouts. Toyota tests the market by rolling out small allocations to limited areas. That real-world data they collect provides a powerful means of product alignment. The fact that it also meets California requirements is a benefit to the approach, a win-win situation for both.

4-29-2019 **Stop!** It continued. There's a strong feeling of anger coming from certain individuals. This highlights their view: "*Stop studying on it and make fully electric vehicles.*" That belief of having to deliver something right away is a theme we'll always have to deal with. If they don't see the entire vehicle, none of the technology exists. That's sad... and quite impractical. There's no effective means of achieving a rollout of that nature without extreme risk. Successful business requires sensible steps. You improve components, then implement using existing platforms. For example, that's how Prius got its two-speed hybrid system. It started in Camry hybrid. Another example is the AWD for Prius. Same thing, it started elsewhere. Not everything is offered immediately either. The fact that Mirai is using an all-electric propulsion system that would make for a great Prius EV later is further proof of doing things in stages. Imagine how expensive and how challenging it would be to provide that configuration now. Battery technology isn't up to the challenge yet. Facing the expectation of prices directly competitive with traditional vehicles simply isn't realistic yet. In a few years time, when the liquid electrolyte barrier is overcome, things could be profoundly different. That dramatic reduction of heat & fire exposures will really change the reach of fully electric vehicles... hence the value of studying. In the meantime, it's not like the rest of the vehicle isn't taking shape. Sadly, certain individuals are blind to that progress. Ugh. I tried to state the situation in terms immediately understandable. It probably won't to any good though. Some people just like to argue. We'll see: What other legacy automaker is making fully electric vehicles that are profitable, without dependency on tax-credits? Toyota's fully electric platform currently used in Mirai will make a nice EV platform, when battery cost drops to the level of realistic high-volume production. In the meantime, there's continued refinement and the spread of hybrid choices. Remember, that diversification is essential for plug-in offerings... something all the other legacy automakers must also address. In other words, Toyota is not sitting idle as the narrative portrays.

4-30-2019 **Full-Size Pickup.** Quite vague, though impressionable, announcements about the intent to produce full-size electric pickups really shook the industry yesterday and today. Ford revealed their joint-venture with new partner and GM immediately countered with plans of their own. It was the usual substanceless rhetoric feed. You know, those ambiguous releases that really don't tell you anything. That complete absence of detail is so much a part of our normal approach to accepting plans, no one seems to care anymore. Merit is just freely given out without any expectation to actually be held accountable. That's why all the plans for VW shouldn't be taken seriously until something is delivered in quantity. Right now, it's all just empty hope. There's lot of potential and substantial investment, but that in no way equates to success. It will happen, eventually. Rushing out press-releases doesn't speed up the process. Yet, that's what we are getting.

4-30-2019 **Blinded.** Sometimes, the hate runs so deep nothing else is seen. In this case, it was yet another attack on Toyota. Rather than actually discuss the topic at hand, there was an obvious diversion of attention. That effort to evade is a undeniable sign they really don't care. All they want is for you to stop posting information related to the discussion. They'll do anything to change the subject. Ugh. I fired back to today's "*Fool Cell*" nonsense attempting to distract from the plug-in hybrid posts with: Really? So blinded by a resistance to diversity that you don't actually see the plug-in advancements taking place? With just an output of 68 kW, we already have a vehicle from Toyota able to drive as an EV. From just that small 8.8 kWh battery-pack, my daily commute in a Prius Prime is entirely electric. Complete with both electric A/C and the industry's most efficient heat-pump, it's a rewarding experience at an affordable price. Toyota simply isn't interested in playing the games you want. They are refining their technology as the market progresses beyond the early-adopter stage. Mirai is a great example; the platform delivers 113 kW of EV power. So what if the current power supply comes from a fuel-cell? Within the next year, a plug-in hybrid Corolla and an EV model of C-HR will be rolled out in China taking advantage of what they learned from Mirai. So what if they also pursue fuel-cell offerings? There's quite a bit of opportunity available for fleet & commercial sales. Are you so blinded by rhetoric of one-solution-for-all that you can't see the value of a business offering a variety of choices?

4-30-2019 **Attacker Info.** Now that post history is available, the circumstances have changed rather dramatically. You can follow the activity of each participant. That lack of accountability was terrible. Certain individuals would hide behind an avatar. You'd never know who they really were or even what & where they were posting. That's why that awful daily blog for Volt thrived for so long. It attracted those who just wanted to win battles on a regular basis with no concern for winning the war. They only cared about small victories. Since the discussion threads usually died the very next day, it was easy to post the same rhetoric endlessly to achieve exactly that. They'd do everything possible to retain the status quo, learning how to prevent conclusions from being drawn. That type of behavior is what brings down the integrity of a venue. Some of those websites falling victim to such activity clean up their overall message by upgrading software to deter those determined to undermine. It works well. This is the latest example. Moderators made it quite clear there would be no compromise. Either you accept the effort to make people be responsible for their actions or don't participate anymore. Phew! It sure is nice to have improvements like that take place.

5-01-2019 **Trolling Pattern.** It is sad to report that although websites hosting blogs are improving the political environmental is not. In fact, that particular venue is getting worse. The very activity I used to witness and deal with on a regular basis is now playing out in the daily news. We get sound bites of politicians outright lying over and over again. We get the same deceptive messages so often, you lose touch with purpose & direction. The same old nonsense is now repeating there. In other words, the pattern of trolls is easily recognizable in politics. Some simply don't care. They figure if enough join into that group-think, accountability won't be necessary... everyone will agree what is "*truth*" and what is "*fanboy*". In other words, they work really hard to enable dismissal. There's no need to justify your claim. You only have to refer to the next person saying the same thing. Thankfully, there's always a day-of-reckoning at some point. Catch is, a lot of collateral damage can occur along the way. Cleaning up that mess afterward can be a monumental effort. Look no further than Volt for a great example of that. What in the world will GM do now? There's no path forward. Preventing that from happening again with some other efforts starts by addressing shortcomings that allow trolls to thrive.

5-01-2019 **Ice Spin.** Witnessing the anticipation of bad news is always interesting. We should be getting news of April sales today. That's the first month GM faced with a 50% reduction of tax-credits. Everyone knew Volt was doomed, but few enthusiasts were willing to acknowledge the destructive path it was on until the outcome was undeniable. Their hope of a miracle was far too much of a gamble to help with the ultimate goal of change anyway. GM had already reversed course by embracing the very approach they had worked so hard to fight. EREV was to be the "*range anxiety*" solution to EV capacity shortcomings. That never made any sense. Enthusiasts claim this outcome was inevitable, that it was the plan all along... despite overwhelming evidence to the contrary. That's why I documented history as it was occurring. Details written while events are playing out is how you find out what the true story was. There's no other good way to assess what expectations were after the fact. That makes the spin about ICE vehicles taking place right now a great topic to blog about. Who knows, that announcement I'm expecting from Toyota about a mid-cycle upgrade shouldn't too far away. All the signs are pointing to stage setup going well. This is how I stated the reaction to what's happening right now, in the moment, before we actually get the news: Using Toyota as a distraction to draw attention away from the automakers who haven't actually delivered anything affordable... Makes sense. There are many who refuse to acknowledge tax-credit dependency, who treat the early-adopters as representative of mainstream consumer demand. Reality is, even a small battery-pack will offer a dramatic reduction in consumption & emissions... and will make far more of an impact to changing the status quo than a few expensive token offerings. Camry, Corolla, C-HR, RAV4 all provide a means of reaching a wide variety of customers being offered as a hybrid with a plug. What other automaker has such diverse choices available? Toyota is setting that stage and you refuse to acknowledge it.

5-02-2019 **Real Change?** Raising doubt is standard practice for when attempting to undermine. When successful, that sentiment will be passed along by others. For example: "*I am beginning to wonder if these vehicles aren't a publicity stunt or an attempt to carefully impact overall fleet mpg rather than a true vehicle marketing attempt.*" This is especially easy to see as the approach of an announcement nears. In this case, we just cleared the fallout related to Volt & Bolt. That first month of phaseout sales were just reported. With the tax-credit no longer an option GM could exploit, it cleared the way for Toyota to take a turn. In simply made no sense getting involved with those actions of the past which clearly didn't pursue real change. Toyota's choice to avoid that is one I wholeheartedly welcome. I spelled out the situation with:

That narrative is making the rounds. It's easy to get sucked into the belief of that being the case too... if you aren't familiar with Toyota's history.

The practice of intentionally limiting rollout is what we saw with Prius even before it rolled out here in the United States. That extremely limited offering, only available in Japan, actually had a plug. It was quickly dropped, since battery-tech of the time offered very little capacity to take advantage of. In fact, the rollout in the United States was came with an entirely new pack... so significant of an upgrade, it should have been called a full generation. Switching from D-cell packaging to prismatic was a really big deal. But back then, no one cared. It was just labeled as a mid-cycle update, despite the pack change, the screen changing from button to touch, the engine gaining more power, and the look itself changing.

That's not even the point of the story either. It was that Toyota continued to hold back. Cruise-Control was intentionally not included, a way of deterring those who weren't absolutely interested in purchasing a Prius. After all, there was no tax-credit back then. You could only get a tax-deduction, which equated to about $350 for most people. It was a blatant effort to attract only the devoted. We proved it too, by confirming cruise-control was part of the system already, only the stalk with interface buttons was left off... which you could have the dealer add later, if you were so inclined.

Toyota wasn't targeting mainstream consumers yet. They used early rollout as an opportunity to collect real-world data. This is why they felt free to experiment with Prius Prime. Knowing that it would only be offered in specific areas, feedback from those markets could be studied without having to re-educate later, should big changes be offered in a mid-cycle update. After all, Toyota knew GM was using Volt as a publicity stunt by attracting conquest sales with tax-credits, not even trying to draw interest from their own loyal customers. That meant Toyota has lots of time available. So, we saw this first half of Prime's product-cycle with a middle-seat swapped out for an arm-rest with storage and the cargo-area raised to offer more capacity.

That choice resulted in valuable real-world data. All that telematic activity provided a vital understanding of how the system would operate in true driving conditions, but without interfering with upgrade & diversification efforts underway at their dealers. Remember, it's about changing the entire fleet, the whole product-line, not just offering a token vehicle. That has gone well, as we see the upgrades to Camry & RAV4 hybrids and the introduction of Corolla hybrid taking place. At the same time, there's some tweaks to Prius Prime on the way.

In other words, taking the time to consider the bigger picture along a larger timeline, you can see what Toyota is really doing.

5-02-2019 **Expectations.** Sadly, the reply back was one of little substance: "*I do think Toyota's position as the acknowledged pioneer and industry leader in this technology has been diminished by their own doing - to my disappointment.*" This is where knowing your audience is necessary. Posting online among enthusiasts who border on crazy-fanboys from time to time, you really need to be aware how little they represent mainstream consumers. So when supposed controversy comes up, remind yourself how the typical consumer most likely will never be part of any of that. In fact, most what even understand what the supposed problem was. They'll just simply see the outcome as what was an obvious step forward. In reality, it's never that clear. This is why expectations must be set. No clarity about that path forward, no progress can be made. For this, we must define what "*success*" is. That's why I always ask for goals. It helps identify scope & timeline. The topic of "*leader*" is so vague, it could mean anything. We see that too. Different people have different definitions. So, what they expect differs. I made sure it was quite clear from my perspective: How leadership is defined is based upon product life-cycle. Upon the early stages (low volume, high cost), it is a reasonable expectation for a large manufacturer to be a pioneer. But as the product matures (several generations later), the expectation changes. Upon that later stage, it switches (high volume, low cost). Toyota is very much pushing to be the leader in that regard.

5-02-2019 **Change.** Most people simply don't pay close enough attention to notice how change actually takes place. It occurs over a long course of time, but they don't notice it until something grabs their attention. In other words, they don't seek it out. That quest would reveal the components at play, leading to an understanding of influences & barriers. Instead, it is usually something like this: "*Afterwards, when I had time to reflect, I realized at least for me that was a ridiculous adventure to go through to buy a car. One I will never consider again.*" That was the comment posted following a chaotic hunt to find a Prime to purchase. It's what happens when you jump without any preparation. I sounded off, knowing he had already made up his mind, but to properly follow up with the on-going discussion and to give others something to consider:

Having mainstream expectations during this early-adopter stage will inevitably lead to disappointment. You need to be realistic about timeline. Paradigm shifts do not happen overnight. The industry is still just introducing first choices, experimenting with configurations while very much depending upon subsidies to get established. We are many years away from the ordinary customer shopping experience.

With the case of Prius Prime specifically, we know there's a mid-cycle update on the way for 2020. That means there's no benefit to ramping up inventory of the outgoing model... especially when you take the Osborne Effect into account. Making matters worse, the industry itself is faced with having to deal with fallout from Innovator's Dilemma... specifically the problem GM created by making Volt too specialized, causing market confusion in the process.

Think about what it takes to build vehicles requiring large quantities of product not scaled-up yet for high-volume. (Toyota sells over 10 Million new vehicles annually.) Think about what it takes to ensure salespeople & mechanics are well informed about the new product you are rolling out. That's a monumental challenge to do it right. Also making it both competitive and profitable requires a lot of time.

That everyday shopping experience you hope for will happen, eventually. Look at what happened with hybrids. You can now go to a Toyota dealer and choose between several different choices. Deciding between a hatchback (Prius), 3 different sizes of sedan (Corolla, Camry, Avalon), and 2 different sizes of SUV (RAV4 & Highlander) is now totally realistic. We will likely be getting the C-HR hybrid here in the not-too-distant future as well. All that took awhile though. T he same will be the case for plug-in hybrids.

What other legacy automakers will be offering anything in quantity anytime soon?

5-02-2019 **2020 Prime.** To my delight, the announcements of the mid-cycle upgrade for Prime came right on schedule. Summation of what was to come and when was dead on. That shows I am carefully & comprehensives observing the factors at play and have correcting recognized the patterns. After 20 years, I should have a clear understanding of Toyota business practices and how they reflect upon the industry as a whole. Influence of other automakers actions plays a big role is Toyota decisions. Unlike what enthusiasts expect, Toyota does not operate in isolation. That's why "*EV Market*" reference should not be taken seriously. What happens on the larger scale is what matters, not the motivation of enthusiasts. That's why I posted this in reaction to the press-release we got from Toyota just an hour ago: Commuting in mine is entirely electric. I enjoy the EV driving experience and see how Toyota's effort will appeal to the masses. No tax-credits or gimmicks. It's just the next-gen advancement of their hybrid system. 1,259 miles from my current tank, with a 1/3 of it still left. That works out to 198 MPG. In other words, the feelings expressed from a few uptight enthusiasts unwilling to accept Toyota's focus toward offering an affordable solution for their own loyal customers and showroom shoppers really don't have any impact. Toyota is targeting the mainstream market. Prius Prime clearly for that audience. Think of how Corolla and RAV4 hybrids also offering a plug will change the landscape, as well as the posting here.

5-02-2019 **Press Release.** This is what we got from Toyota today: "*New upgrades for 2020 include: New 5th seat for even more room. Standard Apple CarPlay, SiriusXM and Amazon Alexa compatibility. Two additional 2.1A USB ports for the rear passengers. Black interior accents to replace previous white accents for a more premium feel. A new sun visor extender. A relocation of seat heater buttons for front seat passengers for easier usability. New grade strategy that offers LE, XLE, and Limited Grades.*" That collection of refinements is exactly what I had expected to hear about. What I don't expect to be told is a change to the battery-pack. There's no reason to draw any attention to cell/stack arrangement. It should go without saying that continuous revision takes place. That's a reasonable expectation. On-Going improvement is how progress occurs, not profound overnight change. Toyota tests the market with limited rollout. Knowing the entire industry is shifting to SUV, where the preference for larger vehicles has already taken hold even though there is still some denial, Toyota took the risk to find out if a change to interior layout would be embraced. It wasn't, so they adjusted accordingly. It's ironic how antagonists claim Toyota is unwilling to try anything new, yet turn a blind-eye when evidence to the contrary is presented. This is why change is perceived so differently for different people. If they don't pay close enough attention, they'll never notice something like the 4-seat arrangement was tried. For that matter, they'll never know that Toyota took the risk with a raised cargo floor either. That's annoying, but quite understandable.

5-03-2019 **Clues.** Some people simply won't ever get it: "*The nutty thing is that they could increase the size of the battery and range at -no cost- to the customer. The federal tax rebate is partially based on the battery capacity...*" Of course, some of that could come from calling it a rebate. That implies everyone will get one. In reality, you must have enough tax-liability to collect the full tax-credit. Some people won't. Consequently, they'll only be able to claim a partial amount or none at all. The passing along of such misleading information is a clue that purpose may not be understood. I watch for clues like that... and pass along my observations: GM proved that gaming the system for short-term gain was a terrible idea. Volt ended up becoming a vehicle for conquest sales as a result, never actually changing the status quo. Loyal GM customers kept purchasing the same traditional vehicles and Volt died without a successor when the tax-credits were used up. Remember, intention of that subsidy is to help each automaker alter their own fleet, making it greener for their own customers. That's why each automaker got their own allocation of 200,000 to use on their own timeline. Adding capacity wouldn't do that. It would simply make Prius Prime too expensive after that 200,000 limit is reached. With a starting price of $27,600 and that base model loaded with a surprising number of features, Toyota has a long-term winner in the works. It's a design we are already seeing carry over to Corolla hybrid. The same could easily happen with RAV4 hybrid too.

5-03-2019 **Long Term.** Dealing with enthusiasts always meant a forced short-term perspective. They simply didn't care what happened next. It was all about establishing a foothold. Cost of doing so wasn't a concern. That was their downfall. In addition to the obvious monetary sacrifices, they were giving up chances to do more along the way. Most notably was their dismissal of the importance of having an ally. Pride got in the way, causing the loss of purpose. They really would lose sight of what was truly important. That's why I pushed on a regular basis for goals. From time to time, I'd get an answer to my question. Sadly, the objective stated always varied. It was a moving target without any clear progress forward. This summed it up well: "*The Volt was the best-selling EV in US history until it was cancelled. On what basis do you claim that the Prime is a "long-term winner" with even worse sales than the "terrible" Volt?*" Looking backward without anything truly being achieved (measured by the lack of any actual change) makes it all too clear there wasn't any real understanding of what the technology would or should deliver. What were the plans? Not having a vision for the future is a very real problem. In terms of business, that's a warning. Something of substance must be accomplished. All the efforts we saw ended up just being for show. When the tax-credits hit phaseout, GM simply reverted back to old practices. We have a nice selection of guzzling SUVs now and a mid-engine sports car on the way. What kind of long-term plan is that? I'm growing tired of the rhetoric, but fortunately don't have to deal with it too much longer. This nonsense is coming to an end. The voices of enthusiasts are fading and the queries of newbies being to sound like a chorus. I certainly welcome that change. But there's still some reflecting upon what happened to do: Volt never attracted GM's own showroom shoppers, had a MSRP far too high to survive without subsides, and wasn't able to diversify prior to tax-credit phaseout. Toyota is clearly making efforts to avoid each of those mistakes.

5-04-2019 **Victory.** Sadly, there are a few who keep pushing that narrative of early-adopter sales representing what mainstream consumers will buy. That's because they only see the numbers. The cost of dependency or value of loyalty simply doesn't come into play. They don't consider that an factor to measure. So, comments like this continue to persist: "*Again, Toyota has fewer sales of a less-expensive car in a more crowded market. I don't see how that's a victory.*" It makes you wonder how long that will continue. With the audience for Volt now gone, asking "*Who?*" isn't necessary. The vehicle, nor its technology, is being produced anymore. It died... exactly as predicted. GM's obsession with conquest handed victory to whomever was willing to stay true to purpose. Toyota set goals that didn't depend upon subsidies and didn't depend upon attracting outside buyers. Starting with hybrid technology, there was a persistent effort to change their fleet. What could be found on their dealers' lots would transform over time... which is now quite apparent with so many highly efficient, affordable choices available. We'll see them become more and more electrified over time. It will make the decision for carrying more of them and fewer of the traditional choices easy. That's how it should be done. That is what we are now witnessing. Yet, some refuse to see it. I'm happy to point that out: There it is. The same mistake so many others made... not recognizing who the market is.

5-04-2019 **Doing It Right.** That didn't take long. I wondered if the wait for an incoherent argument in defense of Volt would come soon. There simply isn't anything left to support a plan that made no progress after all those years. With every possible excuse exhausted, a feeling of defeat is taking over. Phew! What a waste of opportunity. So much could have been accomplished. Oh well. Now it is time for true leadership, not conquest. I was happy to provide the detail:

Timing & Circumstances tell us the real story.

Volt-1 failed. Hope had been that it would become a huge sales success, a technology to "*leap frog*" the leader, Prius. Sales just barely scraped along (averaging 1,600 to 1,700 monthly). So, effort to postpone that victory began. Volt-2 fizzled too. Sales remained flat. Reach never grew beyond early-adopters. GM's own loyal customers simply weren't interested.

Hope to become a technology to replace traditional offerings faded quickly. Spin was that GM remained a leader, despite heavy dependence on tax-credits and an abrupt change of strategy. All that work to promote "*EREV*" as a solution was abandoned in favor of its own antithesis. Bolt never achieved that needed growth either.

Since way back when the Two-Mode plug-in prototype was being promoted, we had expected GM to diversify their technology to offer it on a platform they could actually sell in high-volume. That would be an Equinox or Trax using Voltec. It never happened. The government subsidy for that very purpose was squandered on conquest instead.

This is why the approach Toyota used to transform Prius to plug-in Prius is so important. It's an affordable design that can be easily applied to its other hybrid offerings. In fact, later this year, it will happen for Corolla hybrid. So, it's reasonable to expect we'll get a RAV4 hybrid with a plug in the not-too-distant future... which would indeed draw interest from Toyota's own loyal customers.

Toyota is taking the time to do it right.

5-05-2019 **Leapfrog.** It's remarkable how many times you see someone make a statement like this without any follow up: "*So instead of barely, almost, kind of catching up Toyota should have leapfrogged.*" I posted my response just 12 minutes after it had been posted. So, I'm quite curious if I'll get anything constructive in reply. In this circumstance, the comment was about Toyota's choices related to the infotainment system. It could have been anything. We see examples all of the place routinely. I posted: That term "*leapfrog*" has become meaningless rhetoric. It's easy to understand why too. Just ask anyone who's serious about improvement what improvement actually means. That absence of detail and lack of agreement make it all too clear the path to an upgrade is a very real problem. Want a different example of the same problem? Look at the mess we have with public charging-stations. After all these years, there is consolidated message about how they should be used and who should use them. You'd think the answer to that would be obvious. Digging for information, you end up with many conflicting messages. Please tell us with a level of clarity, as if you were funding the effort, what you would like. As a software engineer, I've discovered asking that question tends to end complaints. The user comes to realize they don't actually have solid requirements for me to program. This is why partnership with business customers is so vital. You need an ongoing exchange of information. With the case of Toyota, this is why they have employed a phased rollout. That approach really irritates some enthusiasts... to the point of them acting in frustration like trolls... but it is a proven method for achieving actual progress. Watch for detail and try to pass it along.

5-05-2019 **Facetious.** I was really hoping this new member on the big Prius forum was just being facetious. That kind of obnoxious behavior, showing no interest to consider what others are sharing, is frustrating to deal with. When I got this, I was done: "*You expect the customer to write the spec for you?*" He simply didn't care. I posted and moved on: To complain without providing any constructive feedback is a waste of everyone's time. Ever notice how the act of asking what a consumer actually wants will often result in something that isn't well articulated? It simply makes no sense for you to assume the provider will be able to accurately guess what you expect. That's why extensive study of consumer behavior takes place. Toyota, just like other providers, will collect and carefully observes massive amounts of real-world data with the hope of figuring out what you don't bother to take the time to explain. With over 25 years of experience trying to understand what the user actually wants, verses what they claim to want, I can tell you that anyone who makes an effort to describe what their need actually is will get taken seriously. Those who don't are just looking for an audience to vent upon.

5-05-2019 **Listen.** Even though some new voices are obnoxious, far more are simply looking for somewhere to share thoughts: "*It sounds like Toyota is betting that they can quickly turn something like a Prius Prime into a full electric quickly rather than investing in all-electric design now.*" Stuff like that is welcome. They tend to stay open-minded, asking for more information so they can draw their own conclusions. For them, I'm happy to contribute little nuggets of detail to help that process along. In this case, I could even do in with respect to the sound theme: Listen to the whisper, not the rhetoric. That all-electric 152 hp drive system already in use by Mirai would make a nice setup for the next-gen Prius.

5-06-2019 **2020 Timing.** Accurate predictions come from careful & meticulous study. Both the 2001 & 2012 rollouts were mid-cycle upgrades, though they could easily be labeled as generations. People don't recognize change easily, so that's a rather pointless debate. I was an active participant with both though, so my perspective is quite different. I recognize how Toyota performs their study and what they look for. Knowing their goal of sustainable high-volume profitability being of major importance, it's easy to see beyond rhetoric. They don't find disruption to dealers acceptable. Dumping a profoundly new technology without any clear direction, as GM did with Volt, upon them is totally against what they've demonstrated over the past 20 years. That's why I saw a mid-cycle upgrade as a very realistic expectation to set. Limiting availability and the obvious burn down of inventory should have made it obvious to everyone watching, or at least those actively participating online. Instead, I got quite a bit of pushback from sharing my observations and declaring a prediction of a very short 2019. It made sense that Toyota would stay clear of GM fallout, being well aware of tax-credit dependency and the long-term damage that results. 1 day after 1 month of phaseout sales, we get news of the upgrade. Today, we got news that the path is wide open for what looks to be a wait of just a little over 1 month until 2020 deliveries begin. Sweet!

5-07-2019 **Opportunity Missed.** Some people just never learn. Ugh. It's not even worth quoting the nonsense anymore. Here's my reply: Yes, repeating the same mistakes... Volt was never targeted at the masses, even though it was marketed that way. The configuration was too expensive, overkill for what was actually needed. Hope was the "*it's worth it*" reasoning would catch on. Affordability is a requirement that enthusiasts turned a blind-eye to, hence so many problems... notably, the way to market Volt. The nonsense of EREV really screwed up the message to consumers. Simply sticking with "*plug-in hybrid*" would have been a wise move. It's over now. Voltec didn't get diversified prior to tax-credit phaseout being triggered. That opportunity was missed.

5-07-2019 **Superior.** There's a small amount of rhetoric still, but not much. Overly generalized claims like this are all that's left: "*Volt proved GM could make a superior Prius.*" Watching the endgame play out has been interesting. It was undeniable that they long hoped for miracle wouldn't happen. Rather than actually change the status quo, the outlook of enthusiasts was conquest. Their focus on bragging-rights was shallow and self-deprecating. Such a perspective cannot be sustained. Realities of business eventually become too much to evade. It's like building up debt. You can really enjoy yourself for awhile, but at some point it all falls apart. Some take much longer to learn that lesson than others, as I was happing to point out: That definition of "*superior*" is one of only enthusiasts. Checking with the true customer, GM dealers, you get a very different reply. They'll point out importance of the vehicle having a competitive cost. Volt was never affordable, period. GM's pricing goal of "*nicely under $30,000*" was never reached. Toyota, on the other hand, nailed it with Prius Prime at $27,600 nicely loaded for the base 2020 model.

5-08-2019 **Reminder.** Stuff like this reveals how little effort is made to look at the bigger picture: "*Don't worry, it will run out eventually as more and more Prius owners get converted to other brands.*" It comes from the mindset of conquest. The early-adopter perspective is that automakers are competing with each other. They absolutely refuse to look at the situation from the point-of-view where tax-credits have all been used up and those offerings are then competing with other choices on the dealer's showroom floor. That idea of competing directly with traditional vehicles had been fought against with such intensity, it was truly remarkable. Volt enthusiasts were the worst, absolutely refusing to acknowledge a market where Equinox was their greatest foe. That level of denial was amazing. They have been paid the price. Seeing them welcome their own destruction was an interesting experience. I patiently observed, reminding them along the way of goals. What mattered was shrugged off though, sometimes intensely fought, never taken seriously. I asked a lot of questions along the way... and still do: Which will other brands offer to compete with plug-in model of RAV4 hybrid? Remember, it's all about diversifying the technology. Spreading it to other vehicles, like Toyota giving Corolla hybrid the PHV treatment, is already underway. That's the fundamental mistake GM made with Volt. Success requires rollout to other choices... like a SUV. Again, what can we expect from automakers to compete with that?

5-08-2019 **Tidbits.** Reaching new audiences means dealing with a hodgepodge of information. Often, a fact will be sighted incorrectly. That misunderstanding can spin out of control at some point, if not properly addressed. When it comes to efficiency, that's common. Many make the easy assumption that greater battery-capacity equates to greater efficiency. In reality, the reverse can actually be the case. If that range isn't actually utilized, you're carrying around unnecessary weight. How the electricity is consumed is what matters... which is why "*gas consumption*" was always a hot topic. People would misunderstand MPG as a result. That's why MPG isn't used as a measure of efficiency in most of the rest of the world; instead, others elsewhere state consumptions in terms of how much fuel is consumed to travel a specific distance. Our own EPA introduced that approach for electricity, but the market is far too premature to recognize the importance. So for now, we are stuck on the MPGe rating. That stands for "Miles Per Gallon Equivalent". Few understand how it works either. Making matters worse is when the two get confused with each other, as it was today. I pointed out the error: Mixing up MPG with MPGe is a common problem. Prime's 133 MPGe wins hands down over Clarity's 110 MPGe. Being more efficient with EV drive is a big deal in the overall equation of both production cost and ownership cost. Remember overall goals. For Clarity to deliver higher MPG results, you have to drive further routinely between charges. Otherwise, you'll end up with a Prime that's difficult to compete with. Mine is at 1,529 miles with the current tank, resulting in an average of 189 MPG. Also, you don't seem to be aware that Prime became a 5-seater a few days ago. Production of the 2020 just began and shipments are expected to begin in a little over a month.

5-08-2019 **Schooled.** Sometimes posts are so confusing, you wonder if the person has any clue how the system actually works. Of course, some wanting to undermine will intentionally confuse matters by posting outdated information and facts unrelated to the subject of discussion. It's all fairly maddening. That's why many online are either lurkers or pushers after awhile. You end up forming an opinion of some sort if you hang around long enough. This is what brings about turnover, especially when a new generation rolls out. So, I provide background from time to time. Never really knowing who you are dealing with necessitates reminders. Though on some occasions, you know you are dealing with a person hell-bent on stirring trouble. That was today, when I punched back with some education: Toyota's approach is clear evidence of planning well ahead, establishing a design that can easily be augmented without requiring major changes. To make Prius into Prius Prime, a one-way clutch was added. This allows MG1 (which is normally used as a generator) to be used for propulsion, adding to the output from MG2. Combined with the larger battery-pack, far more EV power becomes available. It really is that simple. Each of the hybrids, like RAV4, will be able to take advantage of the same approach. It's a cost-effective means of reaching a very large & diverse audience.

5-08-2019 **Desperate.** Watching a troll become desperate is interesting. They all eventually back themselves into a corner. Some figure out how to wiggle out of that situation. Some end up losing attention to the point of giving up. Whatever the situation, you just need to remain true to goals and never lash out. I enjoy the effort to find constructive rebuttal material. They push you to searching for clues where you wouldn't ever consider usual. For example, the relentless attacks on Toyota's fuel-cell program overlooked what is now so obvious. Mirai is an EV platform that would provide a great template for a Prius without a gas engine. The size of its electric propulsion system would be ideal for that. It's just the right balance of power & cost, when you connect it to a battery-pack. Antagonists quickly recognized that fact when I discovered & shared that information. It was an oops on their part on a colossal scale. No one had bothered to step back far enough to notice. Being the one to point it out was a delight. For the most part though, I don't need to pull out argument material on that scale. It's still effective to keep focus on hybrids: With the mid-cycle update a little over a month from first delivery, it's pretty clear the old narrative has fallen apart and new spin doesn't have an audience. Toyota's larger hybrids offering more power and more space for batteries demonstrate it's a waste of time bothering to respond. We all see Toyota setting the stage for a major push away from their traditional choices by providing a variety of hybrid options that will all easily transition to plug-in hybrid. It's a simple path for dealer & consumer to follow... something all the other automakers are scrambling to also deliver... hence the obvious attempts by some to distract & confuse. Yup, desperate.

5-09-2019 **Non-Hybrid Plug-Ins.** This was wonderful to read: "*The only narrative is the one spun by a Toyota fanboy who makes up story about how Toyota would extend its non-hybrid plugins to PHEV*." The post came from not just an antagonist, this was an outright hater. He just plain doesn't care. Posting anything possible to undermine Prius is his goal. It's quite obvious too. I wonder how much longer he'll survive with the new discussion approach. That structure makes attacks easy to avoid and trolls easy to ignore. For me personally, I was amazed at his level of anger. That confused message made that a very real problem to retract. It made no sense. He backed himself into a corner and revealed desperation... which I called him out on: Your own spin of "*non-hybrid plugin*" is truly bizarre, worthy of being such a blatant attempt to undermine PHEV progress, it should be bubbled up to the top of the discussion thread rather than buried in a long string of replies. Toyota already offers Camry, Corolla, Avalon, RAV4, and Highlander as hybrids in this market. That's a large portion of what you find on dealers lots here in the United States with hybrid models. C-HR is also available as a hybrid in other markets. Prius got the PHEV treatment 2.5 years ago and it is already getting a mid-cycle upgrade. Corolla will become available as a PHEV later this year in China. Right before our eyes, we are seeing the progress forward with greater electrification taking place. The most recent tank in my Prius PHEV (aka Prime) is almost complete. That 1,573 miles so far equates to 190 MPG. Spinning that to whatever you want won't change the outcome. We are seeing Toyota's fleet advance forward in a way no other legacy automaker has been able to achieve.

5-09-2019 **Observation.** This type of assessment of market potential is quite common: "*It's great that the 47-mile electric range Clarity PHEV is giving the 25-mile electric range Prius Prime a run for its money...*" It comes from just watching sales. No study or understanding of the larger market is a very, very common problem. People just report what they see, making the assumption that pattern will apply to everyone. It's a grave mistake... one that played out entirely with Volt. Remember all those "*Who?*" asks. Each time I posed that question, there was a flurry of rhetoric attack as an answer. That was a dead giveaway their stance was or soon would experience trouble. And sure enough, GM killed Volt. That premiere technology expected to become a choice for many never reached beyond niche buyers. Those early-adopters taking advantage of tax-credit opportunities were never a reflection of the market to come. Mainstream shoppers are very, very different. That's why offerings like Clarity must be carefully studied for potential, looking beyond the configuration available today for what is clearly a limited market. How will the technology reach ordinary consumers? I put it this way: Anecdotal observation doesn't equate to much. While the tax-credits are still in play, all we are really seeing is just pre-game trials against other new entries. The real game starts when plug-in offerings must compete directly against the true competition... traditional vehicles. Once the showroom floor of a legacy automaker, it boils down to the price on the sticker. Without any subsidy available, you quickly find out who prepared well and who was just working the crowd. Toyota is clearly setting the stage for mass acceptance. That low MSRP for Prius Prime and the affordable means of also making the other Toyota hybrids plug-in models is a formula for success with a great deal of potential. We'll see Corolla hybrid become a Corolla PHV this year. Following that could be RAV4. Few will care about more range when an entry-level choice can deliver so much. Don't forget how incredibly efficient the hybrid system is following depletion of the plug-supplied electricity... and how well proven the reliability is.

5-10-2019 **Spoiled Market.** When Volt was first revealed, people feared that reception of delight would turn into an introduction of disaster. Reason for that was simple... but an easy lessoned-learned to forget or overlook. It's origin was not a subject of debate. Decades back, GM had rolled out their solution to the gas-price crisis. Rather than focus on small cars to compete, they went all out on diesel. Trouble was, their diesel engines were horribly unreliable... so much so, it spoiled the market. That appeal was soured so bad, other automakers abandoned their own diesel plans. That's why there was a concern from the beginning that GM would do the same with Volt. I saw that trouble brewing immediately. That's how the "*vaporware*" posts ended up with me providing contributions. Seeing that goals were set well above what was realistic for that calendar and well above what cost would reasonably justify, there was to possible was to deliver so much in such a short amount of time. It was the "*over promise, under deliver*" problem ramped up to a whole new level rhetoric. It was if nothing had been learned from the Two-Mode disaster. We now have evidence the Volt disaster has indeed risen beyond that, to the scale of diesel fallout from decades back. Evidence of that is undeniable. VW will not be offering their first from-the-ground-up EV here in the United States. They see this market as disinterested in the technology, not worth the bother. GM failing to achieve a successor to Volt is a big factor in that decision. It was regarded as the prominent technology for legacy automakers. Being able to diversify the offering for high-volume profitable sales would have opened the door to opportunity for others; instead, Volt was discontinued without a successor. The supposed replacement of Bolt as withered on the vine, a fitting cliché for expectations of fruitful growth. This is why Toyota worked so hard to avoid fallout. I'm quite thankful it worked. After so much rhetoric, there was risk of collapse across the board... especially with the magnitude of political influence. Being left to build up our own market isn't so bad either. It's not like Prius supporters don't have a history of that to provide a guide to doing it again.

5-11-2019 **Bird Crap.** Discussion of a constructive nature is emerging. To watch things fall into place after so long having to deal with online nonsense is rewarding. Of course, that's what I've done at work for decades. You don't build great software overnight. It takes an enormous amount of study to get it right. But after countless upgrades and lots of feedback, you achieve that long-term goal. That's why I felt so fulfilled upon reading this: "*Spending most of my days at a dealership, I can firsthand tell you that Prius' in general are nothing more than bird crap collectors right now...*" It was objective comment inserted into a thread about 2020 inventory. The upgrade to Prime is getting serious attention from outside the group-thinkers already. That's the sign I've been looking for. Those unfamiliar voices are wonderful. The same old spin from the same old daily posters is just a waste of time and a distraction. Comments like this one today confirm the landscape is changing. Toyota is reaching a new audience. Yeah! Anywho, this is what I posted in reply:

We've known about Toyota's intent to transition Prius to a plug-only offering for an entire decade.

Back with the gen-2 prototype, it demonstrated battery technology was simply not there yet. Even though the system could deliver 100 km/h (62 mph), the return simply wasn't realistic. Capacity was too low and cost was too high.

The gen-3 offering was the first to actually be offered as a choice to consumers. Toyota intentionally limited it to very select markets though, knowing it would be best to stay as a real-world data-collection vehicle rather than something for the masses. That's why there was no reason for high-volume production yet. After all, it was rolled out mid-cycle.

Prius Prime (the gen-4 plug-in model) is the first with potential for the masses; however, Toyota kept it limited too. The goal was to get feedback about what it would take to drop most of the regular Prius models so the plug could be favored instead. That's why quantity & scope was limited... until this mid-cycle update.

Notice how we have no information whatsoever about how the 2020 battery-pack fits? What are the odds that Toyota didn't allow their engineers to indulge. Restacking the pack for a cell arrangement capable of fitting better while at the same time squeaking out a little bit more profit was quite realistic.

Key to that success though was to invest heavily in the rest of the fleet in the meantime. Getting Camry, Corolla, RAV4, and Highlander all upgraded was an essential part of the bigger equation. Allowing non-plug Prius choice to be reduced to AWD and Limited Edition models pave the way for Prime. You want a regular hybrid, just choose one of the others instead.

You'd think those plans would be obvious. Turns out, that's not the case. Most people only have a basic understanding of micro economics and have no idea what macro economics even is. So, we have to deal with a lot of incorrect assumptions and even more rhetoric about Toyota intentions.

Keep in mind, dealers are Toyota's true customer, not consumers. When you start to see

that picture, it becomes easier to understand the relationship regions & country have on supply & demand. This is why there was a burndown of 2018 inventory and 2019 inventory was so limited. In fact, some of us recognized that pattern and stated there would be a mid-cycle upgrade this year with potential for a very short 2019 offering. After all, late Spring rollout for mid-cycle is nothing new. That's how I got my 2012 Prius PHV.

Being able to compete directly against other vehicles on the showroom floor is a massive undertaking. Don't fall for any claims that don't take that essential component to successful business into account. We aren't dealing with an "*EV market*" only. That terrible early-adopter perspective has proven a grave mistake... quite literally, since Volt is now dead. For a plug-in hybrid to sell in high-volume without any dependency on subsidies, it must appeal to the casual shopper. Prime's design with heavy attention to low MSRP wasn't easy for Toyota to achieve.

Watch how interest is stirred for the 2020 Prime. Expect that paradigm-shift intent to finally get noticed.

5-12-2019 **Acceptance & Balance.** The ability to fail quickly and move on (the "Agile" method) is not something certain enthusiasts will ever embrace. They fight and fight and fight for a cause that sounds good, but doesn't actually have a viable business path. That's what sets them apart from supporters. If something doesn't work, you acknowledge the lesson learned and confirm goals are still sensible. Instead, we get excuses & blame. Ugh. That's still what a few are doing as damage-control for Volt. They just plain don't want to accept what happened... the very thing that sets them up to repeat the same mistake, yet again. In this case, it was refusing to acknowledge this comment on a discussion about Honda's effort to offer a plug-in hybrid: "*How is/was the Volt in any way better than the Clarity? Volt is too small, cramped.*" I was obviously annoyed. So, I jumped in with: It doesn't matter. The problem with Volt was always GM's attitude toward the technology. Configuring a niche was fine for initial rollout, but betting the farm on it becoming the source of sustainable high-volume profitable sales with a recipe for disaster. GM never planned to diversify. That's an essential next step in any type of effort to change the status quo. Initially, constructive feedback was to simply offer a second model with a more affordable configuration. Enthusiast pushback turned that into the suggestion to offer that technology in Volt on a more appealing platform for GM's own customers, like Equinox. Instead, GM focused on making Volt even more appealing to enthusiasts. They ended up rolling out a next-gen Volt, which clearly emphasized traits showroom shoppers would have no interest in paying a premium for. They also rolled out ELR, an even more expensive version of Volt. It was the problem of "*Innovator's Dilemma*" playing out exactly as supporters expressed concern about. Thankfully, other automakers didn't follow GM. Seeing Honda favor a layout that isn't cramped is great. The potential for Toyota to do the same with their Camry or RAV4 hybrids adds to that sentiment of balance. What did GM's choice to push an enthusiast favored niche accomplish?

5-13-2019 **Subaru Hybrid.** Spotting a new purchase (no plates yet) of a Crosstrek on the road today left me wondering. I couldn't for the life of me remember at that moment if there was a hybrid model prior to the plug-in and what to look for on the upcoming plug-in model? Fortunately, I was able to capture the moment with my dashcam. Afterward, I looked up badging on internet. Turns out, it wasn't the Subaru with Prime's tech in it. So, I still haven't seen one yet. From such a small automaker, that's no surprise... though, I have noticed quite a number of Crosstreks on the road. It's only a matter of time... and I now know exactly what to look for.

5-14-2019 **$1,000 Fee.** Imagine getting hit with that each year when renewing registration for your vehicle. That's what owners in the state of Illinois are now facing. It's an extreme for collecting funds in place of what would ordinarily be accounted for simply through gas-tax. The logic of EV miles not paying for road repair & replace is sensible. But with an amount so massive, that's nuts. What makes such a huge amount realistic? A traditional vehicle getting 35 MPG over an annual travel distance of 15,000 miles will consume 429 gallons of gas. If the typical tax is $0.25 per gallon, that only comes to $107.25 for the entire year. How can nearly 10 times that amount be justified for an electric-only vehicle? That's absolutely absurd to think it could be looked upon as reasonable. Talking about extreme overkill. Why not a fee of $125 instead? Such a proposed effort to provide proceeds for maintenance... which are very difficult to account... is clearly a move to discourage the switch to electricity. You can easily imagine some type of oil-industry lobbying to influence a political proposal do drastic

5-12-2019 **EV Support in Japan.** We get comments like this on a regular basis: "*Ironically, Japan is way-low on that list, because of their insistence upon developing FCEVs over BEVs.*" That often comes from jumping to conclusions using limited to no actual data to support them. Many only see references to hydrogen support and have no idea what actually takes place behind the scenes in technical decisions and public releases. It's very easy to cherry-pick information too. Simply filtering what's shared is how misconceptions are intentionally spread. In other words, some people feed narratives. Whether that is done with purpose or unknowingly doesn't matter. It's all about making sure specific facts aren't ever shared. For example, not having 240-volt service available for most homes in Japan is a vital tidbits never mentioned. That would obviously impact decisions related to the size of a battery-pack offering. What benefit is there to a capacity larger than what an owner can reasonably recharge overnight. With standard voltage lower in Japan than our lowest here in the United States is a really big deal... yet, rarely acknowledged or even known. I kept my response to the misconception feeding short: That would be an anecdotal observation leading you to decision based upon incomplete information. Most households in Japan only have 100-volt lines available. Imagine how inconvenient it would be to have that as your only means of recharging an EV. It would take forever. That shortcoming is why Prime over there has CHAdeMO as an option.

5-16-2019 **Short-Sightedness.** If you pay close attention to the rhetoric, sometimes a shortcoming to their line of argument will be exposed. In the case of constantly trying to push a narrative portraying Toyota as unwilling to embrace EV... which is long-term... I came to realize no one was addressing mid-term. It only takes a moment of thought about what those plans could be when you recognize the importance. Toyota has a clear path to get from here to there. GM never did. Watching Volt trapped in the past, never advancing forward eventually got noticed. That's how Bolt name about. In fact, that's how the similar sounding aspect was derived. It was obvious right from that moment it was announced confusion with those similar names would help conceal the dramatic change of plans for GM. Failing to have anything capable of achieving the next step in terms of spreading Volt technology to some mainstream vehicle with the intent of competing directly against traditional vehicles (the undeniable next stage for any initial rollout) meant giving up and trying something else. Abandoning that technology was a rather drastic move, one that does not have any path forward. It's incredibly risky to expect customers to embrace something so unfamiliar. Sure, early-adopters don't mind. But for ordinary people who no little to nothing about how their current vehicle operates means a world of unexpected consequences to deal with. There's simply no way to set realistic expectations. Fortunately, not all automakers are that short-sighted. Hopefully, most of the enthusiasts will wake up to reality too. There are consequences. Leading by example is the most effective means of change. Perhaps this will help: People who complain about "*self-charging*" are not acknowledging or recognizing Toyota's effort to phaseout traditional vehicles. When that is achieved, there will be two fundamentally different types of hybrids available. Use of the "*self-charging*" label makes it very clear it is different from the "*plug-in*" model. Planning ahead like that is good business. Contributing to confusion by fueling enthusiast rhetoric is unfortunate.

5-16-2019 **EV Owners Meeting.** This evening's (here in Minnesota, where our group is quite large and quite diverse) was quite informative. I wasn't aware that the effort to provide a state-level tax-credit was still active. $2,500 for each new purchase would be great. Unfortunately, that is being fought against really hard. Making matters even worse with respect to political lobbying is a proposed $200 fee per charging-station. Imagine owners of a store or resort facing that payment each year for each charging their offer for their patrons. How is that even being considered? For what purpose? There's no benefit to what will clearly looked upon as a discouragement. Sadly, our group is keenly in tune to how much the general public is oblivious to these happenings. The year's legislative session will end this week without them being any the wiser. Most people still know very little about electric vehicles or charging. Even fewer know anything about the detail related to politics. Fortunately, we recognize the potential. That's what we are trying to teach others about. For example, I routinely hear that our grid is incapable of serving a large number of vehicles for charging. That's pure nonsense. We already see that type of demand each summers. A/C power is readily available. We manage just fine. That same load can be provided for homes needing overnight vehicle charging. It's not a big deal. Our infrastructure already supports it... no upgrade needed. In fact, that provides opportunity rural areas are hoping to exploit. Those co-ops know they'll have a very difficult time getting local businesses to offer chargers. But in homes, there's a great deal of potential. So, we get many exchanges with their representatives about how to achieve that. Appealing to customers is a win-win situation. They'll get to sell more electricity, even for those with solar. Our effort now is to spread the word about things to come. In the meantime, we're establishing relationships with those who can spread the word. For me, I have an interview scheduled with a national representative and I'll be organizing a discussion panel at a local library. I'm also looking forward to starting up gatherings again, now that availability of Prime is looking to ramp up. In other words, it's all about being proactive. Finding a group of supporters to make that happen is great.

5-17-2019 **GM Progress?** Remember all those claims of "*vastly superior*" to that resulted in a position of supposed leadership? I heard so many "*behind*" insults it was truly remarkable... and never made any sense. GM demonstrated you could have a great performing electric-vehicle if you brushed aside concerns of cost and just squeezed in as much battery-capacity as possible. What did that accomplish? It certainly didn't result in any progress with regard to changing the status quo. Just go to a GM dealership. Do you see any difference Volt or Bolt made? How can Toyota be so far behind when their hybrid technology has become so prolific? The new RAV4 hybrid is extremely popular. It's a platform that can inexpensively support plug augmentation. How is that in any way "*laggard*" indication? It's undeniable effort to avoid the Osborne Effect. When the market nears mainstream interest toward plugging in, transition away from traditional vehicles across the fleet will be well underway. This isn't manipulation of attitude via press-release. It's a solid business plan. As for GM making progress, there we spy-shots of a supposed plug-in SUV posted online today. What was most interesting about that was the lack of interest. In the past, we'd get enthusiast hype stirred to an extreme. Now, there's barely a whisper. People have clearly moved on, given up on GM. The reputation of "*over promise, under deliver*" has become a burn for so many, there simply isn't an audience anymore. This is why I kept asking the "Who?" question... knowing someday this would be the outcome. Sustainable business cannot survive on conquest alone.

5-17-2019 **Attacking Imports.** During that long series of rhetoric for Volt, there was often a lot of flag-waving propaganda. We'd get claims of "*American*" vehicle support for a car that was nearly two-thirds foreign. So much was imported from Korea, it was difficult to have any type of constructive response. Nothing was effective to those who simply dismiss facts. The same problem persisted with Bolt until recently, when everyone stopped paying attention to GM. Focus was has become directed to Tesla, which isn't as American built as thought. There are some essential components coming from China manufacturers... which makes it subject to tariffs. The recent application for exemption from that was rejected too. Cost to American consumers is skyrocketing overall with so many sources now faced with higher prices. How do you deal with a self-imposed problem that ultimately will cause harm? Our president just plain doesn't care about the consequences. Today's announcement made that behavior even worse. The idea of superiority is reaching a scary level. There was an executive proclamation that declared a 25% tariff will be imposed on imports from Europe & Japan. Making things worse, he's attacking the brand not the product. I suspect news of fallout from this will be fresh online first thing tomorrow morning.

5-18-2019 **It's Getting Ugly.** This was the opening sentence on the first article I came across: "*President Donald Trump on Friday declared that imported cars represented a threat to U.S. national security...*" It's truly disturbing to see fear used in such a way. That type of manipulation of people, making them feel insecure when there isn't actually anything to fear, is a practice those well informed know all too well. You appeal to emotion, telling them what they want to hear. That version of reality is fake news. It's a narrative used to undermine... and is often effective for those who simply don't pay attention or don't want to get involved. It's group-think with terrible consequences. Needless to say, there was a press-release from Toyota about the attack. This was how they responded: "*Toyota has been deeply engrained in the U.S. for over 60 years. Between our R&D centers, 10 manufacturing plants, 1,500-strong dealer network, extensive supply chain and other operations, we directly and indirectly employ over 475,000 in the U.S., and have invested over $60 billion in this country, including over $1 billion in philanthropic and community-outreach efforts.*" In addition to all those American paychecks, there are over 36,000,000 vehicles from Toyota/Lexus on our roads still. What a mess. Consumers here will end up with fewer choices and those choices will be more expensive. How is that helping American families? How is that helping anything related to improved security? Think about how much better the country would be with imports helping to change infrastructure, encouraging the move away from imported oil? It's an attack on the wrong industry. How stupid can this supposed leader of ours really be?

5-18-2019 **Climate Denial.** I stumbled across an article today about a giant coal company filing for bankruptcy. It was Chapter 11, so there will be some type of reorganization effort. That process if revealing. Much can be learned about how the business got into that situation. That's key to understanding what the future holds. What should you expect? What will actually happen? How long will it take. This is what I had to say with regard to this particular situation: It's interesting when you have some family that actually lives in Gillette. Driving around there will my Blue Magnetism Prime, especially when back on the dirt roads, sure provides an acute awareness of how much certain areas of the country fight to retain the status quo. You see signs there proudly supporting that industry... which is extra poignant during the holiday, when you see one reminding you that coal in your stocking is the ultimate gift. There's opportunity to embrace change. The potential is obvious. Just imagine how such unfarmable land that's always windy could take advantage of turbines. Generating lots of electricity to supply other areas of the country seems like something they'd seek out, knowing that coal is doomed. Perhaps this bankruptcy file will serve as a wake-up call. It certainly has revealed that some have been well aware of the problem. At some point, they need to finally address it. Soon would be nice. So many resources have been wasted on the denial. Evidence of how it impact climate is obvious. Solutions to that are too. It's so reminiscent of tobacco. There fight to prevent the inevitable was remarkable.

5-19-2019 **Charging Questions.** We are getting a lot of them now. For example: "*40A (overkill for Prime) EVSE. Plugs to 40A 240v circuit. Charges the Prime from 0 to 34 miles (reported) in 2 hours flat.*" There is a lot to contribute. Basically, any information is a good means of getting constructive discussion. Many people have little to no background. So, even just sharing personal experience stories is helpful... which is precisely what I did today: We have 2, both the Wi-Fi enabled model. They work great for our Primes. Being able to check status, adjust settings (like maximum draw and maximum charge), and view history is really nice. A full recharge takes us 1-hour 50-minutes. Keep in mind that a 40-amp line (sustained delivery of 32 amps) will provide 200 miles of range in 8 hours. So, a 40A setup is really overkill for most of your need is overnight charging. Remember, you'll almost certainly want a second charger for your household at some point. That means taking into account now how much your service-panel can provide for capacity overall. You'll also want to consider how to take advantage of your local electricity discount opportunities. In our case, we were the very first customers for our Co-Op to request dual time-of-use lines. With that, our billing lists activity from each vehicle individually, showing the quantity of kWh usage for each pricing category (based on timing when electricity is drawn). It's quite nice. All we needed to do was pay for the extra meter ($75) and can ($70) during installation of the line. Another thing to be aware of is the 240-volt outlet type. Having such a standard outlet is important when shopping for a charger (adapters are available). NEMA 14-50 is by far the most common for new installs. But that's likely not what you have currently for other appliances, like a clothes dryer. It can support a maximum capacity of 50-amp, but the line doesn't need to be that powerful. In our case, we have 8-gauge wire connected to 40-amp breakers. There isn't much else to consider technically. All you really need to know are those basics. The electrician providing an estimate for cost for running line(s) is the only thing that will vary for individual homes, since service-panel access and where you would like to physically locate the charger will obviously differ.

5-20-2019 **Local Trolls.** His posting have grown so bad, it has really become a problem. Today, we got this: "*my ev estimate always goes down after driving hv. no idea why.*" It's just a flurry of worthless posting. Everything is lowercase without ever referring back to any specific message. He doesn't quote what he's referring to. There's just interjections of brainless posts without any context. There's clearly no thought involved. No one could be so active for so long and still not have any clue. I pointed that out too, as well as provide constructive comment: After nearly 78,000 posts here and 14 years of participation... let's try to use that experience to help us all advance to the next level. It's really important at this stage to engage in the more informative discussion. We are the ones who make that progress forward happen, by posting messages that are constructive. Think about how poor of a job salespeople at the dealership do for actually selling the technology. We all get frustrated by their "*no idea why*" responses. Doing the same here puts us at the same level of disinterest. The more we share our understanding with others, the better off everyone else will be. In this case, the answer to why is simple. The system takes an average based on the outcome of how the battery was recently used. Electricity shared with HV is less efficient than just using it with EV. The traction motor (along with associated components) isn't being used to its full potential, which is optimized for efficiency.

5-20-2019 **The Bigger Picture.** I found my own quote from a little over 4 years ago which applied well to the topic: "*25 miles (40 km) is a worthy goal.*" It was a prediction that turned out to be remarkably accurate. I posted this on the long-dead thread it had originated, hoping to stir renewed discussion on the topic: I was looking for a recent comment about the wish that Toyota had made the mid-cycle upgrade of Prime to deliver more EV mile, so I could point out the importance of looking forward... seeing the bigger picture. I couldn't find it, but did stumble across this look forward from the past... which never lost sight of the bigger picture. For example, there have been quite a number of complaints related to Toyota's use of the "*self charging*" label in their hybrid advertisements. Anyone notice how not a single one of those posts mentioned Toyota quest to phase out traditional vehicles? Having established that "*self charging*" identifier makes the identifier of "*plug in*" so unambiguous, there's no uncertainty what the difference is. Look forward, not backward... as my own quote above did from 4 years ago. Notice how I nailed the expectation for Prime long before anyone else had any idea why Toyota would do such a thing? Back then, there was quite a stir that Toyota was giving up plug-in support entirely as a result of PHV production ending. Those were the words of some spinning their own narrative. Don't listen. Pay attention by looking forward. In this case, I'd like point out an important reason why the capacity for Prime wasn't increased mid-cycle. It's quite simple. Toyota places a very high value on the used market. They go out of their way to appeal to the early-adopters, making the upgrade so compelling some trade-in for the newer model. They provides inventory for the used market. An important aspect of that used market is support. Changing capacity would have resulted in a loss of value in 2 regards. One is obviously less EV miles. The other is simply replacement coverage. If you want a vehicle to last a freakishly long time, don't make it's parts so unique they become difficult & expense to replace. That leads us to the next look forward. Would it be cost-effective to have the engineers restack the cells to make them fit better? Resulting increase in cargo area without any change to operational specs would be a benefit to both new & used sales. Doesn't that seem a worthy goal for mid-cycle?

5-21-2019 **Confusion.** The topic of marketing confusion for Volt came up today. Needless to say, I had much to contribute in that discussion:

Depends upon the audience. GM catered to enthusiasts, thriving on the attention from their early-adopter niche. Toyota is focused entirely on mainstream buyers. That fundamental difference means very, very different messages.

With the case of Toyota, the forward-thinking aspect tends to get overlooked by everyone. They're effort to phaseout traditional vehicles requires setting the stage long in advance to avoid confusion when that final happens. The first part is what antagonists absolutely love to spin, the "*self-charging*" promotion. That marketing taken out of context can be used as undermining material. But when you come to realize that "*plug-in*" is the second part, their approach makes sense. That's how they will distinguish between the two very different types of hybrid offered.

On the other extreme is GM. There is no message or even a clear plan. Heavy investment was made into refinement of their plug-in hybrid tech. But rather than rollout what Volt demonstrated into a popular GM vehicle, like Equinox, the effort was just abandoned in favor of Volt's own antithesis: a full EV. Sending such mixed messages to their customers without any obvious next-step forward explains why investors are now so upset.

Knowing that business-sustaining sales (profitable & high-volume) require appeal to shoppers on the showroom floor, advertising detail of how a system operates is pointless. It comes down to the basics... size, price, features, power, handling, etc. The means of propulsion isn't really ever primary purchase criteria. Dealers (the true customer for automakers) simply weren't interested in what early-adopters wanted.

5-21-2019 **Campaign?** As expected, the discussion got rather heated quickly. This really stirred things up: "*GM campaigned on range anxiety.*" It was the result of the enthusiast claiming hybrid owners were the target for Volt, which makes no sense for an audience already quite familiar with dual-powered systems. Why wouldn't you reach out to those who have been waiting for an EV instead? The arguments had little substance. It was just more of the usual rhetoric. I chimed back in with: No, the problem was GM had a solution looking for a problem. Reality is, there's a huge PHEV market in the waiting and Toyota is prepping for it with deploys of a wide variety of hybrid choices. Each is which is setting the stage by replacing their traditional counterpart and making way for a plug-in model. Your own reply repeated the same mistaken message by focusing solely on Prius owners and conquest. Deciding to completely ignore the large sedan and SUV market was a profound error by GM repeated by enthusiasts. Looking now, it should be obvious how much GM messed up by not marketing Volt as a platform for other vehicles to adopt. Just imagine what that message had sent. People would be expecting an Equinox or Trax with that technology. Instead, loyal GM customers just replace their old GM guzzler with a new GM guzzler. What will GM campaign on now?

5-21-2019 **No Market.** The effort to avoid anything constructive continued: The major mistake made by Volt enthusiasts was to treat the technology as a competitor with other automakers, rather than GM's transition away from its own traditional offerings. That made conquest sales the focus. It wasted the limited supply of tax-credits, achieving nothing in returns. GM's status quo remained intact. This prevented the benefits of plug-in hybrids from ever being addressed. Attention was constantly directed to minor conquest. Volt won a few battles, but lost the war. Enthusiasts enabled GM to fall into the innovator's dilemma trap. So, no amount of advertising would overcome the misdirection. Volt became a product without a market.

5-21-2019 **Futile.** They say hate blinds. They are right. When a person makes up their mind you have an agenda, they stop listening. That's especially problematic if they assume incorrectly about what it is. For example: "*It (Volt) failed because people in EV community like you who hated it just because it is a PHEV from GM.*" That sentiment of not being able to be supportive of more than a single automaker is a difficult self-created barrier to overcome. Some people believe cooperation is impossible. That's absurd. We have shared goals for many things. Why couldn't electrification be among them? Ugh. I asked: The point is to change the status quo, right? Targeting EV supporters was a fundamental mistake. Yet, it continues. That "*wrong audience*" lesson was not learned. The goal of appealing to showroom shoppers wasn't taken seriously. It failed because enthusiasts didn't understand who the market for Volt was. Trying to sell a performance compact to loyal GM customers interested in a SUV was a waste of time & money. It was doomed to fail. Looking back, it's amazing to recall how hard certain people truly believed that would work and to what extremes they'd go to defend that risky hope. Reality is, the path forward for GM will require finally acknowledging need over want. Priorities for ordinary consumers don't view the divide between PHEV and EV the same way. Treating the situation as such is futile.

5-22-2019 **KISS.** The arguing about how marketing was or should have been continued. Distortion of history is rampant at this point. Not remembering the timeline correctly and simply just forgetting all that influenced decisions is an all to familiar problem. That's why I documented that history as it was playing out, capturing as much as I could while it was happening, to properly represent it all these years later. I just look back through the blogs to get an accurate picture of the situation at the time. It's far too easy to look back with bias once you know the outcome. Not knowing is what leads to the behavior that unfolded. In a way, its not so bad that they forget. It can sometimes present an opportunity to reintroduce an idea which had been brushed aside in the past. For example: "*I drove over 1,600 miles with my most recent tank of gas.*" That was my marketing suggestion to the discussion. I further added: What more can be effectively said when you have the attention of a random person for just 30 seconds? That simple sentence addresses all concern without getting into an detail. It's marketing that actually works. Ironically, GM teased that very idea. Enthusiasts fought it though, not wanting to acknowledge the reality of Volt not actually being vastly superior. Other PHEV would be able to deliver the same thing. That's how the self-destructive EREV identifier came about. KISS really is the best approach.

5-22-2019 **Competition.** The best word to describe today's situation is "Ugh". It was a staged competition to compare the MPGe of an AWD Prius to that of a Tesla Model 3 AWD. See the problem yet? If you've read my blogs from the past, you'll recognize the MPG issue. Yup, just like that coast to coast drive of Jetta against Prius, it was a measure designed to focus specifically on just a single trait and dismiss all else. The video repeated that mantra over and over again, as if that's all that ever matters in terms of understanding the ownership equation. To be unbiased, you avoid ever doing such a thing. This is why those trying to honestly represent true usage always report their lifetime value. That measurement takes everything into account... daily driving... seasonal changes... vacation trips... running errands... holiday shopping... family gatherings... entertainment stops... you name it. To attempt to make a specific test representative of true performance is a common undermining technique we've seen all to well. So whether the video posted was intended to be bias, that's what it ended up being. Perhaps if they follow up with a variety of other drives, then it would balance out. But this first one was not appropriate as presented. And I didn't even mention the huge price difference. Since when it comparing vehicles with such a large price difference a reasonable representation of competition? Ugh.

5-22-2019 **Cry Spin.** Attack is the theme. Rather than deal with the issue at hand (effective marketing and a path forward), it's better to declare the messenger the real problem. Ugh. Fortunately, I don't have to put up with that nonsense anymore. Toyota's plan to diversify has been going really well. Progress of that goal is obvious. Sweet! This is how I responded to the troublemaker who clearly isn't ready to face reality yet: 6,556 RAV4 hybrid; 2,128 Camry hybrid; 1,403 Corolla hybrid; 1,104 Highlander hybrid (next-gen coming later this year). All are examples of popular vehicles adopting the hybrid technology and selling well. Those numbers are just from April alone. Think about what that's doing to interest in their traditional counterparts. That's a solid path forward... non-disruptive... an approach dealers will embrace... exactly what's needed for electrification to reach the masses. As the hybrid models become more popular, a plug-in variant will be added. Cry spin all you want. It won't change the reality that we still don't see any fleet plan from GM.

5-23-2019 **Evade & Bash.** Feelings related to defending GM are still quite high. With a loss so blatant, the damage-control effort is daunting. Those few still holding on to unwarranted hope have literally nothing to work with. Tax-Credit phaseout is underway and there isn't any path forward. Stubborn resistance from dealers is as strong as ever. Why change? Bolt is simply far too different from ordinary inventory that's stocked for salespeople to bother. This is why it was so important to get a clear message of purpose. After an entire decade, we still don't have that from GM. What is their next step? Needless to say, there's no interest in actually addressing that issue. Instead, the response is to evade & bash. Doing everything possible to change the topic. Where have I encountered that? Anywho, this is how I dealt with that nonsense: Toyota is demonstrating a clear path forward that is proving to be very successful. Dealers are pleased with the results and there's a great deal of potential for growth. That wide variety of hybrids, each on a platform that can affordably & profitably offer a plug, is the solution GM had always hoped for.

5-23-2019 **Marketing.** This is how the long string of posts about how GM messed up with Volt came to an end: "*...marketing strategy aimed at the general public.*" Since it was something I had blogged (and complained) about for an entire decade, it should be no surprised that I sounded off about price. Way back in 2007, it sounded quite unrealistic to set a target so low for a return so high. That proved quite true too. Concern about that was blown off though. Criticism was twisted as claims of undermining attempts. Enthusiasts just plain did not want to hear anything constructive. Question is, now that those enthusiasts are all gone, what do those participating online at this point think? With Volt dead and the possibility of that technology containing unlikely, it's an interesting thing to ponder. I didn't. I just posted: GM should have stuck with its own strategy. That "*nicely under $30,000*" goal still stands true for appeal to the masses.

5-23-2019 **Entertainment.** I'm tired of certain individuals who use the forum for their own entertainment. In this case, it's a retired person who apparently has nothing better to do. It wouldn't be so bad if his many scores of posts each day (sometimes even exceeding 100) actually included some study. They don't though. In fact, we see repeats of the same thing frequently. There is no progress, despite such active participation. Posts never included a quote, are always all lowercase, and rarely haven't anything of substance. That's the same thing a troll does. For example: "*toyota can barely sell 2,000 a month at the current pricing.*" It wasn't even on topic. It was an comment completely out of context. We were discussing what brought about GM's most recent disaster. Like a troll, his purpose is to provoke. You know, anything to get someone to provide entertainment. Being engaged in discussion is all he desires. Progress is never made. I see the pattern repeat over and over. Sometimes, I do actually push back to draw attention to his activity. Vague posts are what tend to do that. Today, I kept it brief: That's highly misleading. Toyota has clearly been delaying both promotion & rollout until the mid-cycle. Toyota has also done all it could to avoid getting caught up in GM's fallout.

5-24-2019 **Tradeoff.** Another thing I find annoying is when luxury vehicles are compared to ordinary mainstream offerings. How is that constructive? Like other pointless efforts, it happens all the time. That can be an effective means of undermining a discussion. Again, this is something we often find coming from one of those individuals who use the forum for their own personal entertainment. Today, it was: "*The 2019 BMW 330e loses 105 liters (3.7 cubic feet) for its 12 kwh liquid cooled battery.*" Even though this topic presents the option to expand upon the topic being discussed, it really wasn't helpful... since the topic has been beaten to death already. They like to repeat. That's key to their entertainment. Preventing progress is something they work hard at. After all, not many have a domain like that at their disposal. We can to much to prevent their posting. Their distractions continue, endlessly. Like usual, I keep my replies to such individuals brief: Liquid cooling adds cost & weight. To be a mass-market leader, doing the same as a luxury brand doesn't make sense. GM learned that lesson the hard way. The tradeoff isn't worth it.

5-24-2019 **Priorities.** This is why I so often say "ugh" to some of the stuff posted in the forum threads: "*Yes, yes, exactly...*" That was a vague agreement just for the sake of moving on to a preferred topic. It's what happens when you nail down an element of importance. Those efforts to keep things active can't be interrupted by a logical point. The last thing they want you to do is draw a conclusion, since it will end their entertainment. Annoyed, as usual, I still took the time to reply with something constructive: With all that, you completely evaded the topic of MASS-MARKET sales. That means MSRP near the consumer mean (not average) without subsidies, since it must be able to compete directly with traditional offerings. The goal is mainstream volume with several models for each automaker. Remember, the ability to achieve both profitable & sustainable requires a balance of priorities.

5-24-2019 **New Audience.** It never ends. Spin from long-time antagonists always emerges as some point. I was actually a bit surprised it took so long this time: "*It shows that GM is serious enough about making a long-term commitment to electric vehicles to cast aside the Volt, GM's most successful electrified vehicle to date, and embark on an uncertain all-electric future even if it means some near term sacrifice.*" That was amusing to read... since there hasn't been any long-term commitment actually made. GM simply abandoned Volt when the tax-credits were used up. It ended up being a waste of opportunity. What was the point of joining an engine to a motor, especially with gen-2 refinements in hybrid efficiency, if the goal all along was an all-electric future? Why not just do what Nissan did instead, just start with the preferred approach? There is no justification to spend so much, then cast it aside. Sacrificing such a massive engineering investment doesn't make sense if there's nothing to switch to. GM itself told use profitable EV sales are still several years away. Cutting losses is one thing. But when you know that technology would work great in a Trax, why wouldn't you offer it? Think about the size of that particular SUV. Think about the convenient height for adding batteries. Think about the propulsion configuration. Trax uses a 1.4-liter turbocharged 4-cylinder engine to deliver 138 horsepower. Volt used a 1.5-liter 4-cylinder engine to deliver 149 horsepower. Doesn't that seem an ideal platform for the propulsion system to have been transferred to, rather than just abandon? Anywho, the Volt enthusiasts have a new audience now. They are trying to somehow convince them that's a terrible idea, that simply endorsing only Bolt makes more sense than leveraging all that refinement GM already delivered. Huh?

5-24-2019 **Jumping Ship.** There aren't many Volt enthusiasts remaining. Yet another just revealed he's jumping ship: "*I'll be trading my 2017 Volt for a M3 in the coming months.*" The hypocrisy is amazing. They absolutely insisted conquest wasn't a problem, that GM was building loyalty with their commitment to EREV technology. That fell apart to such an extreme, they cannot distance themselves fast enough. Remember all those attacks I got on the EV blog, when I started posting there after the Volt blog died? Even those came to an end. It was futile defending a technology that had been "*cast aside*" without even so much as a tear. To be told this would never happen... Looking back at the nonsense I had to endure. What was the point? They fought and fought and fought without ever doing what I asked, to state goals. I was about winning something, not actually getting the status quo to change. I saw that from the start. My question changed to "*Who?*" when it became apparent their was no interest in mainstream sales. Appealing to ordinary consumers wasn't of any interest to them. Just about all of them have jumped ship at this point. Many followed glory, hoping to find it elsewhere. The rest faded into nothing. It's a strange victory.

5-24-2019 **Sales Graph.** Someone animated the sales chart for the United States over the past 7 years. It shows month-by-month changes, allowing for a rather clever means of representing progress of the market. It doesn't actually show progress of the industry though. That limited scope is very misleading. The fact that it also divided gen-1 and gen-2 of the plug-in Prius into two separate categories was rather blatant misleading too. Enthusiasts would have screamed bloody murder if that had been done for Volt, but it wasn't. Worldwide sales were completely omitted too. It was obvious cherry-picking; nonetheless, it did stir some constructive discussion. People are avoiding the topic of GM progress though and this was yet another example. Playing the victim card for Volt isn't even happening anymore. Bolt is just there, but nothing is happening with it. Tesla was the rising star in that animation, but there's a gray cloud growing over its future. With the final reduction to 25% just 5 weeks away now, that dependency on tax-credit for sales is obvious. No one seems to want to discuss that though, just like what we saw with GM. So, I reminded everyone of that recent history to be ready for some type of change on the horizon: GM's heavy dependence on tax-credits only resulted in trivial sales with respect to the true competition, traditional vehicles. That meant it was doomed once phaseout was triggered. GM should have diversified long before reaching that obvious cliff. No Trax or Equinox with tech from Volt was a terrible executive decision.

5-25-2019 **Cattle Cliché.** I hadn't ever actually heard this one, but it fit well into the sale graph discussion. So, I added more in response to it: That "*all hat and no cattle*" is an excellent way of describing the situation. It doesn't matter though. The first stage of rollout doesn't represent what will happen later anyway. That graph is rather misleading too. The separation of Toyota PHV gen-1 from gen-2 is rather blatant misrepresentation, since the same was not done for Volt. But then again, the graph only tells the early-adopter story, since all the sale were subsidized. That's a lot of low-hanging fruit, which is pretty much all gone now. It's time for the cattle. Think about how the market will look once those tax-credits are completely phased out. After all, that quantity of 200,000 vehicles is much when you consider annual sales in the United States is still somewhere around 17,000,000. Consider the extremes. We have Tesla who strived to establish a profitable foothold prior to expiration and GM who simply exploited the conquest opportunity. As a result, one built up some rather fierce loyalty and the other struggles to retain attention. Realistically, it's how the dealers embrace change, not those who end up owning the vehicles. Showroom shoppers are what bring in the sustainable profit. That market has yet to be tapped. There's a lot of potential, but a graph like the one provided doesn't represent how that entirely different audience will respond.

5-25-2019 **One Solution.** Most people have little background in business and pay attention to the market even less. That absence of understanding makes seeing the bigger picture a hopeless battle. All you can really do is provide information when that unknown is detect. For example: "*What I don't understand, though, is why they are spending so much on developing fuel cell cars...*" It makes sense that to be so uncertain. After all, look at how few EV owners actually really understand the EV market. There's just so much to be aware of and the perspective of United States information sources has undeniable bias... a narrative of what is hoped for, rather than what actually is. Some of that comes from the aforementioned lack of understanding. Unfortunately, some also comes from the political efforts to misrepresent. With the hope of providing some useful view, I posted:

One solution for all, especially with so many markets to serve, doesn't make sense. Hydrogen won't be everywhere, but commercial fleet use has strong market potential. The electric drive system can be shared anyway. So, there's a win-win. Heck, even battery advances can be used by both. So, delay with full EV and maturing the FCV tech in the meantime isn't a futile waste as many spin it to be. We reap the benefits for PHV use along the way too.

Basically, it's Toyota thinking long-term & high-volume facing critics obsessed with limited scope returns. After all, who's to say all the investment VW is doing will put them anymore ahead? Look at Tesla, so much spending in charging infrastructure has left them very short on sales & support infrastructure. Balance of risk necessitates diversity. Notice how little Volt accomplished for GM. That major investment in plug-in hybrid tech was just abandoned. Was it good to cut-bait like that?

The answer to that GM conundrum comes from whatever the next step delivers. If their learning experience results in profitable & sustainable sales from whatever Bolt becomes, then yes, it was good. If GM just flounders and is unable to fortify their foothold in the plug-in market, then no, it was a waste. That same logic can be applied to Toyota.

It all boils down to market impact. What really affects the status quo? Most of the hype garners much praise, but really doesn't achieve any real change.

5-26-2019 **Change Precedent.** It is especially intriguing when someone with a constructive demeanor posts something like this: "*The Volt was not abandoned. GM is selling it in China under the name Buick Elite -- they have a new model this year and an electric model (based off the Bolt) called the Velite 6 MAV.*" His message was clear & concise. It didn't play by the rules of engagement though. That approach of logic without context can be brutal, as I pointed out with the hope of some constructive feedback:

Volt enthusiasts established the precedent of separate markets, absolutely refusing to acknowledge worldwide efforts. They fought and fought and fought for over a decade, fiercely attacking anyone who attempted to include Japan or China in activity that took place in the United States. Now, they must reap what they sowed. Making matters worse, some got to the point of hostility (offensive online posting) to divide the market here in the United States. They fortified the narrative that "*EV market*" was all that mattered, that "*mainstream consumers*" would simply follow suit following expiration of tax-credit.

That was a brutal history I will continuously remind people here of... because we've seen that cycle repeat. It started with attacks on Toyota's hybrid system with Two-Mode. That went on for years and years, then finally collapsed when the technology proved unworthy to compete with traditional vehicles. Sound familiar? The very same thing played out with Volt, despite all the reminders and the "*too little, too slowly*" concern expressed over the bankruptcy recovery about the technology.

And sure enough, failure to spread the technology from Volt to something capable of sustainably returning profit is undeniable. The opportunity to use tax-credits as intended (to help with the spread) was wasted. Now, if GM really hasn't abandoned Volt for this market, the technology will have to compete directly against GM's own traditional vehicles (the true competition) without subsidies.

Remember, the point is to change what is offered at dealers, here. Take a look around. Each automaker faces their own set of challenges to change purchase choices for their own customers. Notice how Toyota is doing an absolutely incredible job of pushing out traditional vehicles? RAV4 hybrid is proving extremely popular. That's paving the way for plug-in models.

So what if the narrative that "*Toyota is still balking on EVs*" is what you hear from enthusiasts? They set a terrible precedent that is now coming back to haunt them. Anyone who takes the time to look for true change will find it on Toyota dealers' lots. It may not be the speed or approach that's excited, but it is an undeniable large-scale shift away from traditional vehicles setting the stage for more change.

5-27-2019 **Yawn.** The emoji response was pretty lame. I shoot back with:

That yawn response is an excellent example of a passive-aggressive enthusiast. Showing indifference to such a serious situation is how we identify enabler activity. That's what becomes a part of group-think, the very problem that contributed heavily to Volt's downfall. Those sharing that attitude invited innovator's dilemma. Essentially, they sabotaged GM's efforts by encouraging the niche. It was progress, but the wrong direction and no one was willing to call out the mistake.

It was an error on a monumental scale. All that money invested went to what? Remember, the intent with Volt was to be a high-volume seller. It's not like Toyota's investment in Mirai that is produced at low-volume with clear intention to only sell at that small number and only in limited markets. It's kind of like Tesla back when Roadster served as a real-world research vehicle. Toyota has stated there is no mainstream intention yet with that generation. Decisions will come later, exactly as their all-electric rollout has been presented.

So what if you don't care about the well-being of an automaker? Very few actually do. Most focus on what they see at auto shows, which has little reflection of what they end up purchasing. Tesla offers premium vehicles. Whether or not you want to call them a "luxury" automaker makes no difference anyway. Each automaker has their own audience. Toyota's is much more reflective of mainstream consumers. Their vehicles are ordinary... something most enthusiasts would yawn at.

5-27-2019 **Warm Up.** It took quite a bit of posting from a number of active constructive posters to finally get this: "*If "warm up" is a thing in the past, then the term "warm up" should not even be mentioned anywhere in the manual.*" The new Prime owner wants to have a engine-startup remote installed, but not for the sake of either warming up the cabin or warming up the engine. It was bizarre. Why? That quote became the missing clue. He read that "*warm up*" was necessary. I was revealed to provide the final puzzle piece:

Now, we are finally getting somewhere. You made the assumption that "*warm up*" for a traditional vehicle is the same thing as "*warm up*" is for a hybrid. It is not.

For a traditional vehicle, the term "*warm up*" means to get the engine up to a temperature with enough heat so that the output of the propulsion system is normal. A cold system will be sluggish. Engine oil, engine coolant, and steering fluid all work better when there's some radiant heat energy circulating through the propulsion system.

That same definition most definitely doesn't apply to a hybrid like Prius. It uses 0W-20 synthetic oil in an engine designed for rapid heat distribution. The steering doesn't even have fluid, since it's electric. Most power provided during the initial operation of the engine comes from the electric traction-motor too. In other words, none of that heat is needed for driving.

The "*warm up*" with respect to Prius is related to the emission system. For the catalytic-converter to cleanse emissions thoroughly, it must have heat to make the chemical conversion to take place... hence "*gasoline engine may not stop*" mentioned in the manual. Remember, cleaner emissions than traditional vehicles is a priority for Toyota's hybrid system. Engine warmth is used for that, but is clearly not necessary for propulsion.

So, what you see in the manual is a misunderstanding. For Prius to be cleaner than traditional vehicles, it requires heat from the engine... hence the "*warm up*" mention.

5-27-2019 **Too Soon.** I liked this particular question: *"How is the Volt being "Canceled" a way to rationalize that it's too soon for Toyota - when in fact plug-in's growth has been at a much faster rate then hybrids market begin to grow?*" Since it was the obvious cherry-picking to limit scope, answering was easy; As mentioned countless times by me, the "*EV market*" narrative is not representative of what we will see once this early-adopter stage (clearly defined by tax-credit availability) comes to a close. Statistical misrepresentation is a really easy trap to fall into, especially with generous subsidies involved and an ample amount of low-hanging fruit. That next stage in rollout process is far more difficult and Toyota much better positioned to address that. Anyone can build an expense electric-drive system. Making it affordable and available on a wide variety of platforms is an entirely different matter. Toyota's distribution of HSD is an undeniable example of that. Remember, the upgrade to deliver the full EV driving experience only requires the adding of a one-way clutch. Having the rest already in place provides a simple next-step forward. Since there is no other platform using Volt technology available, Volt itself is no longer being produced, and no hybrid version of any SUV offered, whatever term you want can be used to describe situation GM customers now face. Semantics is a moot point. It is obviously "*too soon*" for GM.

5-27-2019 **Someone Asked.** I responded to inquiry with: Once upon a time, there was a blog for Volt. It innocently started out as a fan website, but over time became a source for fake news. This was long before the term had ever been coined or the understanding of how much damage such a entity could cause. It was a group of enthusiasts who because masters of hype. Making ambiguous automaker releases into unrealistic expectations people would believe became a daily ritual. They would fight anyone who questioned their ways. The ability to hide behind an anonymous posts made it especially inviting for those who just plain didn't care about integrity. Fortunately, it was doomed to ultimately fail... and finally did.

5-28-2019 **Marketing.** This is difficult to understand: "*Perhaps if Toyota made some sort of effort to sell their hybrids?? What would happen if the Toyota marketers got with some of us here on PC and we could coach them on these amazing cars?*" So, providing the response got a little involved.

They are! This is why "*know your audience*" is so vital.

2019 brings about 4 new hybrids. Prius AWD was introduced early in the year, but has a focus on winter driving... which won't arrive until late in the year. RAV4 is a next-gen rollout, so it's facing sold-delivery & back-order situations. Corolla is a brand new hybrid for this market, so there's a lot to address simply from the dynamic that introduces. Highlander next-gen won't be available until later this year.

With all that going on, in addition to the mid-cycle upgrade of Prime and the introduction of the new look for Prius, we can see that Toyota's effort to sell is well underway with dealers... who are their primary audience, since they are the ones who actually purchase Toyota vehicles. The dealers will be working to get their salesperson trained to handle marketing later done by us... who are the secondary audience, since we'll be doing a bulk of the promotion.

Near year end, we'll very likely be getting ordinary advertising. Getting all that in place in the meantime is a major undertaking, to even just properly address the final audience... who will be driving home in one of those new hybrids.

Remember, there's a major shake-up in the EV sector right now. That will most definitely impact the rest of the automotive market. So, steering clear of that... simply by doing other stuff (like dealer prep) in the meantime... is a wise use of that beneficial delay.

5-28-2019 **Paradigm Shift.** This troll just keeps at it: "*yes, but the sales weasels don't. they only see the bottom line*". His style was reflected well with that... never change. It's quite annoying, as is his approach of all lowercase, never quoting, and being exceptionally vague. This is one of those situations where anything different is unwelcome. In other words, he just likes to complain. You know the type. Fortunately, the world around him is changing. This time, it's going to be rather big too. The pattern of stereotypes & misconceptions only lasts so long. I pointed out: That misconception of "tough sell with little to gain" needs to finally be squashed. RAV4 hybrid is proving the very assumption you just contributed to incorrect... hence the next class. Far too often, we see discussions online focus entirely on micro-economics with no regard to macro-economics. They focus on doings of the automaker only with respect to a very narrow scope... like a single vehicle for a limited audience. At this stage, that's harmful. It holds back the work needed to grow the market. In other words, don't be an enabler of the status quo. We now need to move beyond the stage you had been part of. This next one... mainstream acceptance... is very, very different. That means really making an effort to understand the new situation, known as a paradigm shift.

5-29-2019 **Ford Escape 2020.** We actually got a little detail today. This new upcoming hybrid from Ford will use a 2.5 liter four-cylinder engine and will have a starting price of $29,350. The estimated efficiency is 39 MPG combined. Sounds like they'll have a popular choice. Hearing that is on the way provides a glimmer of hope. Such silence from Ford was painful. Nothing seemed to be happening. It made sense though. Why do anything that resembles GM behavior? Not having anything green whatsoever in the SUV category was an indication of trouble to come. There's simply nothing to argue about. No attempt to change the status quo is a very real problem. Something at some point will give. This is good news.

5-31-2019 **C-HR EV.** There was an unveil today. That ended rumor, speculation, and doubt. It leaves antagonists in a pickle. Of course, they'll come up with something else to complain about. Losing their favorite scapegoat leaves damage-control efforts a mess. It's all about setting realistic expectations. They don't... hence being enthusiasts. A true supporter won't do that. They'll make a sincere effort to really understand the market. They don't operate on hype & hope. Toyota doesn't either. We'll eventually get that C-HR or something similar here. That's the way Prius started. In a less fickle market, shaking out refinements takes time. There are tradeoffs which need to be measured in real-world driving. Both engineering & management have choices to make based upon that feedback. It's how you reach the wider audience, beyond just enthusiasts. Toyota doesn't want a niche disaster that GM had with the now dead Volt and still has with Bolt. In other words, we're in that limited rollout stage. Think about how much that did for Prius PHV, since it was just a mid-cycle offering and only made available in 15 states. We're witnessing the same now with Prius Prime. Toyota limited rollout to select regions, without any real push. It was clearly an effort to collect real-world data for the mid-cycle upgrade. Once that is in place (the 2020 model), we should see it nationwide and in much greater quantity. Patience pays off. Unfortunately, few online are willing to practice such waiting. They want it now. Gain in the short-term is an unfortunate expectation with sometimes terrible consequences. Thankfully, Toyota doesn't play that game. Being "*late*" to a party you don't actually want to be part of isn't so bad.

6-01-2019 **Uncertain Future, part 1.** Constant attacks on Toyota make it obvious those enthusiasts lost without that daily blog are struggling without a plan. Having been caught in lies to cover up reality crashing down on them clearly had the long-awaited impact it should. Each time a goal was missed, there was downplay & deception. It was nasty at times. Focus on just engineering alone was a flawed approach. Combined with the overkill attitude, precedent was set. Failure to deliver business need was inevitable. I was annoyed from the start. There was such an obsession with speed & power, the claim of leadership was nothing but vanity. I coined it the "*trophy mentality*" problem. Want clouded judgment. Their desire to project beliefs they had were actually needs for everyone never had merit. That doom took a very long time to play out though. GM milked it for all they time they could drag it out. 200,000 sales is quite small, especially for such a large automaker. I still remember Toyota setting their annual hybrid goal for 300,000. It was for 2005, which was 8 years after rollout. That was not only achieved, it was exceeded. There was no tax-credit available here in the United States back then either. For the 10-year anniversary, the goal was bumped up 40%, to a level 430,000 annual. It seemed quite realistic, since 2006 sales actually reached 315,000. When the goal for 2007 was achieved in late 2007, we were told by Toyota about their next goal: 1,000,000 by 2012. Well, you know how the story goes from there. That goal was achieved and annual sales continued to grow. Now, we have a vast array of hybrid choices and a stage set well for plug-in hybrid opportunity. Meanwhile, we haven't heard anything at all from GM. Even the enthusiasts are dead quiet. The daily blog has resumed posting too. So, I'm going to find out what's going on by attempting a post myself. It's difficult to tell if that will be allowed. There are only 4 messages and those were from hard-core participants. We'll see.

6-01-2019 **Uncertain Future, part 2.** Here is that post:

Rewind to the end of 2008, back when GM was preparing their bankruptcy recovery plans. At that point, the Volt concept was 2 years old and this blog was quite active. I was among the top participants (as listed on the homepage statistics) and was known for my concern about GM not actually following through with their intent to deliver a high-volume profitable plug-in technology. In fact, I shared the same sentiment later expressed by the bankruptcy recovery task-force: "*too little, too slowly*".

Enthusiasts of Volt assured me there was nothing to worry about, GM was investing heavily in Volt and believed strongly their approach would squash both HV and EV offerings. It was to be the industry leader, that technology would grow to levels of acceptance yet to be imagined. I continued to push concern, raising issues over the years about the absence of diversification and catering to niche interest.

There was only a finite quantity of tax-credits available, opportunity was being lost. So reason for the push to move forward was genuine. Volt rollout proved to be a disastrous misalignment of priorities. It was impressive technology poorly implemented. The form & function didn't appeal to GM's own loyal customers. That path to sustainable sales for their dealerships has been jeopardized for the sake of image.

The promise of that push to develop a portfolio beyond Volt wasn't going to happen. That was overwhelmingly confirmed upon learning what gen-2 of the technology would deliver. GM followed the path of praise rather than taking the business situation seriously. No variant in a form similar to their current fleet was to be delivered. Status quo would remain unchanged.

8 years following rollout, word was shared that Volt production would come to an end without any successor. No progress would be made by GM to advance their plug-in hybrid technology. It was to be abandoned in favor of the antithesis they had promoted so hard against, full electric vehicles.

Say what you want about this summary, from a participant who was their on the front lines from long before Volt's concept reveal. Call it online spin. Claim it is a narrative. There is no hiding the reality that a plan forward from GM is still needed. How will the automaker quickly transform a bulk of their fleet to something other than guzzlers without any type of battery-pack?

After all these years, the efforts to electrify haven't resulted in actual change on the showroom floor. Loyal GM customers go to dealers to replace their aged traditional vehicle with a new traditional vehicle. No hybrid. No plug. Nothing by the same old guzzlers.

6-03-2019 **11-20 Years.** I found this quote today intriguing: "*People now care much more about reliability & resale value for years 11-20 of a car's life.*" It is pretty much just a moot point though, as I explained: There's an interesting twist to that. Yes, they do indeed care. But when it plays out, they don't actually keep the vehicle that long. It is statically extremely low (at least here in a northern state) for vehicles to survive that long. The seasonal changes age the vehicle to the point where upkeep to keep a guzzler going simply isn't worth the expense. There's also the reality of human nature. Desire for something newer compels many to replace, even if there are a few years left on the vehicle. Those end up in the used market, skewing the ownership trail. Dealers will sometimes dump those vehicles on buyers who purchase in bulk for resale elsewhere.

6-03-2019 **Real Change.** This was another that caught my attention: "*Dead-cat bounce? Follow the number back a decade or so, hasn't it slowed appreciably.*" People look at sales from various perspectives. I'm often dealing with the difference between micro & macro. That, in itself, represents enormous variance. Each has its place, yet still related, while telling stories of outcome that conflict. Since most online don't ever bother to take the time to really understand and even fewer make an effort to be clear & concise, it's basically a hopeless battle. Opening eyes to see what could be requires that. Most don't see the problem until it's too late though. Volt was the ideal example. Enthusiasts fought and fought and fought, claiming I was making up stuff with the intent to undermine. That took an monumental amount of denial. They worked so hard not to see what was obvious to so many. Oh well. That's over now. GM failed and will hopefully move on. The effort to actually make an impact isn't just a matter of squeezing in a much battery as possible. Did they really think that would actually work? Anywho, I posted this as my reply, pointing out a great example of progress: Very, very, very different market back then makes direct comparisons impossible. The measure of success is based on the progress of traditional vehicle phaseout. RAV4 hybrid is reaching a new audience. That impacts the status quo. Real change is happening.

6-03-2019 **Nonsense.** This closing statement was a real head-scratcher: "*...and a lot of the advantages of a pure EV are lost.*" It was supposedly a rant about PHEV being nothing but a short-term bridge to the future. Remember all that "*stop gap*" nonsense years ago? I wondered if that was more of this. Unfortunately, none of the paragraph preceding it provided any clarity. What could possibly be a strong argument point? It eluded to nothing and Volt enthusiasts worked hard to demonstrate there was nothing lost. So, I really wanted to know what in the world he was referring too. The answer to follow my post was a big disappointment though. Turns out, he had mixed up the two terms and not even noticed. That left me wondering about context. Something still wasn't right. But like many who get caught posting something misunderstood or in error, you rarely ever get constructive follow up. So, I didn't bother. This is what I originally posted: My entire commute in my PHEV is entirely electric. I enjoy the silent cruise on the highway in total comfort without using any gas. Advantages of the all-electric drive is quite obvious. Claims about that EV experience somehow lacking something is nonsense.

6-04-2019 **Between?** On that same thread as the nonsense post, we got this: "*Now that the Volt is all but gone, it is a greater separation between EV and PHEV*." It was apparently an effort to push the two apart, kind of like the failed effort to define EREV. Posts on that topic were both vague and contradictory. They changed over time too. So, any lack of clarity on it now meant future replies would be even weaker. It's yet another attempt to market by clever wording rather than clever engineering. Ugh. When you look at deal, even if vague, those categories will stir discussion to reveal shortcomings. I started my rebuttal with: That's just nonsense. PHEV like Prius Prime have EV up to 84 mph, electric heat-pump, electric A/C... what more do you need? Reality is, the PHEV has a much smaller capacity battery with charging that isn't a fast. The driving experience is no difference.

6-04-2019 **Codependent.** What happens when 2 automakers become dependent upon each other? Turns out, that has been playing out right in front of us. I questioned how Tesla was able to keep funding new builds. It seemed bizarre that so much capital remained available. How many stock was actually being purchased? Similar suspicions came about for GM. What had the automaker been ok with the abrupt abandonment of plug-in efforts? It seemed bizarre that emission requirements were somehow still being fulfilled. Remember all the clamoring of Volt related to HOV stickers? Each sale resulted in some carbon credits. Without those sales now, how was GM getting enough? Bolt certainly wasn't going to deliver and there aren't any hybrids for that. Guess what. Tesla has an abundance and was more than will to exchange them for money from GM. Eek! That's not a sustainable business model, knowing Tesla is still investing heavily and Model 3 is starting to see hints of market saturation at its current pricing. It's a relationship likely to be strained and with no guarantees. This situation is bound to get interesting.

6-05-2019 **May Sales.** That fall I had been talking about for years is now playing out before our eyes. Every time a Volt enthusiast brought up affordability, they would always include the tax-credit. Portraying it as a guarantee for everyone with no expiration was a doomed approach. If somehow the price of batteries ever dropped so low it would make Volt competitive with traditional vehicles, the benefit would also be true for EV offerings. It was a lose-lose situation. That's why Toyota's effort to squeeze out as much efficiency as possible from both HV and EV operation was so important. That was a win-win. In other words, it could compete. We're seeing evidence of that stage being set now. It's all about preparation. You don't gloat & promote. You quietly get everything in place. I keep telling them to get ready. May sales just brought about more rhetoric though. They don't what to hear this: 2020 model-year brings about a mid-cycle upgrade. That should open up availability to the whole country. The current limitation to just selected regions has demonstrated the potential for significant growth. 917 miles on my current tank. Only used 1/8 of the gas so far (about 1.25 gallons). That's 90% of the driving EV. Works great, highly efficient, no effort.

6-06-2019 **Terrible Mistake.** Seeing this was rather vindicating: "*It's brand loyalty...nothing more. If they had a Prius before they don't even check to see what else is out there.*" That type of generalized assumption without any actual data to support the claim is a clue they don't really have any idea what they are talking about. At least with others, you get some sort of anecdotal observation. In this case, I knew there was nothing... because the discussion leading up to it was completely absent of any history. Watch for clues like that. In the meantime, consider how I responded:

What you carelessly dismiss about Toyota has been a very hard lesson learned for GM.

The disastrous end to Volt came about because GM didn't understand the power of loyalty. Rather than create a plug-in hybrid targeting its own customers, focus was entirely on conquest instead. That's why so many abandoned their Volt when the leases expired and traded up for a Tesla. Those tax-credits were supposed to be used to establish a technology for dealers to embrace, something to appeal to showroom shoppers. In other words, GM did nothing to build loyalty.

All these years later, Toyota has built up a reputation that contributes heavily to both the millions of Prius owners considering the purchase of a new Prius along with a massive armada of Toyota shoppers considering the purchase of a RAV4 hybrid.

Note how easy & obvious the next step for Toyota is. They have a clear path laid out. RAV4 hybrid with a plug is quite realistic. Meanwhile, GM has no expectations set. Neither dealers nor consumers have any idea what GM will do next. In other words, dismissing loyalty is a terrible mistake.

6-06-2019 **Timing.** Toyota announced a partnership with Subaru. The joint venture is expected to result in an EV platform to share. Since Toyota is the biggest stakeholder in Subaru (17% holding), it's a sensible step. There's a mutual benefit for the emerging plug-in market. Of course, some feel the effort is never fast enough: "*Would have liked to see this announcement 5 years ago.*" Naturally, those comments are coming from the same crowd who praised GM not too long ago for being so far ahead of all others, showing leadership among the automotive industry beyond anything we could ever imagine. Well, that certainly wasn't true. GM has fallen to still being roughly 4 years away from having something competitive with traditional vehicles. Ugh. It never ceases to amaze me how some cling to meritless hope, wishing for miracle instead of being practical. Oh well. They can look back at this announcement 5 years from now and wonder how Toyota managed to get everything in place. In other words, you won't see much... since there is no specific "time" to really attribute the word. Preparation is quiet & subtle without ever ceasing. In fact, sometimes so much must happen on such a wide scale, the state of those continuous & numerous small improvements go unnoticed. I put it this way: Other automakers have made announcements and come up way short. So, the timing is a wash. Toyota already has lots of experience to leverage. So not only is the likelihood higher, the probability of it being profitable and competitive with the true competition (traditional vehicles) is quite realistic.

6-07-2019 **Competition & Goals.** There are a lot of clueless people who participate in discussions online. For example: "*It is not just Tesla cars. Other cars like I-Pace, E-Tron and Taycan will be in their second, maybe third generation by then. That means they will be facing a lot of competition...*" That seems innocent enough, until you did for detail. There's nothing of substance. That's literally all some have to contribute. Not having any idea how that is actually achieved is a very big problem. That's why I start by asking "*Who?*" When you discover they don't even have an answer to such a fundamental question, the lack of understanding intent is revealed as a major barrier unlikely to be overcome. Think about what that "*generation*" reference actually means. What must an automaker do for the next step? For that matter, what is the purpose of that next step? Most of the time, you confirm they really don't have any clue... because they have neither the background nor make an effort to find information. It's just a gibberish of guessing and gut reaction. Ugh. I kept trying to get them to think these things through. I rarely makes any impression though: Toyota will be using well proven technology, heavily real-world tested for many years before rollout. Mirai already has great 151 hp traction-motor that would work well in a the shared C-HR/Prius platform. Prime already has an extremely efficient heat-pump. Prime also great use of carbon-fiber. There's also the work done with the variety of hybrids to refine their lithium chemistry. Lots taking place behind the scenes positions Toyota well for competing with the true competition, their own traditional vehicles. So what if other automakers offer different configurations? Conquest isn't the goal.

6-08-2019 **Taking the Bait.** I found this quite amusing: "*His point whizzed right over your head.*" That's when you really know your audience. Someone tried to set me up and another tried to take me down. Both end up disappointed. I don't play that game. It's all about the bigger picture, winning that overall war, not battling online for a tiny victory. In other words, they really don't take the matter seriously. It's just like the daily blog. Many find it satisfying to be part of something, even if it really doesn't accomplish the goal they had hoped for. That's why we see participants disappear. They give up upon discovering a mistake had been made. How is that constructive? Why not just course correct instead? You are supposed to learn from mistakes. I always hope some lone individual will heed the advice & observations:

That's called not taking the bait.

Going forward, there will be multiple types of electrified vehicle, one with a plug and one without. Using the term "*hybrid*" simply doesn't make sense anymore; the technology has changed too much over the past 2 decades. So, Toyota being well ahead of everyone else in the hybrid category, coined a new name for the non-plug hybrids.

Ironically, the more you post about the "*self-charging*" category, the more you are doing to help promote it. Drawing attention is exactly with Toyota wants. It's a page right out of the negative-publicity handbook Microsoft so successfully used. Your contribution is appreciated.

Think about how meaningless "*hybrid*" is now. There are so many different types, coming up with a new identifier is a wise move for the entire industry. After all, other industries do that as the technology advances. For example, the Wi-Fi successor to "*ac*" has been named "*6*". The need was there, just as it is for "*hybrid*".

If you still don't like "*self-charging*", start promoting something else instead. Otherwise, you'll be stuck with it to differentiate between non-plug hybrids and those referred to as "*plug-in*".

6-08-2019 **Bandwagon.** Hearing that Toyota officially has plans to deliver EV offerings is taking some aback. They are spinning it as if there is now a rush to jump on the bandwagon. One individual trying to help bring some sense to the wild discussion stated it this way: "*People seem to think that it just finally occurred to Toyota that electric is a thing.*" My statements that there was an effort already underway in China to target an EV model of C-HR for next year basically fell on deaf ears. Acknowledging that meant nothing more to complain about, that they'd have to admit their scapegoat no longer exists. It makes them feel better being able to say the entire industry could have been much further ahead if Toyota had made such an announcement (actually a 45-page presentation released today, with some video) years ago instead. They never want to recognize the reality that there's far more to just increasing production capacity for battery cells. The reality of the market not being ready and Toyota striving to rollout both platform & technology upgrades in the meantime is just ignored. They don't see all that extra work required to actually setup the business part of the infrastructure as anything more than an apologist attempting to distract from the actual issue. Ugh. Needless to say, I expect the posts to spin out of control. Enthusiasts don't deal with change well. For that matter, enthusiasts don't recognize it. That activity can take place for years and the best they'll do is deny it has any relevance to their demands. I simply stated the situation as: It's like the musician who gets praised for being an "*overnight success*" even though they worked hard for decades to achieve their goal.

6-08-2019 **Desperate Spin.** I suspect the discussion is already spinning out of control, that no aspect of being constructive can be stirred at this point. It's what happens with most of these blog topics. They simply become a venue for self-validation and spreading rhetoric. That mantra of Toyota being cast as a "*laggard*" helps them deal with the reality now crashing down as a result of tax-credit expiration marking the death of Volt. That expensive niche was far too dependent on government incentives. Not rolling out the technology to other platforms... any SUV model... market its death long ago. That is what the investment in Gen-2 should have been. Making their niche hatchback even more of a niche was an obvious sign that interest to continue had faded. In fact, that would have been the ideal endorsement for Volt. Dealers would take carrying it in stock with the knowledge that another offering would be on the way. That would have been a great way to prepare salespeople for an upcoming SUV with a plug. Experience with the technology prior to wide scale rollout is essential. Does that approach sound familiar? It's exactly what Toyota is doing... which is exactly why those in favor of GM are against it. They don't believe in cooperation. There isn't even a spirit of shared goals. All they do is desperately spin the situation. It's really sad. I pointed out that situation will the cold reality of being a for-profit business: Bottom line is none of those BEVs have demonstrated the ability to sell well with subsidies. In fact, most didn't even sell well with subsidies. The claimed growth is still far under what's needed for those businesses to achieve & sustain profit. Treating early-adopter outcome as if it is representative of how ordinary consumers will respond is a grave error... as GM just showed us with failure of the technology from Volt to achieve & sustain profit.

6-08-2019 **Behavior Repetition, Whoa!** I had no idea that same behavior of enthusiasts on the daily blog for Volt would emerge on the large general audience EV blog. It is virtually an exact match. My assumption of that audience taking the time to be open-minded and being better informed due to the wider variety of content was quite incorrect. I was wrong. Gasp! They are making the very same mistakes. These are basic errors you'd think they'd be aware of. Clearly, that's not the case. Ugh. It's just like whenever I'd point out to the Volt enthusiasts how I recognized the response pattern as frighteningly similar to what Two-Mode enthusiasts did. Their reactions were a match too. It was amazing. Now, it's happening again! People who don't learn from history really are doomed to repeat it. This blog spanning nearly 20 years of that activity overwhelmingly confirms it. Whoa! Anywho, after a day of crazy posting, I started a new thread with on that blog topic with this: It has been interesting to read the opinions of early-adopters who don't have an understanding how much change is needed to appeal to mainstream consumers. They look at the situation through a micro economics lens not realizing how different macro will be. They also turn a blind-eye to history, remembering only that fits their preferred approach. Well, too bad you don't like the reality that Toyota isn't taking a different path to the same future. The market is plenty big for that diversity.

6-08-2019 **Behavior Repetition, Obsolete.** My post was quickly responded to with an attempt to undermine the sales growth of hybrids: Rhetoric claims of hybrids fast becoming obsolete are rather desperate at this point. We're seeing very strong demand for the new RAV4 hybrid. 40 MPG from such a large AWD vehicle with a base MSRP of $27,850 is all Toyota customers need to know. They are placing orders and waiting for delivery. It's quite impressive to see such excitement. Meanwhile, there's the new Corolla hybrid. Well loaded with safety features and with a starting price of $22,950 it is also a compelling draw for those shopping for a well-balance purchase from a Toyota dealer. There is a next-gen Highlander hybrid coming later this year. 34 MPG from a 240 horsepower system will make people take notice, especially with such a competitive market in that size category. Obsolete, not a chance.

6-08-2019 **Behavior Repetition, Business.** It never ceases to amaze me how narrow the scope of focus is on discussions like this. Participants will obsess with a particular aspect of the technology and disregard the rest of the business. That's such a fundamental mistake, I cannot believe it happens so frequently. They either don't understand or don't even recognize how the rest of the business works. It's not about engineering alone! Ugh. Failing to gasp the reality that legacy automakers must maintain a continuous and reliable flow of revenue is apparently beyond their grasp. Simple matter of accounting boggle their minds. Why? It's not that complicated. Dealers must purchase inventory they know their salespeople will easily be able to sell. Each sale must return enough money for that cycle to continue. These are all people expecting to be paid. They aren't motived by doing what's better for our world. So, extra effort to make the purchase happen or a reduction to the monetary return is a major deterrent. That shouldn't be difficult to acknowledge. Yet, it happens all the time. Those online fighting me fiercely resist any type of acceptance for that aspect of the automotive business. They just plain don't care. It's sad. The result is a lot of spin. The most comment is to portray Toyota as being "*late to the game*". Ironically, their treatment of the situation as a game shows it isn't being taken seriously. This isn't a game. This is a for-profit business. Even the engineering itself is far more involved than they'll even admit. Knowing that, I kept my reply to the latest response short: Toyota is already producing motors, invertors, pumps, etc. for electric drive in high volume. So what if they associated battery-packs are smaller? Instead, there are the same cells stacked together as a longer range vehicle. "*Late*" doesn't hold much merit, especially when you add in profitability to the equation.

6-08-2019 **Behavior Repetition, Audience.** The truly remarkable aspect of some of the nonsense I have to deal with online is the obsession with more being better. There's no sense of balance. The vehicle must deliver more distance and more power, period. That's absurd. You don't attract ordinary consumers that way. They look for a variety of purchase priorities. In fact, this is why the popularity of online comments posted about products has become such a powerful means of solidifying demand. Remember all those years ago how Toyota got ridiculed for doing little to promote Prius? It was all about empowering their own consumers. Toyota knew long ago that owner endorsements were far more influential than anything they could do. That's precisely why they reached out to that group online leaders. We each had captured & maintained an audience they didn't have the means of effectively tapping. It was the key to growth... something that became a fundamental barrier to Volt. Those enthusiasts always reverted back to GM, never actually taking an action to promote as owners. It was strange to watch such great opportunity passed by. They obsessed with the daily blog, not even bothering to explore what the forum venue had to offer. Ironically, I got attacked routinely for hosting my own personal website to share my experiences. Taking about not understanding audience. Ugh. Needless to say, that same nonsense continued it today's post. I kept my next reply to it short too: Who are you trying to convince about Prius Prime range & performance? Enthusiasts here is the wrong audience. When people hear that I effortlessly drive for many, many weeks without refilling the tank, they want to be told more. When I tell them that equates to over 200 MPG, they ask if charging at home is difficult. I tell them the 25 miles of EV can be achieved with nothing but an ordinary 120-volt outlet. In other words, you don't stand a chance when I finally mention the base MSRP of just $27,600.

6-08-2019 **Behavior Repetition, Naming.** Confusion for the naming of Bolt, being mixed up with Volt, was no accident. It was clearly an intentional act to provide damage-control ahead of time. GM already knew Volt was in trouble. Calling attention to their abrupt and rather drastic objective was something to be avoided at all costs. Bolt was the antithesis of what Volt had been designed to compete against. Promotion of Volt shows that extremely well. Remember all that "*range anxiety*" advertising? The discussion today certainly didn't. In fact, someone attempted to take advantage of that damage-control mechanism by trying to mix up my reference. My focus has been entirely on Volt; yet, he claimed I had referred to Bolt. The hope was that slip would go unnoticed. It didn't. I called him out on it too: Interesting how even you mixed up a Bolt and Volt reference. Some of us called that problem out right away, seeing that GM would benefit from the confusion later. And sure enough... As for what I actually did say, I did indeed point out the mistake GM made with Volt. They fell into the innovator's dilemma trap by catering to enthusiast want rather than striving to understand mainstream need. It was the very same mistake they made with Two-Mode. Had GM really wanted to "*out Prius, Prius*" the approach would have been different. Gambling with an overkill design set to an expectation of achieving high-volume profitable sales by mid-cycle was nuts. That simply was never realistic. Pushing out the expectation to gen-2 could have worked if the design had been altered to appeal to their own showroom shoppers. GM didn't do that though. As for the abrupt decision to abandon the technology in Volt to pursue its antithesis instead, that doesn't make sense. There is clearly a market emerging for a Trax or Equinox as a plug-in hybrid.

6-08-2019 **Behavior Repetition, Forest.** Much of the conflict I deal with online is those participants tend to only see a single tree. When you're in a forest, that's a very bad problem. Ignoring everything else around you is a terrible mistake. Yet, that's what they do. In fact, they argue it's all that's important. Ugh. It's that single-mindedness I keep referring to. They refuse to acknowledge more exists. I do my best to point out there is far more to recognize & consider: Looking at just the hatchback market creates a very distorted view. The next-gen RAV4 hybrid is selling remarkably well and the newly introduced Corolla hybrid is showing lots of potential. As Prius transforms from predominantly being a hybrid to just a Limited and AWD offering with the rest PHEV, we'll see those others sour appeal for their traditional counterparts. Have you noticed how nice the 52 MPG Camry hybrid? Right now, effort is being focused on Toyota's primary customer, their dealers. Those are the ones who need to be convinced the automaker is committed to wide scale change. Toyota is a for-profit business after all. Enthusiast obsession with conquest is not a wise path to follow. GM learned that lesson the hard way with Volt. Rather than diversifying their technology as Toyota has done, they catered to niche interest. That was a terrible mistake. That midsize electric sedan you predict will be shipping at 500K per year isn't a realistic forecast. The market will be saturated and the tax-credits used up. It will make that expectation of continued market growth far more of a challenge... even without taking into consideration offerings from legacy automakers. Tesla sales will plateau or even fall at some point in the not too distant future. In other words, the time will be right in a few years. In the meantime, there is a very hard push coming from Toyota to phaseout traditional models. Getting their dealers to favor hybrid choices will give Toyota a major advantage over the other legacy automakers hoping to skip that step. Think about how each automaker will need to entice consumers to purchase a plug-in. There's a lot more to it than just rushing out a one-size-fits-all solution.

6-09-2019 **Behavior Repetition, Oblivious.** The situation is not only dismissed, it's claimed as an extreme: "*If you read the Innovator's Dilemma, you would realize Toyota's approach is 100% wrong.*" That was the response to the ongoing discussion about Toyota's announcement 2 days ago. There are a few who will deny what they witness, doing everything they can to distort reality. It's quite an act of resistance to observe. They'll never admit to not recognizing something. When an important aspect of a situation is overlooked, they'll just outright dismiss it. If I push the issue, I get personally attacked. They're purpose is to win arguments, not to actually address the topic. Ugh. This is how I dealt with that dilemma claim:

Toyota has diversified their technology. We now see it taking 3 paths. RAV4 hybrid, Camry hybrid, Corolla hybrid are all successful implementations of the original Prius offering. Each is contributing to the goal of traditional vehicle phaseout. Prius Prime demonstrates how effectively (simple & profitable) each can be upgraded to offer a plug. C-HR hybrid is a raised Prius platform, offering the height required for more battery-capacity.

None of that shows any sign of innovator's dilemma. Toyota carefully studied their dealers & consumers, then responded accordingly to serve that extremely wide audience.

You want an example of a legacy automaker who did the opposite, look at the disaster Volt became for GM. It started out as a risky approach, one that didn't make sense for the business. How could such an expensive design, one that clearly exceeded requirements, attract & sustain profitable sales? Gen-1 didn't even remotely achieve that goal. GM made the problem worse with Gen-2 by listening to enthusiasts (their own early-adopter customers) rather than finding out what people on their dealers showroom floors would be interested in... hence, falling into the trap. Taking even more risk resulted in a production abruptly ending midway through its product cycle. That's a very expensive problem. The technology died without a successor. All that promoting of EREV as the solution rather than EV fell apart as a costly mistake.

Toyota has a clear electrification path, as the 45-page presentation spells out. They are striving to appeal to dealer & consumer every step of the way, which is very appealing to stockholders. Everyone will see a strong commitment to phasing out traditional vehicles by offering a variety of electrified choices.

Again, none of that resembles being 100% wrong.

6-09-2019 **Behavior Repetition, Silly.** This is what I got when in reply to the audience post: "*That's a really silly argument. The charge time is related to actual battery consumption. The only reason the Prius Prime can be recharged overnight is because it has a pathetically small battery.*" It was the typical type of rhetoric I had dealt with for years from Volt enthusiasts. Some just plain don't care about mainstream sales. Their niche was "*vastly superior*" and any less was a target of insult & ridicule. Ugh. I was annoyed, if you couldn't tell: You're calling Toyota's effort to appeal to ordinary consumers silly? $5,920 lower base MSRP for Prius Prime than Volt is clear evidence of striving to do that. No dependency on tax-credits, which is very much what contributed heavily to Volt's death and no EREV successor. It's a sound business approach, especially when embracing change on such a large scale. As for claiming "*pathetic*" to the size of that battery, that's a obvious effort to conceal the reality that Volt's is too large to be practical for a 120-volt connection. 13 hours for a full recharge is a very real problem. If you start recharging at 6 PM, you'll be good to go at 7 AM for the morning commute. That means you'd have to charge during peak load and wouldn't have a car available for going anywhere after dinner. Remember, adding a 240-volt charger and line to your garage add to both cost & complexity. People want an affordable plug-in choice that's simple to purchase. Know your audience.

6-09-2019 **Behavior Repetition, Vague.** Typical response to getting cornered is to change the topic, being extremely vague in the process: "*The problem with Toyota's analysis is that once supply of BEVs is sufficient there is going to be a wave of government regulation essentially banning the sale of IC engines for everyday use. The health impacts and the environmental impacts will force their hands.*" I'm quite familiar with that tactic. It usually doesn't equate to much. That basically just serves as confirmation to me that they have nothing to argue with about my point and have given up. Despite that, I do ask for detail: Who? When? Where? If you think other legacy automakers have a more comprehensive and faster plan, dish up. Let's here about GM's plan to rollout hybrid, plug-in hybrid, or EV offerings for their primary product: SUV. Toyota is already deep into RAV4 hybrid (which is easily adaptable to offer a plug) and the new Highlander hybrid is coming later this year. Ford is going down a similar path. It's expensive and takes a very long time to get in place for high-volume production & sales. Vague claims about "*regulation*" don't mean much. Bans are extremely difficult to implement... especially when "*health & environmental*" impact is involved, since Toyota hybrids already directly address those issues. In other words, what is the goal? Without that clarity, investment in the needed infrastructure to support whatever regulation is proposed won't happen. Change cannot happen in a vacuum.

6-09-2019 **Behavior Repetition, Downplay.** Becoming absolutely desperate at this point, I got this: "*That's just a HEV, a mild hybrid; that's old tech. Toyota has been remarkably resistant in pursuing plug-in EV tech, let alone BEV tech.*" It's just like nonsense of the past. Repetition of the same old behavior with the hopes of impeding the progress Toyota continues to make is something I'm all too familiar with. Ugh. It's such a recognizable pattern. You'd think there would be something to make it different over time. That's not the case though. Over and over again, with nothing new, really surprises me. I'm in dismay at this point. There's no way they can get away with the deception. In this case, it's an attempt to downplay. With such impressive offerings now, how does anyone think it could work? I punched back with: That attempt to downplay a 219 HP system delivering 40 MPG plus AWD plus 1,750 pounds towing capacity for a base price of $27,850 is quite telling... and ironically, fitting. Reality that the technology is designed for plug augmentation simply by adding a one-way clutch, just like what was done for Prius Prime, is clear evidence of Toyota planning ahead... forward thinking, not backward. They'll be able to advance their entire fleet with little to no disruption of business. It's a sensible plan... hybrid to plug-in hybrid to electric. That's the fastest way to get large-scale change for a extremely diverse audience accomplished.

6-09-2019 **Behavior Repetition, Late.** It's getting to the point of being unbelievable: "*The only way to make EVs price competitive is to actually start making and selling them in large numbers.*" Dealing with individuals that have no background related to business is difficult enough. But when they don't even bother to try to learn what's involved, it's like shooting fish in a barrel. They set themselves up for failure. It's impossible to actually win an argument when you don't know what the argument is about. Ugh. Now I'm in dismay. How can certain people be so blind to what actually makes a difference? I tried to point out the lack of understanding and provide some reasoning why. The behavior repetition doesn't provide any hope though. This same old nonsense will continue elsewhere with someone else. My old foes are long gone now. They death of Volt silenced them. Now, it's new misleading to deal with. Not even trying to understand... Here's how I replied:

That grossly over simplistic claim is why each time there's a "*Toyota is very, very late to the game*" post, it is validation of either being poorly informed or being disingenuous.

Of course, who here is gullible enough to believe that anyway? We know there's far more involved to making a vehicle price-competitive than to simply building more of them. Volume does not equate to being a better product.

Toyota is using their current electric deployments to make the future ones better. That 151 HP motor in Mirai would make the next plug-in Prius really nice. The carbon-fiber already in Prius Prime is proving extremely durable for the hatch. Using it elsewhere in the next-gen offering would be a nice improvement, since reduced weight means better efficiency by not needing as much battery to travel the same distance. The improved aero-dynamics from the dual-wave glass is another efficiency benefit. Then there's the heat-pump, an impressive use of electricity for keeping the cabin warm that other automakers have yet to use.

In short, Toyota is already working hard to get costs reduced. Each time they refine the motor, invertor, or software in their hybrids, that gain is transferred directly to EV efforts. The same goes for any improvement they come up with for lithium chemistry used for those battery-packs.

Put another way, the spin that Toyota is woefully behind just a lame effort to mislead.

6-10-2019 **Tundra Hybrid.** Someday, it will actually come. The whole world is waiting for that day, when a full-size pickup actually gets a full-hybrid offering. Toyota is a strong contender to fulfill that desire. The latest rumor comes about from some spy photos of what appears to be a mule. The photographer claimed acceleration that was silent until about 30 mph. It gave the impression of being a hybrid. Knowing that the Lexus LS 500h sedan already implemented a comparable propulsion size requirement (354 horsepower from a 3.5 liter six-cylinder hybrid system), that isn't too far fetched of a hope. That setup delivers a 33 MPG rating. Seeing the same thing in a pickup delivering around 30 MPG would be remarkable. It's fairly realistic for efficiency. We expect the next-gen Highlander coming late this year to deliver about 34 MPG. When you look back at Toyota's big picture plan, the entire fleet getting a hybrid choice was an expectation. After all is said and done, that is the outcome you'd want. Within the next year or so, that's reasonable. Despite all the problems other automakers have, it's not a problem for Toyota to invest heavily and relentlessly try until they get something competitive to offer. You may not hear much along the way, but results speak for themselves. The latest victory... RAV4 hybrid... make it clear that never giving up is their mantra. That slow & steady of the tortoise means crossing the finish-line at some point. Being able to pass others along the way is a nice reward for the effort.

6-11-2019 **Unsustainable.** How long can that terrible repetitive behavior be sustained? At some point, there's no audience left. The pattern of deception becomes noticeable. And even for those who are not bothered by such terrible practices, they don't want to waste their money on garbage. They will seek out a better deal. This is why virtually all the GM enthusiasts jumped ship. It is no surprise that so many of those who leased a Volt are now driving a Tesla Model 3. As much fight as there was about my claims of Volt only appealing to a small audience, there's no doubt anymore that I was correct. That asking of "*Who?*" was a sincere effort to raise concern about the terrible direction GM had turned. It was movement, but not advancement forward. Racing off on a tangent to serve a niche was a massive waste of opportunity. After the tax-credits are gone, there's nothing to show for them. The fleet remained unchanged. You go to a dealers lot and look around. What's different after all these years of Volt sales? With Toyota, you see a wide variety of hybrids. So what if only a single model currently offers a plug? The next step forward is easy, a simple move that customers will readily understand and dealers will need little effort to sell. It's a logical approach to traditional vehicle replacement. The chaos stirred by GM with Volt was just a smoke & light show. What did it really accomplish? The rhetoric amounted to a time & resources lost. Ugh.

6-12-2019 **Up to $11,500 Off.** Today was a strange day. As the attacks on Toyota settled down, we got news of extreme discounts for Bolt. The advertisements said up to $11,500 off MSRP from now to the end of September... which coincidently is when the tax-credit phaseout reaches its final phase (only 25%). Naturally, there was a wild amount of spin. None of it made any sense though. We're seeing the same fallout we do every time from GM. On the third year, hope can no longer be saved. The market is saturated at that point. Any enthusiast interested in a purchase already purchased. And since GM does nothing but appeal to enthusiasts, there's nothing left. Notice that pattern? Two-Mode. Volt-1. Volt-2. Bolt. Each one suffered the same fate. In year 3, the mess became so unmanageable, drastic steps needed to be taken. At this point though, what is there to save? I found it amusing how someone interjected: "*GM is stockpiling ZEV credits (it has enough for meeting requirement now) in anticipation of the future*." Reading the news, you'd discover it was actually preemptive damage-control or intentional misleading. Either way, GM announced a $150 million investment to ramp up production for Chevrolet Silverado and GMC Sierra. It's like the current administration lifting restrictions to allow sales of E15, as a move to help out farmers struggling from the new tariffs. What you aren't told is that entities are being granted waivers so they will not be required to purchase more ethanol. It's a scam to make you feel better... much like GM's ruse by offering EV sales. There are really only token quantities, but most people never notice. They praise GM for doing more, when in reality, they are not. Just think of how pleased those new owners will be with such discounts. Their customer-satisfaction rating will be outstanding. Environmental impact though will be negligible, since those loud voices will actually be so few. Such discounts do nothing for a business being profitable either. Long-Term sustainability must be achieved through actual advancement forward, not markdowns to get rid of old inventory. Who knows, perhaps this is a move to clean house. A new offering that's far more realistic should eventually be taken seriously.

6-13-2019 **Dead Blog.** My first clue that the daily blog for Volt was destined to turn into a sight to feed antagonists (now more affectionately referred to as "*fake news*" websites) was the response to a Toyota presentation. None of the totally unrealistic expectations being set for GM could stake up to simply lying about what Toyota said. Volt becoming yet another "*over promise, under deliver*" example paled into comparison of outright misleading like that. Toyota had shared their intentions for the future, highlighting how expensive lithium battery-cells were still. It was all about being affordable. Those enthusiasts turned antagonists immediately spun that to an interpretation that Toyota feared the dangers of lithium chemistry. Word spread quickly about those claims of fear, even though people could look up the presentation itself to confirm nothing of the sort was actually stated. Sound familiar? That's exactly what this administration is doing now. They refer to a report and just make up information about what it is claimed to have said. Those are outright lies that enablers are all too happy to endorse. It's blatant greenwash. Attempts to undermine like that are dishonest and will ultimately come back to haunt those who spread such nonsense. I saw how that was a cover to conceal Volt shortcomings. Rather than endorse the technology, they attacked supposed competitors. That's why I constantly had to fight back whenever I shared information about the technology. They feared detail would reveal Prius could continue to stand up against misleading, that the design was an excellent balance of want & need. It was a fundamental mistake. Had they understood the "*Who?*" question, their beloved blog may not be dead now. We keep getting new articles, but almost no one posts anymore. Rather than the old routine of over one-hundred posts daily, there are only 2 or 3 now and sometimes none. What they held most dear was false promises and meritless hope. I'm glad to see it finally dead. They brushed aside the sincere "*too little, too slowly*" concern... which now the consequences of are undeniable.

6-14-2019 **Review Misleading.** It's starting up again. There are articles being published that pose as reviews by credible reviewers. In reality, this is "*fake news*" material being created to spread the narrative of shortcomings. The death of Volt appears to have emboldened some hoping to undermine progress. Seeing their blatant lies in print again sends a renewed message of desperation. This reminds me a lot of the diesel trouble. When the threat from Prius got intense, they'd fight back with efforts to mislead & misinform. That lack of integrity and at time outright dishonesty speaks volumes. I've learned how difficult it is to combat such activity; however, I am now armed with better online combat weapons. My videos continue to evolve, becoming even more informative while delivering even higher quality. That provides a means of reaching audiences those deceptive articles serve to confuse. Watching that level of detail will make those uncertain question what was claimed. All that sparring I did with Volt enthusiasts prepared me for this reach to mainstream consumers. I knew there would be an onslaught of attacks to come from those fighting to retain the status quo. I knew my audience. It was not a bunch of early-adopters taking advantage of a generous subsidy to purchase a niche. This is serious. Getting an ordinary shopper to take interest in a plug-in Prius means overcoming the endless stream of attempts to impede the reach beyond anything any of those GM defenders were willing to actually face. Change isn't easy. Reviews like the ones we are seeing now reveals some of the many barriers they continue to erect.

6-15-2019 **Toyota Op-Ed.** It was very nice to read a comprehensive op-ed submitted by a rather outspoken Prius Prime owner. The article was published on the big EV blog. Knowing how much potential Prius Prime has among that overwhelming jungle of EV choices, it was an especially big deal. The reason should be obvious at this point. The market for EV choices is saturated. Early-Adopters jumped on the tax-credit opportunity. Tesla emerged as the short-term winner, but there is no sense of certainty or direction now. We'd like to hope momentum will continue, but that's not how the mainstream market goes. Those buyers have very, very different priorities... which the op-ed pointed out, highlighting Toyota's recent presentation. I waited 2 full days before posting anything on that topic. It was important to find out what others had to say before chiming in. When I finally did, here's what I posted:

We all watched GM game the system for conquest while Toyota quietly used their hybrids to refine their technology. So what if those electrification refinements are used to benefit both EV and FC offerings? Driving needs variety dramatically and diversity is good business. Token efforts from other legacy automakers haven't many any impact to their own showroom shoppers.

Notice how Toyota is striving to reach a very wide audience now? They've captured some market with Prius, now they will capture more with RAV4 & Corolla hybrids. It's a sensible approach to set the stage for plug-in hybrid rollout. As this op-ed points out, the path to a profitable upgrade from hybrid to plug-in hybrid is only a matter of adding a one-way clutch and increasing battery capacity.

Toyota is a legacy automaker with a strong production, distribution, and sales. That means taking the time to ensure they truly meet their own customer needs is well worth it. No rush from early-adopter expectations will fulfill long-term goals. This is why Prius Prime was only rolled out in limited quantity to limited markets. Responding to feedback with a mid-cycle upgrade is a sensible approach to mainstream acceptance.

There's also the consideration of legacy fallout. Volt had such a heavy dependency on tax-credits, the opportunity for growth wasn't possible. Notice how their reveal immediately followed GM phaseout? Toyota patiently waited continuing with refinements to reach a very large audience every step of the way.

The potential is enormous. Traditional vehicles much quickly be replaced with cleaner choices right away. Toyota is leading that effort to transform their entire fleet.

6-16-2019 **Prime Time.** We got a video share last night featuring the first known 2020 Prius Prime available for sale. This is what I had to say about what I saw:

Takeaway from this first dealer video is the reveal that Toyota stayed true to their objective of reliable & affordable. Since they are now setting goals for the next-gen design, it only makes sense that they know far more than we do. We've seen this many times already. Toyota carefully studies the market as a whole and adjusts accordingly. That "plan way ahead, but remain flexible" approach makes some people crazy. I think it's great, especially when they take risks. Ironically, antagonists are the ones claiming Toyota doesn't take risks, yet they work extremely hard to hide the fact that it actually happens.

Trying a 4-seat configuration is the "Prime" example. It made sense back then to experiment with layout, knowing the "car" market was on a major decline. Prius needed to be redefined to retain an audience. That's normal next step after being a top-seller for several generations. In this case, we learned the middle seat remains an interest draw, despite the fact that several alternatives are available... Corolla hybrid, Camry hybrid, RAV4 hybrid. Toyota had originally targeted aged families for Prius Prime. Remember? They no longer need that middle; however, new uses... like Lyft & Uber... have emerged since then, raising the question of need again. Toyota adjusted accordingly.

Key is keeping design both reliable & affordable, while still remaining a draw. By adding back that extra seat, it makes phasing out the regular hybrid realistic without upsetting the balance of the overall fleet. It's now easy to see Prius being offered as just 3 variants... Limited, AWD, and Prime. That's what we hoped for all along... Prius turning into a choice that highlights the plug. In fact, that reinforces the "self-charging" promotion. Toyota is setting the stage well in advance. It's their forward-thinking that often takes a beating from "anti" rhetoric, but triumphs in the end.

Beside the seating decision was the battery-pack configuration. That was another big risk. Toyota had the choice between cargo capacity and kWh capacity. The decision for initial rollout was to bring back the raised floor. It's what we saw back with the prototype for Prius PHV that ultimately didn't make the cut. Knowing Prius Prime would be a limited rollout until mid-cycle, it was realistic to try the approach again. Why go from 2 to 4 stacks when you could squeeze in a 5th stack? They were designed to be extremely robust with a heavy emphasis on being affordable.

We now see that Toyota liked the results of their real-world testing. Data collected has so far proven those stacks are very reliable. And since reputation for reliability far outweighs cargo capacity, I back that as a wise choice. As much as I would have liked a better fit, the fallout related to Nissan's reliability decision reinforces taking this route by Toyota. After all, affordability is a difficult tradeoff and fitting cargo into Prius Prime hasn't actually been an issue. Remember, affordability also includes warranty coverage. Toyota's focus is on long-term and we know for a fact any increase in EV is a draw to the Prius audience.

With RAV4 hybrid selling exceptionally well and the fallout of GM continuing to get worse, we see Toyota's effort to position themselves to ready Prime for primetime could

really pay off. The market attention on legacy automakers to deliver something now is getting intense. Early-Adopters may praise "in the next few years" announcements, but that's not what ordinary showroom shoppers want. Seeing dealers embrace Prius Prime for 2020, because it fits well into their inventory and basically sells itself, is an expectation we can realistically see happening.

Very long story short, it's time!

6-16-2019 **Public Charger.** Asking for advice like this is great. A new Prime owner will be taking a highway trip and wanted to know what specific service for charging would be best. It doesn't actually work that way, as I explained: Signing up for just one service is like shooting yourself in the foot; however, that will be changing... not yet, though. The reason why quickly becomes obvious after you've tried a few. Even among a specific network, you'll find the experience varies dramatically. It comes down to each charger owner choosing how the equipment is used and how it will be paid for. I've seen quite a variety. Some are entirely free. Some are free for just the first hour. Some have a per/kWh fee. Some have a few based on time. Some have a flat fee. Some have an unlock fee, then add a per/Kwh fee. It's set at the discretion of the owner, not the service. I suggest using a cover-all-chargers type app, like PlugShare. You'll get reviews & photos from users. Those can be extra informative, especially since presence of particular services can be limited. You'll discover a more generic location finder will tell you more.

6-16-2019 **Understanding Dilemma.** It took me 2 days to finally answer this attempt to argue: "*I see you failed to provide examples. Just give us the top 5 from your writings.*" I wasn't about to give him the satisfaction. Having been through this countless times over the last decade with many others, there was no point doing it again. The repeat really wouldn't serve any purpose... though, I was intrigued by his "*100%*" claim. Here's what I ended up posting:

That reveals a failure to recognize the nature of the situation. This isn't a product priced at a only few hundred dollars that's expected to last only a few years. This is roughly 2 magnitudes more expensive (100 times) and should remain in service for over a decade.

In other words, this is a new category of problem. Comparing something with so little in common from either a business or consumer perspective makes no sense. Think about the logistics involved for automotive production, all the very large components requiring third-party suppliers. Heck, just the profit-margin alone makes the perspective profoundly different. he reality that automotive production gets so involved with politics adds a dimension of complexity too. There simply aren't issues on that scale with dilemmas of the past. This is breaking new grow, new territory... a new chapter involving innovation.

Your claim that "*Toyota's approach is 100% wrong*" doesn't have substance to support it. You certainly didn't provide any examples. In fact, even your "*old way of doing things*" reference falls short. We can clearly see that rollout of new tech in the past went just fine. We've seen fuel-injection & anti-lock brakes of the past and a slew recent safety features all change the fleet without issue. The transition to hybrid, plug-in hybrid, and electric won't be a big deal either. It's a natural step forward for Toyota dealers and Toyota shoppers.

Remember, the issue I brought up was GM's failure to recognize their own audience. Toyota isn't making that same mistake.

6-22-2019 **Video - Summer EV miles.** Warm weather is back. I haven't filmed anything since the extreme cold. Time to take advantage of better video hardware & software. Here's what I did, then shared:

It's very easy to exceed the 25-mile rating for EV miles during the summer months. Armed with a new tablet for better aftermarket data capture and 2 upgraded cameras since the original drive 2 years ago, the time was right for a new video to show that.

Watch for the commentary added to highlight specific points. Like before, you'll see me drive out to the coffeeshop twice. That route just happens to be the perfect distance, 15 miles total. So driving it twice to demonstrate the 30-mile EV range available under the ordinary circumstances I'd see on that drive, it's a good real-world example to share.

In this case, the temperature was mild but the wind rather strong. Being a round-trip, that influence of push or pull doesn't matter. You witness all the factors impacting efficiency in great detail. At the bottom, you see my dashboard. To the right, you see output from an ODB-II device presented on a phone app. Notice the wide range of information available while you drive.

In the end, the drive went just a little over 31 miles before plug-supplied electricity was used up. At that point, the gas-engine started and the system switched to HV mode (regular hybrid driving).

View the video at this link: Prius Prime - Summer EV miles

6-23-2019 **New kWh Meter.** A recent update to the aftermarket app for monitor extra vehicle data has me yearning to capture that drive again. Having a gauge now that displays a total kWh consumption/regeneration value is quite empowering... so much so, it will kill discussion threads from going on and on without certainty... just like the one where I posted this:

I'm at the coffeeshop now, the quarter-way mark, looking at the resulting captured data. It's 7 degrees cooler and I got hit by an extra stoplight, so battery capacity (actual) was at 70% rather than the 72% in the video. (That's an estimate of 79% rather than 80%.) It's all real-world data regardless. The more, the better. In this case, that's 23% of EV capacity available (87%-13%=74; 17/74=23%). The value shown for consumed/regened overall for the drive was 1.215 kWh. Now, this is where things got messy...

I consistently measure 5.75 kWh as a "*full*" charge from my JuiceBox Pro charger. That's a complete restoration of EV capacity, including losses from charging and whatever overhead there may be for cycling overhead during the charge and excluding sessions that pre-condition. Some would argue that's not the entire usable EV capacity based on the 8.79 kWh measure of the cells all added up. But my drive often doesn't end as fully depleted (13%), despite being in HV mode. That's due to the long regen I experience just prior to turning into my neighborhood. \Sometimes, it's enough to actually show a little bit of EV available. We know that low values (such as 0.8 mile) will often be suppressed from display. So, you must have an aftermarket gauge to really know what SOC the battery is actually at. But then again, a single percentage point that's truncated falls into margin-of-error territory. With all that being said, I could use a higher value as the measure of "*full*" for EV capacity. But including a from-the-plug value makes no sense when you are only measuring against consumption/regeneration results. So, I stick with 5.75 kWh.

So doing the calculation.... 23 of 5.75 is 1.322 which is not 1.215 kWh. However, it's close enough. We have a means of collecting & analyzing data that's more comprehensive than in the past. Combined with consistent capture approach, it's as accurate as you can get in real-world conditions.

6-23-2019 **EREV is Dead, position.** The fall of Volt has brought about a recognition of problems. Naturally, that means a round of shoot-the-messenger exchanges. It's different now though. Rather than rhetoric from enthusiasts, there's the actual death declared by GM itself and the obvious positioning of Toyota to take the market by storm. Nonetheless, dealing with stuff like this is a pain: "*How do you and john 'infer' what toyota's position is... with the BEV trash talking video ads and all?*" I'm far from being alone now. These exchanges are taking place in new venues too. Those days of the daily blog are long gone. Here's what things have evolved into:

There's nothing being inferred. We look at the big picture. Those articles feed rhetoric by cherry-picking. Portraying the current Lexus position as the entire long-term plan for Toyota is just plain wrong. Yet, many choose to enable the antagonists spreading that spin.

You cannot deny that the "*self-charging*" promotion is an attempt to overcome the confusion related to "*hybrid*" labeling. It is a clear attempt for Toyota to set the stage for "*plug-in*" promotion. They are readying the market by trying to establish a new term to more accurately inform their audience. Again, this is why the KNOW YOU AUDIENCE aspect of advertising is so vital. Toyota doesn't have any concern what a group of online enthusiasts think. That's not who they are targeting.

That's a fundamental mistake GM made with Volt. The essential question of "*Who is the market for Volt?*" was dismissed as unimportant. GM continued on with their own trash talking of BEV, but not in a limited scope as Lexus has done. Volt was a Chevy, intended for appeal to the masses, not a Cadillac. Those who doesn't recognize the difference between luxury & mainstream consumers hope to take us as fools, spreading nonsense about position.

It's really sad when that message is spread. But that's how spin works. Notice how vague the message actually is? That lack of detail is the message people pass along a message without any critical thought.

We study what Toyota has done over the decades and recognize the pattern. We also recognize the mistakes others have made and continue to repeat. That's how we get the big picture.

Think about how chaotic the market has become as a result of tax-credit phaseout. Those weak offerings heavily dependent upon subsidies are now showing their weakness. We saw that coming by looking beyond the cherry-picking. Others "*inferred*" that wouldn't be a problem. They were wrong, very wrong.

6-23-2019 **EREV is Dead, looking back.** In addition to the anti-Toyota position, there's the anti-everything-that-is-not-an-EV position. That can actually be even more of a problem. It's when an early-adopter loses touch with the market. They found a means of overcoming obstacles and doesn't recognize others as not having the same priorities or resources. That makes them a terrible source of feedback. Yet, they are the ones we hear most from. For example: "*You buy a hybrid if you really need or want to pay for two engines. They are more expensive to produce, the worst of both worlds, battery has to pull a stupid ICE around, ICE has to pull a heavy battery around. 20,000 miles in a Leaf never looked back will never go back.*" That's the same old argument we've heard for a decade. Only, the technology has been significantly upgraded and the market much changed. Remember back when GM was first promoting Volt and the term EREV was coined? Pretty much no one does. That lack of background is how mistakes are made by repeating history. I pushed back with:

That's a blatant misrepresentation of what "*hybrid*" actually can deliver. It implies optimization isn't possible and neither is a plug. The example of Prius Prime demonstrates that Toyota can affordability deliver the BEST of both worlds. You get an extremely efficient HV system in addition to extremely efficient EV driving. With the addition of a plug, battery-capacity, and a one-way clutch any of their other hybrids can deliver the same thing.

Think about how popular a RAV4 plug-in hybrid would be for both dealer & consumer. It's a winning solution for Toyota's business. Everyone wins. Dealers get a product that's easy to transition to, with little to no interruption to process or profit. Consumers get an affordable plug-in that will deliver EV without any change to their driving habits. All they have to do is take advantage of the standard 120-volt outlet they already have in their garage.

Never looking back means not acknowledging the challenges still faced by most of the industry. Expecting everyone to just abruptly abandon old technology without any means of bridging to the desired long-term end-result is madness. It doesn't work.

6-23-2019 **EREV is Dead, cleaner.** Back when Volt was doing everything it could to retain attention, the idea of "*cleaner*" was pushed aside. Use of electricity didn't count. It was all about not using gas. That obviously fell apart once EV choices became the focus of being green. GM's gamble of that not happening, that EREV would dominate the market for generations to come, was a senseless risk. Now, the idea of EREV is becoming an associate with guzzling electricity in a costly manner. Volt was an expensive vehicle that inefficiently used electricity. EV propulsion focused on power, using an unnecessarily large battery-pack to compensate for losses. The decision to use a resistance-heater for electric cabin warming only made the problem of electricity guzzling even worse. So with it's death, we can now have constructive discussions about hybrids... well, kind of: "*If you were really looking at a more effective way to reduce emissions, at least in the US where average fleet mileage is 24-25 mpg, you would set a minimum vehicle mileage limit on all vehicles to 50 mpg. This cuts the emission they are counting in half.*" I was a bit annoyed to see that. But you never know. This newer post-Volt audience may be receptive. So, I gave them a chance: Setting an arbitrary MPG minimum won't actually change the status quo. Powers resistant to change will simply fight it, as we now have countless examples of. What they'll struggle to counter though is upgrade mandates. Toyota is leading the way with across the fleet upgrades. Their upcoming next-gen Highlander hybrid is a great example. 34 MPG is quite remarkable for a SUV that large. With regards to pickup offerings, their hybrid system currently in a Lexus is the rumored to be what will end up in Tacoma. That would deliver an expected 30 MPG. So even before consideration of adding a plug, Toyota would have already achieved a significant reduction of emissions & consumption.

6-23-2019 **EREV is Dead, math.** A big part of the propaganda related to the "*EREV*" label was to avoid detail. The category was ambiguous. The definition kept changing. The accountability was missing. It was very much a marketing scheme conjured up to promote a product unable to actually compete. It's the name-recognition concept twisted into a plan to lead without merit. Fortunately, after 2 generations of deception, the effort fell apart. Substantial growth was needed. Dependency on subsidies made that far too unrealistic to continue. It was a terrible gamble, one that produced too many losses to be competitive. Remember, automakers are for-profit businesses. The show of a trophy vehicle would only take them so far. I continued my awareness raising by emphasizing origin, drawing attention to the recent sighting of hybrid impact:

btw, that assumption of "*This cuts the emission they are counting in half.*" is the outcome of successful greenwashing. You've been misled. Measurement of Miles-Per-Gallon has been exploited to conceal the reality that there's an aspect of diminishing returns. Even under the best circumstances, the approach is commonly misunderstood.

This is why the rest of the world has been using a quantity/distance measurement instead. In fact, that's why our own EPA now includes "*2.0 gal/100mi*" in their published materials. Notice how that now appears next to the "*50 MPG*" value on the window-sticker?

The reason for this is simple. An improvement of 5 MPG for a vehicle that was only getting 25 MPG represents far more gas than one that goes from 35 to 40 MPG. Just take a moment to do the math to see why.

For 15,000 miles of driving, the 25 MPG vehicle will consume 600 gallons. The jump to 30 MPG reduces consumption to 500 gallons. That's a 100 gallon improvement. For 35 MPG, the quantity is 429 gallons. That upgrade to 40 MPG changes it to 375 gallons... which represents only a 54 gallon improvement.

Adding a 25-mile rating EV capacity to that 40 MPG vehicle gets messy to standardize. But real-world data coming from Prius Prime reveals their driving to be around 75% electric. That makes the 15,000 miles of driving only 3,750 that depend upon gas. The result from a 40 MPG return in HV mode would come to 94 gallons. That's an improvement of 281 gallons.

See the problem? The temptation is to simply divide that overall distance of 15,000 miles by 94 gallons. What does that resulting 160 MPG actually tell you?

Now consider what the impact to gallons would be if EV range was either 20 miles or 30 miles. Not only does it get confusing, but there's also the reality of diminishing returns. None of which most people (even those here) take the time to consider.

To complicate matters even further, there's the fact that gallons only reflects the reduction of CARBON emissions. So, even if that better way of measuring consumption is used, it doesn't have any reflection upon SMOG related emissions... which means you have to ask what "*cleaner*" actually represents.

In other words, no crazy study necessary. Heck, no emissions target even needs to be

set. It all comes down to replacing the fleet with electrified choices. Putting emphasis on using more and more battery should be the goal, but not until much later. At such an early stage, just getting rid of vehicles without any battery-pack should be the concern.

After all, we have already seen how easy the transition is from hybrid to plug-in hybrid and how much that contributes to the desire for the next purchase to be an EV.

6-23-2019 **EREV is Dead, personal.** It was nice to see a complete lack of substance in the most recent reply. All he could do was go after me with attempts to discredit. That's the most telling clue of having nothing left. Death is confirmed in every regard. It's not damage-control at this point or even trying to feel better about making such a colossal mistake. It's plain old vengeance. I find that amusing... and quite ineffective, as my reply back should reveal:

Shooting the messenger, rather than even bother to address the issue of consumption & emissions... nice.

Toyota has a solid plan for advancing their entire fleet forward. From dealer to consumer, they address the impact change of among all beyond production who will be affected. This attempt to stir old rhetoric is just a final desperate act to distract from your preferred approach. It failed. Get over it. I remember those posts. In fact, that's how some of my videos came about. I used them to shot back.

Losing many battles puts you where on the "*dragging*" claim? It's easy to see how GM has no plan whatsoever to actually deliver something compelling anytime soon. Toyota on the other hand is pushing forward, showing undeniable progress in war as a whole to replace traditional vehicles. RAV4 hybrid and Corolla hybrid, the latest rollouts, show just how wide of an audience Toyota is striving to appeal too. Those are very much mainstream vehicles, both of which their hybrid systems could easily offer a plug model for later. We also see the push with larger vehicles. Highlander hybrid will have a next-gen rollout by year end. Rumors of Tacoma hybrid mule testing continue too.

What I find especially vindicating from all that is your irritation with "*we*" references. Knowing that there is power in numbers and that failed legacy automaker efforts are quickly becoming just a footnote in history, there's no reason to worry about shooting from that direction anymore. The industry simply isn't interested in that approach. Toyota is moving forward by offering a very wide range of hybrids, expanding to PHV offerings with Prius & Corolla, while also exploring EV models with C-HR.

Again, no amount of "*dragging*" nonsense will hide what everyone else sees.

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Watch for the commentary added to highlight specific points. Like before, you'll see me drive out to the coffeeshop twice. That route just happens to be the perfect distance, 15 miles total. So driving it twice to demonstrate the 30-mile EV range available under the ordinary circumstances I'd see on that drive, it's a good real-world example to share.

In this case, the temperature was mild but the wind rather strong. Being a round-trip, that influence of push or pull doesn't matter. You witness all the factors impacting efficiency in great detail. At the bottom, you see my dashboard. To the right, you see output from an ODB-II device presented on a phone app. Notice the wide range of information available while you drive.

In the end, the drive went just a little over 31 miles before plug-supplied electricity was used up. At that point, the gas-engine started and the system switched to HV mode (regular hybrid driving).

View the video at this link: Prius Prime - Summer EV miles

6-23-2019 **New kWh Meter.** A recent update to the aftermarket app for monitor extra vehicle data has me yearning to capture that drive again. Having a gauge now that displays a total kWh consumption/regeneration value is quite empowering... so much so, it will kill discussion threads from going on and on without certainty... just like the one where I posted this:

I'm at the coffeeshop now, the quarter-way mark, looking at the resulting captured data. It's 7 degrees cooler and I got hit by an extra stoplight, so battery capacity (actual) was at 70% rather than the 72% in the video. (That's an estimate of 79% rather than 80%.) It's all real-world data regardless. The more, the better. In this case, that's 23% of EV capacity available (87%-13%=74; 17/74=23%). The value shown for consumed/regened overall for the drive was 1.215 kWh. Now, this is where things got messy...

I consistently measure 5.75 kWh as a "*full*" charge from my JuiceBox Pro charger. That's a complete restoration of EV capacity, including losses from charging and whatever overhead there may be for cycling overhead during the charge and excluding sessions that pre-condition. Some would argue that's not the entire usable EV capacity based on the 8.79 kWh measure of the cells all added up. But my drive often doesn't end as fully depleted (13%), despite being in HV mode. That's due to the long regen I experience just prior to turning into my neighborhood. \Sometimes, it's enough to actually show a little bit of EV available. We know that low values (such as 0.8 mile) will often be suppressed from display. So, you must have an aftermarket gauge to really know what SOC the battery is actually at. But then again, a single percentage point that's truncated falls into margin-of-error territory. With all that being said, I could use a higher value as the measure of "*full*" for EV capacity. But including a from-the-plug value makes no sense when you are only measuring against consumption/regeneration results. So, I stick with 5.75 kWh.

So doing the calculation.... 23 of 5.75 is 1.322 which is not 1.215 kWh. However, it's close enough. We have a means of collecting & analyzing data that's more comprehensive than in the past. Combined with consistent capture approach, it's as accurate as you can get in real-world conditions.

6-23-2019 **EREV is Dead, position.** The fall of Volt has brought about a recognition of problems. Naturally, that means a round of shoot-the-messenger exchanges. It's different now though. Rather than rhetoric from enthusiasts, there's the actual death declared by GM itself and the obvious positioning of Toyota to take the market by storm. Nonetheless, dealing with stuff like this is a pain: "*How do you and john 'infer' what toyota's position is... with the BEV trash talking video ads and all?*" I'm far from being alone now. These exchanges are taking place in new venues too. Those days of the daily blog are long gone. Here's what things have evolved into:

There's nothing being inferred. We look at the big picture. Those articles feed rhetoric by cherry-picking. Portraying the current Lexus position as the entire long-term plan for Toyota is just plain wrong. Yet, many choose to enable the antagonists spreading that spin.

You cannot deny that the "*self-charging*" promotion is an attempt to overcome the confusion related to "*hybrid*" labeling. It is a clear attempt for Toyota to set the stage for "*plug-in*" promotion. They are readying the market by trying to establish a new term to more accurately inform their audience. Again, this is why the KNOW YOU AUDIENCE aspect of advertising is so vital. Toyota doesn't have any concern what a group of online enthusiasts think. That's not who they are targeting.

That's a fundamental mistake GM made with Volt. The essential question of "*Who is the market for Volt?*" was dismissed as unimportant. GM continued on with their own trash talking of BEV, but not in a limited scope as Lexus has done. Volt was a Chevy, intended for appeal to the masses, not a Cadillac. Those who doesn't recognize the difference between luxury & mainstream consumers hope to take us as fools, spreading nonsense about position.

It's really sad when that message is spread. But that's how spin works. Notice how vague the message actually is? That lack of detail is the message people pass along a message without any critical thought.

We study what Toyota has done over the decades and recognize the pattern. We also recognize the mistakes others have made and continue to repeat. That's how we get the big picture.

Think about how chaotic the market has become as a result of tax-credit phaseout. Those weak offerings heavily dependent upon subsidies are now showing their weakness. We saw that coming by looking beyond the cherry-picking. Others "*inferred*" that wouldn't be a problem. They were wrong, very wrong.

6-23-2019 **EREV is Dead, looking back.** In addition to the anti-Toyota position, there's the anti-everything-that-is-not-an-EV position. That can actually be even more of a problem. It's when an early-adopter loses touch with the market. They found a means of overcoming obstacles and doesn't recognize others as not having the same priorities or resources. That makes them a terrible source of feedback. Yet, they are the ones we hear most from. For example: "*You buy a hybrid if you really need or want to pay for two engines. They are more expensive to produce, the worst of both worlds, battery has to pull a stupid ICE around, ICE has to pull a heavy battery around. 20,000 miles in a Leaf never looked back will never go back.*" That's the same old argument we've heard for a decade. Only, the technology has been significantly upgraded and the market much changed. Remember back when GM was first promoting Volt and the term EREV was coined? Pretty much no one does. That lack of background is how mistakes are made by repeating history. I pushed back with:

That's a blatant misrepresentation of what "*hybrid*" actually can deliver. It implies optimization isn't possible and neither is a plug. The example of Prius Prime demonstrates that Toyota can affordability deliver the BEST of both worlds. You get an extremely efficient HV system in addition to extremely efficient EV driving. With the addition of a plug, battery-capacity, and a one-way clutch any of their other hybrids can deliver the same thing.

Think about how popular a RAV4 plug-in hybrid would be for both dealer & consumer. It's a winning solution for Toyota's business. Everyone wins. Dealers get a product that's easy to transition to, with little to no interruption to process or profit. Consumers get an affordable plug-in that will deliver EV without any change to their driving habits. All they have to do is take advantage of the standard 120-volt outlet they already have in their garage.

Never looking back means not acknowledging the challenges still faced by most of the industry. Expecting everyone to just abruptly abandon old technology without any means of bridging to the desired long-term end-result is madness. It doesn't work.

6-23-2019 **EREV is Dead, cleaner.** Back when Volt was doing everything it could to retain attention, the idea of "*cleaner*" was pushed aside. Use of electricity didn't count. It was all about not using gas. That obviously fell apart once EV choices became the focus of being green. GM's gamble of that not happening, that EREV would dominate the market for generations to come, was a senseless risk. Now, the idea of EREV is becoming an associate with guzzling electricity in a costly manner. Volt was an expensive vehicle that inefficiently used electricity. EV propulsion focused on power, using an unnecessarily large battery-pack to compensate for losses. The decision to use a resistance-heater for electric cabin warming only made the problem of electricity guzzling even worse. So with it's death, we can now have constructive discussions about hybrids... well, kind of: "*If you were really looking at a more effective way to reduce emissions, at least in the US where average fleet mileage is 24-25 mpg, you would set a minimum vehicle mileage limit on all vehicles to 50 mpg. This cuts the emission they are counting in half.*" I was a bit annoyed to see that. But you never know. This newer post-Volt audience may be receptive. So, I gave them a chance: Setting an arbitrary MPG minimum won't actually change the status quo. Powers resistant to change will simply fight it, as we now have countless examples of. What they'll struggle to counter though is upgrade mandates. Toyota is leading the way with across the fleet upgrades. Their upcoming next-gen Highlander hybrid is a great example. 34 MPG is quite remarkable for a SUV that large. With regards to pickup offerings, their hybrid system currently in a Lexus is the rumored to be what will end up in Tacoma. That would deliver an expected 30 MPG. So even before consideration of adding a plug, Toyota would have already achieved a significant reduction of emissions & consumption.

6-23-2019 **EREV is Dead, math.** A big part of the propaganda related to the "*EREV*" label was to avoid detail. The category was ambiguous. The definition kept changing. The accountability was missing. It was very much a marketing scheme conjured up to promote a product unable to actually compete. It's the name-recognition concept twisted into a plan to lead without merit. Fortunately, after 2 generations of deception, the effort fell apart. Substantial growth was needed. Dependency on subsidies made that far too unrealistic to continue. It was a terrible gamble, one that produced too many losses to be competitive. Remember, automakers are for-profit businesses. The show of a trophy vehicle would only take them so far. I continued my awareness raising by emphasizing origin, drawing attention to the recent sighting of hybrid impact:

btw, that assumption of "*This cuts the emission they are counting in half.*" is the outcome of successful greenwashing. You've been misled. Measurement of Miles-Per-Gallon has been exploited to conceal the reality that there's an aspect of diminishing returns. Even under the best circumstances, the approach is commonly misunderstood.

This is why the rest of the world has been using a quantity/distance measurement instead. In fact, that's why our own EPA now includes "*2.0 gal/100mi*" in their published materials. Notice how that now appears next to the "*50 MPG*" value on the window-sticker?

The reason for this is simple. An improvement of 5 MPG for a vehicle that was only getting 25 MPG represents far more gas than one that goes from 35 to 40 MPG. Just take a moment to do the math to see why.

For 15,000 miles of driving, the 25 MPG vehicle will consume 600 gallons. The jump to 30 MPG reduces consumption to 500 gallons. That's a 100 gallon improvement. For 35 MPG, the quantity is 429 gallons. That upgrade to 40 MPG changes it to 375 gallons... which represents only a 54 gallon improvement.

Adding a 25-mile rating EV capacity to that 40 MPG vehicle gets messy to standardize. But real-world data coming from Prius Prime reveals their driving to be around 75% electric. That makes the 15,000 miles of driving only 3,750 that depend upon gas. The result from a 40 MPG return in HV mode would come to 94 gallons. That's an improvement of 281 gallons.

See the problem? The temptation is to simply divide that overall distance of 15,000 miles by 94 gallons. What does that resulting 160 MPG actually tell you?

Now consider what the impact to gallons would be if EV range was either 20 miles or 30 miles. Not only does it get confusing, but there's also the reality of diminishing returns. None of which most people (even those here) take the time to consider.

To complicate matters even further, there's the fact that gallons only reflects the reduction of CARBON emissions. So, even if that better way of measuring consumption is used, it doesn't have any reflection upon SMOG related emissions... which means you have to ask what "*cleaner*" actually represents.

In other words, no crazy study necessary. Heck, no emissions target even needs to be

set. It all comes down to replacing the fleet with electrified choices. Putting emphasis on using more and more battery should be the goal, but not until much later. At such an early stage, just getting rid of vehicles without any battery-pack should be the concern.

After all, we have already seen how easy the transition is from hybrid to plug-in hybrid and how much that contributes to the desire for the next purchase to be an EV.

6-23-2019 **EREV is Dead, personal.** It was nice to see a complete lack of substance in the most recent reply. All he could do was go after me with attempts to discredit. That's the most telling clue of having nothing left. Death is confirmed in every regard. It's not damage-control at this point or even trying to feel better about making such a colossal mistake. It's plain old vengeance. I find that amusing... and quite ineffective, as my reply back should reveal:

Shooting the messenger, rather than even bother to address the issue of consumption & emissions... nice.

Toyota has a solid plan for advancing their entire fleet forward. From dealer to consumer, they address the impact change of among all beyond production who will be affected. This attempt to stir old rhetoric is just a final desperate act to distract from your preferred approach. It failed. Get over it. I remember those posts. In fact, that's how some of my videos came about. I used them to shot back.

Losing many battles puts you where on the "*dragging*" claim? It's easy to see how GM has no plan whatsoever to actually deliver something compelling anytime soon. Toyota on the other hand is pushing forward, showing undeniable progress in war as a whole to replace traditional vehicles. RAV4 hybrid and Corolla hybrid, the latest rollouts, show just how wide of an audience Toyota is striving to appeal too. Those are very much mainstream vehicles, both of which their hybrid systems could easily offer a plug model for later. We also see the push with larger vehicles. Highlander hybrid will have a next-gen rollout by year end. Rumors of Tacoma hybrid mule testing continue too.

What I find especially vindicating from all that is your irritation with "*we*" references. Knowing that there is power in numbers and that failed legacy automaker efforts are quickly becoming just a footnote in history, there's no reason to worry about shooting from that direction anymore. The industry simply isn't interested in that approach. Toyota is moving forward by offering a very wide range of hybrids, expanding to PHV offerings with Prius & Corolla, while also exploring EV models with C-HR.

Again, no amount of "*dragging*" nonsense will hide what everyone else sees.

6-23-2019 **EREV is Dead, ambiguity.** More than anything, I find that most telling. When you push for detail and get that instead, you know they are bluffing... or in our case, intentionally attempting to mislead. There will be references to articles & videos, but no actual link or even a quote. So, the very idea of addressing context or audience is impossible. It what the antagonist does to evade getting confronted on detail. I saw that for an entire decade from Volt enthusiasts. Their hate for me grew to extremes. I kept out facts with lots of detail they simply couldn't deal with. Armed with a wealth of business research, their engineering arguments fell apart. They couldn't deal with those facts that reached beyond simply building a better vehicle. That's why I kept bringing up audience. Of all the challenges the technology faced, finding a way of appealing to ordinary showroom shoppers was well beyond what their technically-oriented minds were trained to do. They simply couldn't see that perspective. So providing detail made no difference in their willingness to try to understand. It was outright dismissal that what I was presenting had any relevance. That's why the ambiguity was enough. They didn't feel any need to provide more... which is why I kept pointing out the shortcoming of their "*good enough*" attitude. After so many years of dealing with that, it feels really good for not having given into the temptation to fight back on the same level. Instead, I kept on with my research and kept filming video to disprove claims. That detail is priceless.

6-23-2019 **EREV is Dead, prevention.** This kind of spin is how narratives are established: "*toyota made a bev decision recently, based on the china market alone. and they make a lot of decisions based on the japanese market alone. the rest of us get the crumbs, and we're grateful for them!*" That same old troublemaker just keeps repeating his own perspective over and over. Sadly, it's one of very limited scope and he clearly doesn't actually read some of the posts. It's the nonsense from years ago living on... just pass along a vague message and ignore real-world data. Their attack often includes audience, shooting the message with efforts to discredit. It especially angers them when you point out you are not alone. Fighting on a personal level is much easier, hence the limited scope. My fight with them goes on. The experience from dealing with the trouble Volt enthusiasts created provided lots of informative background... providing an great sense of how to prevent: Actually, we have been discussing the EV model of C-HR for over a year now. The perspective of "*recent*" is the antagonist narrative being passed along. As for that "*the rest of us part*", it is why the "*Who?*" question was asked so many times over the years. In fact, that's how "*know your audience*" came about. There was a genuine concern the EREV nonsense would mess up the market here. And sure enough, that "*vastly superior*" push soured reception here. I am not the slightest bit grateful for that unfortunate outcome, since it was preventable.... and I was one of those in the "*we*" that fought hard to try to prevent this.

6-24-2019 **EREV is Dead, failure.** Posts like this speak volumes: "*So the Volt wasn't cancelled. Its factory was shut down because the other model lines made there were cancelled. Now being a sedan'ish car, moving Volt production couldn't be justified. The drive train is in a couple of Chinese Buicks, so Voltec didn't fail.*" That's ongoing damage-control you come to expect. The massive failure to achieve objectives is a very big deal. Every single time Prius was mentioned in the news, it was immediately followed by a message of superiority about Volt. Yet, that technology vanished. It was basically a fade. EREV was meaningless marketing. There was never a clear definition of what it meant. Every time that got called out, the definition would change. If you take the time to research that change, you see the pattern of evade & alter. It's not worth fighting the antagonists on any of that with an expectation of actually getting acknowledgement. You use those opportunities to provide exposition. It's a way of revealing history to newbies and those who hadn't paid close enough attention. To that post though, I just let him have it: That's called moving the goal posts. We all know the target numbers, dates, and locations... none of which that damage-control effort will forgive. This is yet another example of OVER PROMISE, UNDER DELIVER.

6-24-2019 **EREV is Dead, trolling.** Blatant trolling has become so common, the hope is that chaos will allow it to continue unchallenged. I'm fighting back:

Pretending this is new information screams unfulfilled objectives.

Reality is, the measure for success of failure was always based upon the ability for each automaker to deliver a system that could achieve sustainable & profitable sales prior to tax-credit phaseout. The reason for that is uneatable. It was the very purpose of such a generous subsidy. In fact, that is why each automaker was given the discretion of choosing their own timeline, to best utilize that limited opportunity.

GM squandered what they had, wasting it on conquest rather than finding a means of spreading the technology to other vehicles. That's why the lame excuse for Volt being discounted holds no merit. That system should have been implemented within a Trax or Equinox many years ago. Remember how all that EREV vastly superior nonsense? Volt sales plateaued at the 1,600 to 1,700 level. Each month, regardless of what GM attempted, growth was never achieved. That's so far below the business goal to keep the technology viable, there's nothing else to but try something quite different.

Toyota's approach is quite different, hence the absence of any constructive attempt to discuss the situation. Toyota still has time. They have an ample number of tax-credits available and they are already well into the diversification effort. Corolla PHV will be rolled out later this year, starting elsewhere. That gives them even more time to prepare the stage here for that necessary growth. In the meantime, RAV4 hybrid is pushing well into the mainstream, reaching a new audience GM could only dream of. It's a platform capable of offering a plug later too.

So all the spin about not failing won't cover up the reality of status quo remaining unchanged for GM. Their dealers are doing the same old push of giant guzzlers with no plan for the future. It's just a day-to-day survival situation... which is why there's reason not to consistently remind everyone of that past. You don't overcome mistakes in history by not acknowledging they ever happened.

This is why recognition of Toyota's effort genuinely change their fleet should be taken seriously. This antithesis thread revealed what about efforts to achieve efficiency & sustainability?

6-25-2019 **More Videos.** I'm compelled to continue filming, advancing my technique with each publish. The quality continues to improve... so much so, the videos now stand out. With the presentation so refined over the years and the for-dummies type commentary, it's becoming easy for the content to get dismissed. I have exactly what I need to convey the message that I need. The aspect of being a filmed-by-owner video is lost. There's no rough-around-the-edges element. All those years of refinement effort put me in a challenging position. Some moderated venues won't allow self-promotion. That content looks exactly like that now. Bummer. True, I can still stir interest in other ways. But the nature of many blogs & forums are to cater to newbies. Content that's well-polished and carefully thought out simply isn't a focus there... since that doesn't promote participation. In fact, that type of solid real-world data discourages it. Nonetheless, I'll keep filming. Know your audience teaches me that the content will be shared, just by a different means in the future. The audience is growing. That type of change... empowering others to share & conclude... is how growth takes place. So, more videos will come.

6-26-2019 **No Future.** There's a repeat of the "*vastly superior*" attitude emerging. Now that Volt has basically vanished from existence... which is strange, it's as if it never made any market impact whatsoever... we're seeing entirely new efforts to undermine. Rather than just attack Toyota specifically, the entire category has been targeted. For example: "*The push for electrification has put a number of OEMs in a weakened position as they lack true EV tech. To make up for it, they're trying to sell plug-in hybrids.*" The article with that opening line ended with: "*Numerous carmakers have huge EV plans starting in about a year for the 2021 and 2022 model years.*" It's history repeating, again. We get vague claims that hope is built up. Meritless hype feeds the excitement. Ugh. I responded to the link sighting that article with:

It's the same old nonsense we saw when hybrids were new. There was a constant onslaught of attacks all attempting to mislead about future by implying all worked the same way. It took quite a while to finally gather up enough convenient online material to easily disprove & discredit those source. Some were rather relentless, doing everything they possibly could to undermine progress. That's why I've been building up a collection of driving videos, each showing in depth detail to show their claims are a load of crap.

It's sad that PHEV are being attacked by EV supporters, but no surprise. Our owner's group here liked to mock me, but in in a friendly manner... knowing my effort was to promote lithium-battery use for any type of automotive propulsion. For us, it's all about getting the most out of whatever plug you have available. We have honest exchanges about how each of our designs operate... which is a far cry from this article. Ugh.

The video I filmed yesterday captures detail about kWh consumption for a continuous drive using up the entire EV capacity. That trip of just a little over 30 miles using only electricity is great, but this article draws attention to the HV aspect. I'll have to do a fresh capture (now I add commentary) with a long drive using nothing but gas. That MPG is always impressive.

6-27-2019 **Wondering Why.** I liked this: "*I don't know the numbers, but based on the fact that I rarely see a Prime on the streets but often see the Gen4 Prius; I am assuming that Toyota is selling a lot more of them than Primes. I wonder why that is?*" It was someone trying to figure out the true situation, knowing that anecdotal observations can be misleading and sometimes just plain wrong. That's good to know some people are using critical thinking. This was my reply to that:

Neither our market, nor the entire industry, were ready for mainstream PHEV offerings.

The biggest problem was cost. That heralded PHEV leader for years was heavily dependent upon tax-credits for mere survival. Sales never grew to the level necessary to compete with other vehicles offered on dealer's showroom floors. It's production has been ceased as a result, without any successor model. The entire approach was abandoned. So, there wasn't any point rushing out the technology by other automakers. Toyota saw the benefit of refining & diversifying in the meantime.

That positions Prius Prime incredibly well for the necessity of appealing to both dealer & consumer. If the salesperson isn't able to get a worthwhile commission, what's the incentive to sell it? There's no point in pushing a vehicle facing profit challenges. Seeing Toyota invest heaving in the spread of the technology really helps. Diversification is the ultimate endorsement. Elsewhere this year, the Corolla PHV will be rolling out. Seeing the technology from Prius Prime emerge in another hybrid sends a strong message... especially for those wondering if RAV4 hybrid will someday also get a PHV model.

In other words, the stage is still being set. We'll witness the plug-in model of Prius become the dominant choice, leaving just the Limited and AWD as regular models. It's an essential paradigm-shift long in the making and very carefully thought one... hence no reason to rush.

6-27-2019 **Video - kWh Meter Data.** Understanding how the electricity is actually consumed to provide propulsion in addition to cabin heating/cooling is really important. I end up having to deal with posts from people who don't. That really confuses matters. Their claims are misleading because they didn't have all the information that was needed. So, I'm always on the quest to provide that missing detail. With this newest video, you lots of new data. I was excited to be able provide something previously unavailable. It looks like it will be really handy to have this footage readily available... which is what you now have. Here's the detail: The latest upgrade from that aftermarket app (called "*Hybrid Assistant*") I use to create Prius Prime drive videos with has added a very informative new meter. You can now see the electricity being consumed & regenerated. That display of kWh is real-world data we've never had access to on this level. It's a great learning tool to really understand what the plug-in hybrid technology is really delivering. Here's my first video using it, featuring a 30-mile drive of all EV with kWh data the entire way. I'm quite curious what others will have to say after observing that collection of content compiled into a single contiguous video. Feel free to posts comment on whatever information catches your interest. Here's the link to view it: Prius Prime - kWh Meter Data

6-27-2019 **kWh Video Feedback.** I did end up getting a few responses right away to the newest video. This was one long follow-up replies:

I'm working on a cheat-sheet. Posts like this are how I collect feedback about the content for it. In this instance, the topic is kWh.

kWh is the amount of actual electricity consumed by the vehicle. This is a big deal, since some plug-ins are more efficient than others. In fact, some are outright guzzlers of electricity. That's why drawing attention to how well Prius Prime uses its supply available will help endorse Toyota's well thought out design.

Think about kWh. That's the unit of electricity your provider bills you for. Requiring less to travel the same distance is a better return on your vehicle purchase. Your monthly statement will be lower. It also means you'll spend less time at the charger. So, knowing the actual efficiency rate is very important. Understanding of that starts with observation of how kWh is used.

Prius Prime has a 8.79 kWh capacity battery-pack. Part of that is reserved for longevity, never touched for the sake of avoiding stress on the cells. Extremes accelerate aging. There's also a portion of it reserved for HV travel. The portion allocated for EV travel is noted on the dashboard as the percent value from 100 to 0, when the numeric display option is selected. On that secondary display (to the right), it is the range from 87% to 12%. In other words, the dashboard shows "*usable*" capacity and the phone app for that aftermarket gauge connected to the ODB-II port shows "*actual*" charge level.

Watching the video, you'll see the Total kWh value go up & down. That's because it is showing the net result of using plug-supplied electricity and some of what it recovered when braking (known as "*regeneration*" of electricity). For that 30-mile drive, it states a 5.2 kWh as the transition point, where EV capacity is depleted entirely and HV mode engages. At that point, the gas-engine joins in to supply power for both propulsion & electricity.

The next step in understanding kWh is to look at what happens when you plug in. There are conversion losses going from household AC to the battery DC. There are efficiency differences from the charging speed as well.

6-28-2019 **Worth It.** Far too often... in fact, it is almost all the time... people don't place any worth on contributing to being green. Effort to endorse infrastructure and related components (like equipment & employment) get overlooked entirely, never given even a cent of value. It never gets talked about by those researching vehicle purchases and gets dismissed by antagonists. Undermining is the silent enemy. Progress is impeded by basically just ignoring what contributes to it. Ugh. So, I look for opportunities to draw attention. For example: "*A 240-volt Level-2 charge station is almost never worth the money. It provides much faster recharges, but that only matters if one can save enough gasoline which almost never happens or if one is serious about not burning gasoline.*" That advice excluded factors not related to anything directly returned to the owner. I always hope some mention of green worth unrelated to "saving" is included. Sadly, that rarely happens. But at least I still get the opportunity to draw attention to the omission: Hope you don't mind me pointing out the trap you fell into... That's a sad sentiment passed along from rhetoric long ago, unaware of the message it truly conveys. Read that message again. Notice the complete absence of the other benefit? Most people don't. Focus is diverted entirely to gas consumption. That's the trap. There's no value whatsoever placed upon simply being greener. By installing a level-2 charger, you are doing your part to endorse infrastructure upgrades. It gives electricians & manufacturers both profit & experience to benefit the rest of the market. So, whether or not you ever take advantage of the reduced charging time (which undoubtedly, you will at some point), you've contributed to the movement forward... which we all appreciate. Sorry, it ends up almost sounding like a guilt-trip, but that is how to appeal to people when they focus on "*worth it*" equations which leave out some factors. Think about how easy that fact was to overlook.

6-28-2019 **Who? Reset.** It's easy to see history hitting the reset button. Know your audience. Almost the entire collection of antagonists are gone. These were the individuals who embraced group-think to push Volt. It's seemingly started innocent enough, with just a bunch of early-adopters sharing the same vision. But as their support systematically dismissed evidence of hurdles too big to overcome alone, they embraced "*vastly superior*" rather than seeking out alliances to help break down barriers. They became enthusiasts fueled by hope. It grew into a terrible hype. The ideas of substance & merit were abandoned. They'd eventually come to resist any type of constructive discussion. It's an awful pattern I have witnessed several times now over the 19 years of being actively involved in fighting the status quo in the automotive industry greening. They'd target me, rather than those fighting against change. Ugh. That was the origin of the "*Who?*" question but didn't become something to highlight as a problem until Volt came along... when I started asking "*Who is the market for Volt?*" They thought I was crazy. To those enthusiasts, the answer was obvious... them... hence, the group-think. My recognition of the same thing happening with ASSIST hybrids, then Two-Mode, then EREV is the result of meticulous study. Each made the pattern of incorrect audience a well defined match. They were all focusing on engineering and basically just brushed aside all other purchase priorities. They'd confuse want with need. That lose of perspective is what doomed them. It's like the EV problem now. I keep seeing "*affordable*" associated with the price of a vehicle in the low 30's. How is that supposed to be a realistic choice for someone looking to only spend something in the low 20's for their next vehicle? Corolla hybrid has a starting price of $22,950. Remember the "*nicely under $30,000*" goal? Those unwilling to acknowledge history don't. In fact, they pretend many of the other lessons learned from history simply don't apply to their situation. It's a push forward based on hope, rather than sound business. That's too much of a gamble. We've seen it failed several times on a huge level.

6-28-2019 **Who? Dealers.** I remember getting feedback about my attitude, claiming it wasn't the message, it was conveyance of it. That seemed sensible, until you recognize the pattern of dismissal. The information itself was never acted upon. Those not recognizing who just kept on with their pattern of defiance. They knew best and nothing provided would sway their belief. Their act of stubbornness contributed heavily to the death of volt. The reality of dealer-not-consumer never sunk in. That epiphany never happened, despite countless attempts to get them to see the problem. Ugh. It's come down to a lesson learned which some still refuse to accept:

Dealers have been the problem all along. Trouble is, early-adopters weren't interested in the bigger picture. Focus was entirely on conquest purchase, not actually changing mainstream buyers. GM crashed & burned because of this. Tesla gave a valiant effort to avoid the inevitable plateau resulting from tax-credit phaseout. Things will work out fine in the end, but that slow down wasn't an expectation properly set... despite countless warnings of it coming.

The only legacy automaker with a solid plan for getting dealers to embrace change is Toyota (though their is lots of potential for Hyundai). Across the board, we are seeing hybrid rollout... Corolla, Camry, Avalon, C-HR, Highlander. The latest has been an incredible success: RAV4. Think about how much easier selling the PHEV and EV models will be later with widespread acceptance of hybrids. That risk of change would have been mitigated, and in short time too. The expectation is currently set at 20 to 25% of RAV4 to be hybrids. What other automaker is seeing that level of penetration? Dealers who are on their game will establish a welcoming of new tech as a sales advantage.

Toyota also has the unique opportunity to also appeal to Prius owners, a massive base to draw interest from for their first PHEV offering. And with the Corolla PHEV rolling out elsewhere in the world later this year, there's an undeniable effort to stir attention from dealers. Corolla is a top-selling vehicle. Getting a plug-in version to market is a really big step forward. Income from routine maintenance will be lower, but being able to keep demand strong for sales will reduce dealer apprehension.

6-28-2019 **Who? Wait.** There's nothing wrong with delay... as long as you have a solid reason for it. Enthusiasts will wait for a miracle, hoping some announcement will result in a huge overnight success. They don't understand how much must actually take place for the sales they want to become a reality. It isn't a matter of build it and they will buy it. That was a painful lesson learned for the Volt enthusiasts. They truly believed a "*vastly superior*" product was all it would take. In fact, some still think the lack of advertising on GM's part is all it would have taken for it to achieve high-volume profitable sales. The realities of stocking inventory and the act of selling never get any attention. Focus is always entirely on the consumer... who doesn't pay attention. From their perspective, it really is just a matter of waiting. The problem is, for how long? That sentiment keeps getting passed along. We never actually arrive at that time. The wait becomes indefinite. I tried to convey that in this series of exchanges: That "*just give it a couple of years*" reply is getting really old. It's unacceptable to just give legacy automakers a free pass with an "*all segments will be covered by 2025*". The reason why is simple. Dealers will just wait. That's an entire vehicle generation, just waiting for introductory rollouts. Then how much longer after that do we have to wait until the high-volume sales actually begin? Annual sales worldwide are over 80 MILLION vehicles. Change needs to begin now.

6-28-2019 **Who? Excuses.** The exchanges continue. I could tell he was just searching for an excuse to dismiss me, rather than actually consider the information being shared. This summed up the situation well: "*And I believe you give people no credit for actually figuring out how to use new technology*." That was a polite means of shooting the messenger. It was an attempt to get the consumer involved in the supply & demand discussion. I know how vital inventory is. With the initial rollout back in August 2000, through May 2002, you could only get a Prius by ordering one. All new purchases were sight unseen. The who back then was Toyota's diehard supporters, which is why they made getting one more than just pointing to one on the dealer's lot. That's why the mid-cycle rollout of the first plug-in Prius was also internet only, then switched to only select states. Toyota knew its audience and had a very clear objective (collecting real-world data from well-informed markets). So later when next generation came along, rollout come be to a wider who without any surprises. Unfortunately, the fallout with GM caused delay. But that's not an excuse, that's a wait with very good reason. This exchange was none of that. He just plain did not like what I was posting and I wasn't about to allow him to continued without a callout: That's a red herring, diverting attention away from the topic of dealers. People can't buy what isn't available. In other words, the true customer of legacy automakers are dealers, not the end consumer.

6-29-2019 **Who? Hate.** Lashing out is the next step, when an antagonist becomes so frustrated with the information shared, the effort turns into an expression of hate. For example: "*I have no love for any of the traditional majors and could care less if they go out of business. The ones that actually care about doing full EV's I care about. The rest? Hell with them.*" He was letting emotion steer the discussion. Logic was abandoned. Points about having something quantitative to aim for... you know, a goal... was lost in the frustration of me not listening to the rhetoric. I wasn't taking the bait and he couldn't see why. That's because he didn't know who he was dealing with. Know your audience. I don't give in to hate. I don't let group-think make my decisions. I share observations and explain why my stance was taken:

Lack of substance invalidates that argument. It's so vague, there's nothing to actually discuss. We've been hearing the "*all electric*" mantra for an entire decade. The unfortunate legacy consequence of that was an exploitation of tax-credits.

The problem is forcing a specific approach, which history has repeatedly revealed to be a path to failure. Changing the mantra from "*all electric*" to "*full battery*" doesn't change anything either. It should always be about goals. Establish something meaningful for automakers to deliver. Without any real target, there's no competition, no incentive, no push. Business as usual simply continues.

In other words, you're giving them exactly what they need to retain the status quo. Notice how some automakers have announced the number of models they intend to deliver by 2025, rather than any actual vehicle quantity? All they need to do is rollout a token few to fulfill that horribly vague promise. They don't have to be affordable. They don't have to provide any specific range. Heck, they don't even have to use electricity efficiently.

So what if the industry expert in hybrids delivers a Prius Prime, Corolla Prime, Camry Prime, and RAV4 Prime? Each will provide exceptional electric & gas efficiency (as EV and HV ratings for Prius Prime already confirm) at an affordable price. And since they will based upon high-volume platforms their customers already strongly demand, supplying an alternative propulsion system is a sensible approach.

I understand the desire to aim for the best, to not waste resources on transitional technology. But the reality of the situation is that legacy automakers are a for-profit business who serve dealers that require easy to sell vehicles who will favor profitable inventory. That idea of abruptly switching to a specific approach when it is "*ready*" doesn't fit within the realities of consumer need, salesperson need, dealer need, supplier need, or automaker need.

Who is the "*full battery*" label supposed to appeal? Someone commuting with a PHEV that's within the range of their employer or where they park provides chargers will experience "*full battery*" driving. So what if there's a gas engine available for long trips. The bulk of their driving will be "*all electric*" anyway. The bulk of their driving will be with only electricity.

6-30-2019 **Who? Anger.** Reading through the series of posts again, it became obvious that he had no idea how a plug-in hybrid actually operated and was quite frustrated with the lack of progress from legacy automakers. Back when there was Volt, that all too familiar delay attitude was expressed upon missed goals. Shortcomings would be resolved with the next generation, so act of waiting would be all that was necessary for targets to be reached. That was quite a gamble, very risky. Depending on to many things to happen for an objective to be reached is one thing. But now, there isn't even to shoot for. He just labeled the finish line as "full battery" without specifying anything else. There was no substance and I called him out on it. So, he deleted all his posts. Getting caught in the act and responding that was is intriguing. Since I have email notify enabled, I already had an offline record of all the posts. That meant I could constructively respond anyway. And I did, with a call out.. since the who became him:

The stance I have taken is the result watching you just brush aside history, dismissing those facts presented without any type of acknowledgement. No label necessary for that behavior. It's the outcome that matters. I got your attention. That was the point. Will you just go your own way and ignore those lessons learned or ask questions about how to prevent the repetition?

Again, lack of substance means not sighting anything quantitative. Just a vague "*full battery*" sets no targets whatsoever. Not having any type of time, price, volume objective is how that history happened. Being sick of labels & overplay is good reason to seek out strong personalities willing to step up. If that's you, sound off with some solid goals & realistic expectations.

As for spinning my belief to be that of hybrids only, you clearly need to read more posts . I'm all about EV, but don't at all agree with the polarizing approach many here endorse. They are the combative ones. I'm just trying to get attention within that chaos.

6-30-2019 **Fallen Leader.** Anyone remember all the relentless attacks on Toyota about how far behind they were, that following the industry leader would be a painfully difficult struggle? It's hard to believe that was less than 6 months ago. GM was the praised automaker who could do no wrong. Today, there was an article published where the comments posted said GM could do no right. Interestingly, there was much agreement. The reason why is obvious... sales of Volt & Bolt never amounted to any actual change. Status quo remains intact and early-adopters are upset. Despite so many warnings of tax-credit exploitation and niche pandering, they are dumbfounded about the outcome. It's quite extraordinary to witness. Timing is exactly as anticipated too. We are halfway through the 50% tax-credit phaseout and 2nd quarter sales results will soon be revealed. Everyone knows such bad news is on the way that there's nothing to fuel hype anymore. It's over. Right on cue to step through the ashes is Toyota. Their choice to not upgrade the battery-pack mid-cycle makes more sense than ever. It means they have a solid 2 years of real-world data to leverage. That scale of owner endorsement is how growth is achieved. Rollout to the remaining 35 states will be so much easier with that experience to refer to. This is why I put up with all the nonsense from those Volt enthusiasts. They were too shortsighted to understand who the effort should be targeted at. Appealing to enthusiasts was a momentous mistake. GM really blew it.

6-30-2019 **Innovation.** From that discussion focusing on GM's fall came this: "*The problem with legacy, run-by-committee, focus-group-driven companies is that they don't innovate. They try to give people what they think they want. Unlike visionaries like Jobs and Musk, they don't deliver what people don't even know they want.*" It was a thought-provoking comment about want, not even bothering to bring up need. I liked that. But rather get into the subjective aspect of advancement, I kept focus on the innovation effort itself with:

It's not a matter of getting legacy automakers to innovate. It's how to appeal to their true customers, their dealers. Remember, this is a for-profit business with a long history of resistance to change.

GM had a disastrous run with Volt. Design suffered from group-think fueled by exploitation of tax-credits. That's easy to see now, since feedback was from enthusiasts rather than ordinary consumers and cost-reduction efforts were far from target pricing. It's too expensive and doesn't appeal to their own showroom shoppers. But back then, leadership given despite that. It was a denial path to nowhere, which is confirmed now by that technology not being spread to make it profitable... the very purpose of those tax-credits. Lesson learned is innovation requires acute attention to audience.

Toyota is constantly ridiculed for focusing on hybrids, despite the overwhelming evidence they are setting the stage for high-volume rollout of plug-in models. We see Prius with that plug-in upgrade worldwide already. Corolla hybrid offered as a plug-in hybrid later this year in some markets. C-HR, which is a hybrid in Europe already, will be offered as an EV in China for 2020. What is compelling Toyota to push forward with their fleet transformation? It's their understanding of how to appeal to their own audience and not listening to early-adopter rhetoric.

We can see the obsession with SUVs here is making the RAV4 hybrid a strong seller. That's a terrible platform for efficiency; however, it does make for a compelling plug-in hybrid. Toyota has an affordable means of delivering that too. It's a next step forward dealers can easily embrace... which is a key component to making any innovation effort a success.

In short, look beyond just the technology itself.

6-30-2019 **Mass-Market or Luxury?** The question of "*Who?*" got asked more and more as GM's struggle for sales got worse and worse. The reason was simple; they were all about conquest but we couldn't figure out with who. Supposedly, the purpose of Bolt was to compete directly with Tesla. That seemed a bit odd, but made more sense than the split-personality of Volt going after both Leaf and Prius PHV. That was still a problem though. It made the assertion that Tesla was seeking a mass-market audience. With the price for Model S and Model X so high, it meant everything would be based upon Tesla somehow achieving that hyped $35,000 price-point immediately upon rollout. Even then, market saturation was a very real issue. That's far above the mainstream expectation. All this depended upon sustainable sales being achieved quickly too. None of that happened. Both GM & Tesla are in challenging positions now. Fundamentals are now being analyzed too: "*It doesn't matter whether Tesla delivers 90,000 cars or 900,000 in the 2nd quarter - what's more important is whether Tesla goes mass-market or stays luxury.*" That article opener really caught my attention. It emphasized what I had been raising concern about all along... audience... who? For GM, we know they have a heavy base of Pickup & SUV owners. That means the category of luxury is a bit skewed, since that category is typically sedan-centric. Coming from the Chevy brand, that makes no sense whatsoever. What about for Tesla? Those sedans which their current customers find absolutely stunning for looks are all early-adopters. They don't represent the mass-market. Is that a problem for Tesla? Disappointingly, the article didn't mention that at all. It's entire focus was on what volume was the correct level for the proper profit-margin? Balancing capacity with capability is a challenge. You really need to understand a large amount of influencing factors to get that right. With so much investor interest at stake, that's a very real problem. Remember what contributed to GM's bankruptcy? See those same elements at play now for the legacy automaker? That leaves Tesla in a difficult position of how to integrate as a new automaker into an aged & troubled system. To compete with ordinary consumer choices, price still needs to drop dramatically. Operational cost is wonderfully low for EV early-adopters, but that isn't something as easy to appeal with toward the shopper who focuses almost entirely on the out-the-door cost. Purchases don't often include fuel expense. In fact, that's why guzzlers remain so popular. Gas is cheap enough. So, consumers don't give it any priority. That's why the much lower cost for electricity is such a hard sell. Mass-Market appeal means far more potential. So, it's a really big deal to make intended audience clear. GM didn't and failed as a result. Tesla must now make the decision.

7-01-2019 **Down to 25%.** Big news today is that Tesla tax-credit phaseout drops down to 25%. That has renewed the rhetoric. But with the death of Volt, there's no real substance to those arguments anymore. As a legacy automaker, there was some leverage from GM on the topic. With Tesla though, it's basically find a different means of subsidizing progress. So, I was intrigued how the new discussion thread would progress. This is the quote I homed in on: "*No, the per manufacturer number is idiotic. A common pool makes sense. The pioneers don't get penalized and the laggards don't get rewarded. There was a lot of work to bring up the technologies, supply chains, and marketing to bring forth these products. The laggard companies did none of this work and still enjoy plenty of credits.*" Knowing there's so much neglect & overlook related to the rest of what it takes to advance the technology forward, I had much to say:

The narrative of laggard fell apart when it was confirmed that GM exploited their tax-credits for conquest sales, rather than using them as intended to change what their own loyal customers would buy. There's simply no way to argue that either Volt or Bolt actually changed the status quo. We see those with old GM guzzlers simply replacing them with new GM guzzlers.

Each automaker being given an allocation of their own meant taking the time to do it right. GM's rush to market was wasted opportunity. Pioneer means you do something with whatever ground you break. GM didn't. We still doesn't see any model of SUV with any type of plug. That was the point of getting such a generous government subsidy.

Remember, the goal is to deliver something that can compete directly with traditional vehicles sharing the same showroom floor. That means each automaker must develop technology to appeal to their own shoppers. Retaining loyalty is a vital aspect of legacy sales. Those dealers depend upon repeat business, which requires an easy sales with a reasonable profit.

Of course, focus on "*bring forth*" is misguided. It implies we're stuck in the early-adopter phase still and nothing was accomplished. That's a load of garbage. Subsidies are not needed for the vehicles anymore. New tax-credit offerings should focus on the next stage: INFRASTRUCTURE.

Just imagine how well spent the money would be getting homes upgrades to offer L2 for each vehicle parked there. That would do far more to move mainstream consumers forward than just giving more to buyers already set on purchasing a plug-in vehicle anyway.

Just imagine how well spent the money would be getting employer... and businesses... and ramp owners.

It's all about moving forward. Pioneer efforts should be there now.

7-01-2019 **Well Timed.** Naturally, the attempt to draw attention to sad state of infrastructures and how those challenges are being ignored turned into an attack on Toyota: "*Toyota foolishly burned up nearly half their tax-credits on little PHEVs. By the time they go full BEV, they might not have much tax-credit left.*" There's so much of an obsession with delivering a BEV, they simply don't care about anything else related to mainstream acceptance. It's a fundamental mistake to evade balance, which is an essential to sustainable profit. It's what happens when group-think takes hold. They lose touch with the basics, choosing to lean on distractions as justification. That's sad. I point it out, but they really just plain don't care: Toyota won't need tax-credits for BEV offerings. That supposed "*foolish*" use for PHEV has already produced a remarkably efficiency system. Cost reduction is well underway. Battery refinements are pushing forward. There's even weight improvements coming from carbon-fiber. There's simply no merit to claims of having missed opportunity. Real-World data collecting from the plug-ins rolled out is serving its purpose well. Toyota is using that information to advance the entire fleet forward. So what if an EV doesn't come until the next stage when subsidies aren't available? At that point, the business of selling plug-ins would have been established anyway... which is the point of that money.

7-01-2019 **Do The Math.** He failed to consider the big picture, but it was a welcome change of pace. This was a discussion about charger setup at home... the very balance I had been arguing for in that other thread. It came to this: "*There should be some math to back up this analysis.*" That's usually how most of the posts progress. They get deep into the math, completely missing the point of contributing to green infrastructure. When reduced emissions is give a value of $0 in those analysis, you are very likely to experience a pushback to anything related to doing-your-part consideration. So, mention of helping a local electricity co-op or a local electrician shop by provided some real-world hands-on opportunity for them is pointless. They simply don't understand the benefit that provides. It's really unfortunate. This is what pushes me to find new approaches and new responses. In this case, it was simple. Debating between sticking with the existing 120-volt connection or having a new line & outlet installed for 240-volt power overlooked something which should be obvious. What do you do for the second vehicle? Households tend to have at least 2 vehicles. Not looking forward enough to realize there's only 1 outlet available is quite shortsighted... especially when these discussions amortize cost over the span of many years. That level-2 charger simply becomes a requirement for the purchase of a second plug-in vehicle. It makes no sense running a lower gauge wire. If you have to go to the trouble of installation anyway... Since those arguments insist upon math being the primary means of justification, I simply showed my response as this equation: 2 cars + 1 outlet = L2 needed.

7-01-2019 **Rush To Market.** In the past, arguments to disparage Toyota pretty much inevitably ended up with a turn to fuel-cell investment. It was an intriguing pattern of attempted undermining... since they were establishing a precedent I could turn on them later. For example: "*Toyota will go full FCEV before full electric. At least that is their plan.*" I took that bait... but didn't respond with the hoped for rhetoric type response. I hit back with cold, hard facts. This is the type of information that makes them cringe, because there's no effective means to rebut what just go posted: The name of that vehicle is Mirai. It uses a 151 hp electric-motor, which isn't a coincidence. That's a size perfect for an EV model of Prius or Corolla in this market. Toyota is being clever by dual using tax-credits, taking advantage of the FCEV opportunity to help bring about a means of achieving economy-of-scale savings for upcoming EV offerings. It's a interesting win-win situation that many here overlook or don't understand. Why not gain experience for something with so much potential, refining the technology before ramping up? After all, we have already witnessed what rushing to market did for GM.

7-02-2019 **Too Bad.** Exactly as predicted, there was no effective mean to rebut. Instead, he just got really angry and lashed out with a personal attack: "*Toyota is anti-EV. Don't spin it, Toyota fan boy*." I was quite pleased about getting such a clear indicator of having nailed it. I found a weakness in their arguments I could indeed exploit. That was always the hope of letting them set precedent... since that often leads to them backing themselves into a corner. That pattern of antagonist behavior, which is often self-deprecating, is quite common. They provide there own material for defeat. That's why I push so hard, allowing them to fall into their own trap. It confirms their stance is not well balanced. Overlooking the bigger picture is most often their tactical error. With this exchange, that confirmation was provided: That evidence showing they are not clearly struck a nerve. Now, whenever you try to spread that narrative, you'll get a reminder of the facts. All along, it has only been timing. Ramp up doesn't need to happen yet. Toyota continues to refine its EV tech by using their PHEV and FCEV platforms. So what if my 80 mph electric-only ability comes from a small battery-pack currently. It's an EV in disguise. So what if the carbon-fiber hatch isn't seen by anyone. It's very effective why reduction. So what if most don't know about the vapor-injected heat-pump. It's an extremely efficient means of cabin warming. Toyota is a legacy automaker that will emerge with a strong showing, right there with Tesla, but serving a different audience. Too bad if you don't.

7-02-2019 **No Substance.** That discussion shifted from Toyota to GM, the expected outcome when cornered. In this case, it's to spin a rosy picture of the future. Trouble is, GM is terrible in regard to promises. They are vague & ambiguous. The more you dig to get detail, the more you get conflicted & misleading messages of intent. It's been that way since Two-Mode development began. You had no idea what GM actually planned to deliver. Enthusiasts don't care though. They spread meritless hype, like: "*Actually I think GM is starting to show so real commitment to the Bolt EV. Inventories have remained high and prices at dealerships have come way down but GM keeps shipping new Bolt EVs out of the factory.*" That's a complete disregard for the market. It focuses entirely on a single vehicle without anything quantitative. The hope is to set an expectation based on assumptions the reader makes, rather than something that can actually be measured to definitively gauge progress. There's never any accountability either. When a promise isn't delivered, the response is always one of misunderstanding with the claim. What was said isn't what was actually meant is an effort to evade. Notice how "*real commitment*" and "*remained high*" aren't defined? Vague references like that are red flags. When pushed for detail, any type of ambiguous response is confirmation of no substance. I did exactly that, then posted this upon getting the confirm: Real commitment would mean putting it up against the true competition... other vehicles sharing the showroom floor. Remember, purpose is to actually change the status quo. No impact to that comes from conquest sales. Focus needs to be on GM influencing their own loyal customers, those looking to replace their old GM vehicle with a new one. Seeing the complete absence of any type of green SUV, the dominant GM product, is confirmation of no current commitment. Trax, Blazer, Equinox, Traverse, Tahoe... why aren't any of them offered as anything other than a guzzler? Two-Mode was rolled out over a decade ago. What happened to it? Why is there still nothing for the SUV line-up? Notice all the hype on GM's website now? There's a lot of electric & technology stories, but nothing of any actual substance.

7-03-2019 **Misleading Statistics.** That's what we called them ages ago. That has since become "*fake news*" fodder. Stuff like this is the source: "*Most people after driving a PHEV for 3 years will buy a BEV as their next car. So I don't see PHEVs ever gaining much market share...*" Often, the origin of such a claim is unknown & outdated. The method for drawing such a conclusion is questionable too, especially when it is so vague and without any references. Passing that claim along without question is the hope. Rhetoric builds upon beliefs that cannot be substantiated. Ugh. I punched back with:

A statistic based on an extremely limited sampling with a market skewed by limited availability and the scramble to take advantage of tax-credits before they expire tells us nothing constructive. In reality, mainstream consumers will flock to PHEV choices that are competitive with traditional vehicles. EV will come later simply because they are ready for a second vehicle with a plug, if they have capacity available. That PHEV will remain in their household.

Key selling point is that fact that many households have capacity challenges. Starting with a 120-volt connection is what will make things easy for both dealer & consumer. Making one dedicated high-amp outlet available is something that will come later, after the PHEV has been purchased. Getting a second line to a second vehicle is a topic "*most people*" avoid discussion about. Know your audience.

As for market share, that's also a limited scope issue. It will vary wildly from automaker to automaker. Toyota will thrive in that market because they have a very strong hybrid product-line already, showing increased growth and sustainable profit. Migrating to plug-in hybrid is an easy step salespeople will embrace. It's a simple upgrade option to sell, so why not? EV models take far more effort to sell to a showroom shopper.

7-03-2019 **June Sales.** When EV sales are posted, there's always a stir related to Toyota. The results of Prius Prime are an enigma. I provide background to draw interest in the thread, hoping to draw constructive discussion. Yes, I know, critical thought is a challenge when dealing with enthusiasts. But among early-adopters, a few helpful supporters will eventually emerge. This topic is great for filtering out hype. Hopefully, this helps that process along: 2019 Prius Prime inventory has been low, due to the 2020 model being that long awaited mid-cycle update which brings about that rear middle seat along with Apple CarPlay. The outgoing model was only available in selected markets as well, so sales expectations were never high with such limited access. When that new model begins delivery, the hope is there will be a ramp-up of production and nationwide distribution will become the norm. Knowing there will be market fallout from tax-credit phaseout anyway, it made sense waiting until the mid-cycle update was ready before going all out.

7-03-2019 **Decline.** It's quite common to focus on a single vehicle. Remember how the Volt enthusiasts would obsess with Prius, absolutely refusing to even acknowledge the existence of other Toyota hybrids. It was Camry hybrid that made them especially crazy. Having such similar size electric-motors was reason to be concerned about GM slipping behind. Of course, now with RAV4 hybrid so popular, it's over. The "*too little, too late*" has become a reality on several fronts. GM's supposed leadership didn't have any merit. There was no investment to spread technology to other vehicles, as Toyota has done. I make sure everyone understand that lesson learned too:

That perspective only works if you look at just Prius, disregarding what's happened with the rest of Toyota and the market here.

Toyota has used that window of time to rollout the new Camry hybrid, the new RAV4 hybrid, the upcoming new Highlander hybrid, and introduce Corolla hybrid. They also rolled out a new look for Prius, staging it for AWD and Limited models only while allowing the PHEV model to become the dominant offering.

Notice the when the mid-cycle upgrade of Prime was revealed? That's not a coincidence. It was part of a well thought out plan. Toyota was well aware of how GM was exploiting the tax-credits for conquest sales, rather than targeting their own customers. That meant Toyota would have to fight a pointless battle, wasting those limited subsidies with nothing to gain. So, Toyota avoided it by waiting... until the day after the first month of phaseout began for GM. It worked well too. Damage control efforts for Volt had come to a close at that point. The chapter in history it held had ended. Toyota got the spotlight and took full advantage of it, releasing a press announcement about the 2020 model.

Notice how well RAV4 hybrid is selling? That would make a great PHEV platform. All the work Toyota did will Prius Prime will transfer over nicely. You get the economy-of-scale benefit with a reputation for reliability established. It's a win for everyone along the Toyota production, distribution, sales, and ownership path across a widening array of choices... the full perspective. Growth is needed... many models... no dependency on tax-credits.

That's why an impression of decline doesn't matter. As stages change, there will be ups & downs. It's all about the overall advance.

7-03-2019 **Continue To Lag.** They don't give up. There's a never-ending push of the narrative about Toyota being behind. It's that mindset of making themselves feel better about GM's trouble by claiming someone else has it worse, even if there's no substance to the claim. Ugh. I hit back at today's slander attempt with: Toyota taking a different route to mainstream BEV doesn't mean they are behind. No legacy automaker has had any sale yet that wasn't subsidized. Others taking advantage of tax-credits is terrible gauge for how good ordinary demand will be. The race hasn't even started yet. That's why you question focus on Volt. It was an impediment for all those years. Always gloating about how far ahead it was, even though its reach never extended beyond niche. All that "*leader*" hype amounted to nothing. The technology never found a way to grow... which is why the approach Toyota is taking still has a great deal of potential. The smooth, quiet, efficient EV drive Prius Prime demonstrates is a taste of what's to come. There's a lot of other platform type work to take place before affordable, everyday type offerings are realistic. Notice how other legacy automakers really aren't doing much more than promoting what they are planning, rather than actually selling?

7-03-2019 **Approach.** The desperation is unbelievable now. Back in the, there's was the propaganda to leverage. But with real-world data so readily available, that doesn't work anymore. Attempts to misinform get debunked very quickly. Unfortunately, antagonists just switch to other tactics. In this case, they do whatever they can to change the topic. Diverting attention elsewhere doesn't work with someone so aware of their behavior. I just keep hitting back with facts: You're overlooking the platform those hybrids use & share. TNGA (Toyota New Global Architecture) enables that move forward, but time was needed to roll it out. That's worldwide. The discussion is about automakers & approach. GM bet the farm on Volt, choosing not to spread the technology until it was too late. Toyota is aggressively working to diversify, quite the opposite.

7-03-2019 **Better.** From time to time, there are attempts at constructive discussion. It usually breaks down when no substance for follow up is provided. For example: *"A common reason I hear from non-enthusiasts who want an SUV is being able to see "better" because they sit higher and feel safer.*" That sounds reasonable, but there's no context. When? Who? And now the question is what? What exactly is the "*SUV*" they are referring to? Is a crossover in their want list? With the acceptance of non-sedan variants becoming so popular, how small & short of a vehicle are they actually talking about? That element of better becomes a wash when everyone else is driving larger anyway. Notice how lack of detail makes you wonder what substance, if any, is credible to the aspect of better? Of course, there's me to inject some logic into those posts: Not following as close allows then to see better and it is safer. They really just use that as a justification... hence, know your audience. The takeaway from learning that is logic doesn't always sell. In fact, critical thinking is pretty low on the decision-making process for vehicle purchases. This is why Toyota had taken the time to create a hybrid design that's readily adaptable to support a plug.... RAV4. So when the time is right, they pull the trigger without consequence... the Osborne effect.

7-**03-2019** **Profitable Stage.** I especially liked seeing this: "*Honda and Toyota continue to duke it out to see who can dominate with last decade's technology!*" It came from an antagonists who clearly didn't want to read anything drawing attention to PHEV progress. Watching others from a distance, rather than being dragged into the mess, is preferred. There is worry that Toyota & Honda could see success on a scale large enough to cause problems for GM, who has abandoned the PHEV market. Not having anything in that category to offer is a very real problem without a strong infrastructure to favor only EVs as the path away from traditional choices. Knowing Toyota & Honda, as well as others like Hyundai/Kia, will have a variety to plug types to offer makes the hype coming from supposed profitable rollouts coming in the next few years rather dicey. How much eggs-in-one-basket risk can be taken? GM's failure with Volt was costly. The closing of Lordstown production really hurt. This is why I stated over and over and over again the importance of diversifying prior to tax-credits running out. Imagine if GM had to retool to get Trax with Voltec offered in greater capacity? Switching over that location from Cruze to more Trax would have been a welcome improvement for everyone involved. It's a next step which should have taken place years ago. Instead, countless direct & indirect employment opportunity has been lost from inaction. That's really sad. I put the situation this way though, being sensitive to those impacted by such major executive decision mistakes: In other words, the effort is moving on from early-adopter to mainstream. That's the normal progression when a technology matures. It's the high-volume profitable stage all automakers hope to reach.

7-**04-2019** **10 Year Ago.** It has been interesting to read through the discussion thread from exactly 10 years ago. This was back when Volt enthusiasts were under the belief that the design GM would be rolling out roughly 16 months from then would be a SERIES type hybrid. This was also when it was common knowledge that Toyota's newest generation Prius (rolled out just 2 months earlier) had a "*plug-in ready*" design, which meant a larger Li-Ion battery-pack could be swapped with the existing NiMH. Things went soar though and exchanges got ugly. By the time Spring came along (9 months later), those enthusiasts discovered Volt would actually be a PARALLEL hybrid instead and that new Prius had become far more popular than anticipated. Rhetoric had become more and more nasty as a result. In those decade old posts, I found lots of meritless claims about how superior the GM design would be over Toyota. It was evidence early on that they really didn't have much knowledge of how efficiency was achieved or the problems related to implementing the technology. They mocked Prius for having an "*evolutionary*" design, not understanding that's what would be needed. Revolutionary is not how you appeal to ordinary consumers, since those mainstream buyers are shopping for affordable & reliable choices that are well balanced... because that's what the dealer will sell. Anything related to good business was disparaged for the sake of endorsing what seemed then to be a "*vastly superior*" approach. It wasn't. 10 years later, that is overwhelmingly clear. Now, they are choosing to repeat those same mistakes, dismissing what they don't like and clinging to hope with substance. It's a mess, again!

7-05-2019 **Promoting Change.** The end of this year bring the end of tax-credits for Tesla. That's stirring lots of renewed discussion when sales results are a hot topic. July sales was an especially good example: "*If you can't charge it then it isn't included, no charge port then no inclusion. Hope that helps. BTW, that also excludes Toyota's "self-charging" cars.*" There's lots of how-to-report monthly totals. Some EV supporters want nothing to do with PHEV. Others get irritated by the lack of clarity among hybrid offerings. This is the very reason Toyota is taking yet another risk that many refuse to acknowledge. The love to cherry-pick. I love to point out that's what they are doing. I try to do it objectively though, hoping to prevent confrontation by presenting lots of information to consider. This was today's attempt:

That is actually the point, when you come to realize "*self-charging*" is really just the first stage in marketing shift. Next will be to promote "*plug-in*" without deprecating the effort to draw attention to their work to phaseout traditional vehicles. This is a big problem for legacy automakers, a barrier to overcome that Tesla and their supporters often don't give credit for.

Consider how abused the term "*hybrid*" has become. 21 years after sales of Prius began, it represents anything that delivers more than just a continuously running engine. By changing to "*self-charging*", it forces new discussion... which this group took and ran with, despite being such an EV-centric venue. They helped set the stage for that next stage. The term self-charging is now recognized as the type of no-plug hybrid Toyota/Lexus sells, not what other automakers sell with the "*hybrid*" label... a necessary distinction for phasing out traditional vehicles.

Think about how little showroom shoppers actually understand about the technologies available. There at the dealer, being presented with a "*self-charging*" and "*plug-in*" choice, there's no confusion. Both are obvious improvements over traditional offerings with obvious definitions of purpose.

EV supporters really struggle with how to get dealers to embrace change. Toyota doesn't. Toyota is setting the stage for a quick & easy transition. Consider how vital effective marketing much be to appeal to ordinary consumers. The "*self-charging*" and "*plug-in*" labels don't intimidate. They are a simple means of promoting change.

7-05-2019 **BEV vs PHEV Sales.** An article posted today on that topic left out a lot of things to consider. It was basically just a fluff piece to generate discussion, which is great. But that obvious exclusion of vital information was quite annoying. That's what happens when you focus entirely on numbers. Looking at influencing factors... the market itself... was disregarded entirely. That type of omission borders on fake news. Hopefully, the missing facts will be addressed. We'll see. In the meantime, this was what I had to say:

There are 3 major factors at play with regard to PHEV sales in the first half of 2019 that were not addressed.

First was the discontinuation of Volt. Knowing GM no longer had any definitive plans to rollout an type of PHEV tech to any of their traditional vehicles meant that production end represented an abandonment of that market. That means whether or not other automakers move in to fill that void must be taken into consideration. Remember, sales of Volt were almost entirely the conquest type. That meant there was interest from elsewhere, but few choices from elsewhere available.

Second was the limited availability of Prius Prime inventory. Toyota knew it had a 2020 mid-cycle update on the way for the second half of the year. That meant supply of 2019 models would be in small quantities to only the select markets it had been available. Nationwide rollout would not happen until after that update. So, sales results in the first half wouldn't be representative of actual demand... especially since the 2020 model would offer improvements based upon market feedback.

Third is the on-going influence of tax-credits. With them in place, we're still only looking at early-adopter buyers. These are people who cross-brand shop and take advantage of subsidy opportunities. Regular showroom shopper are an entirely different audience, not in any way represented by the sales results to date.

7-05-2019 **Misrepresenting Sales.** Stuff like this is very irritating to encounter: "*Hybrids flat since 2017*." It's nothing new. People have been over-generalizing like that for 20 years. Anything with a battery-pack was called a "*hybrid*" vehicle. Nothing about its design, or even shape or size, made any difference. All the numbers were just lumped together and averaged. It's just like averaging price, instead of using median. That is deception tactic often used to misrepresent. The catch is, there are many who either don't care or don't bother to research what information they are actually passing along. The number simply validates their stance, so they use it. That's why I jump in with facts regularly to give a heads up to those who honestly didn't know and keep those who might be hoping to mislead something actually constructive to consider. In this case: Notice what's happening with the new RAV4 hybrid? It's a midsize SUV that delivers 40 MPG. There's a massive market for that particular audience, especially with a starting MSRP of $27,850. Consequently, growth has been dramatic. Comparing the first half of 2018 to the first half of 2019, the growth rate is 142%. In terms of actual numbers here, June had 9,013 sales. For Toyota's design, that only requires the addition of a one-way clutch. Finding room for that extra battery-capacity is obviously with a larger interior like that too. So, there's a lot of potential. Flat is misleading.

7-05-2019 **Understanding MPGe.** Those trying to run reputable venue for sharing information about all vehicles with a plug are really struggling with those who are poorly informed... and those who just plain don't care to learn. They keep publishing articles from time to time about how efficiency is actually measured & represented. That makes a huge difference toward understanding the variety of technologies available. Not all electrics are the same. Not understanding that is a big problem, since it prevents advancement of discussions. If the knowledge sharing is remains stuck at a basic level and is routinely posted about with incorrect comment material, the integrity of the venue is at risk. For example: "*It should be just RANGE for an EV. For a PHEV it should be EV range then MPG when the sloppy OPEC gas awallower starts to spew it exhaust.*" That seems innocent enough. But it is highly misleading. Any automaker can just add more cells to give the impression of efficiency. But in reality, its really a waste of resources. I tried to explain, yet again: Capacity of the battery-pack is a red herring, telling you nothing whatsoever about how efficiently electricity is actually consumed. 44 kWh/100 mi. 25 kWh/100 mi. Those numbers are from the article's illustration. They reveal that one vehicle uses far more electricity to travel the same distance. This is why even a short-range PHEV can be a much greener choice than an EV with a long-range capacity. More can actually be a disadvantage. After all, unused capacity doesn't accomplish anything. That's why the consumption rate is a necessary measure of true efficiency. In this case, the data reveals the one is an outright guzzler in comparison since it requires an additional 19 kWh of electricity to travel that same 100 miles. Think about the added expense to pay for those extra kWh and the wasted time waiting for longer recharge.

7-06-2019 **Timeline Downplay.** I see posts like this frequently: "*Don't worry about PHEVs. There is no long term future for them, they are a transition vehicle for people not ready to take the full step to BEVs.*" Calling them out for lack of substance usually ends up a battle. Some feel insulted, since from their point of view nothing else needs to be said. Few recognize the absence of anything measurable. No quantity of any type... volume, pricing, duration, variants, markets, etc... is a dead giveaway they didn't actually put any thought into what they posted. It was just a gut reaction based on anecdotal observations. Constantly having to deal with such callous attitude about what some claim is annoying. But that serves as an indication of progress. Certain things are eventually overcome. Remember misconceptions from 20 years ago? It's a slow process. Even small steps are progress. Here's my small push forward for today: Just a transition vehicle? That downplay is telling. Toyota has sold over 13 MILLION hybrids and sales continue to grow. Prius Prime and Corolla PHV are now demonstrating just how easy it is to offer a variety of competitive-with-traditional choices offering a plug. Think about how long it will take for BEV to become a choice actually able to compete head-to-head with a traditional choice on the showroom floor. We all know that will eventually happen, but not anytime soon. Prices are still too high and profit still too low. That makes them very unappealing for dealers to even bother to stock them. How many 10's of MILLIONS of plug-in hybrids could be sold in the meantime? It's all about being realistic. You can't just blow off such a significant of a stage like that, especially when we all know that the first plug-in purchase will lead to serious consideration of a second with greater capacity. In other words, BEV depend upon PHEV to help deal with the pushback. Remember, the inherit nature of most people is to resist change.

7-07-2019 **New Battle Front.** Antagonists experienced an announced attack on a totally new front... a sucker punch. Out of the blue, Toyota revealed they are testing a new type of solar-cell for automotive use. It thinner than in the past, which makes it more flexible and more efficient. That efficiency rate jumps from the current 22.5% to +34%. It's quite an improvement. So much so, there's worry about this new arrow in Toyota's quiver. That equates to some sizeable levels of EV range being replenished while parked and while driving. That's a twist no one saw coming. Seeing Toyota on the offensive makes those antagonists crazy. They have no idea how to deal with that. Some of the old rhetoric isn't working well either. I was obviously amused to witness the struggle and was happy to join in the new battle: You're completely missing the point of getting more out of less. I have two 4K wi-fi cameras outside that never need to be plugged in. Each equipped with a small solar-panel makes them extremely convenient. It also means they don't require as large of a battery. Those same advantages translate over to a vehicle.

7-07-2019 **Desperate Already.** Downplay of the solar feature fell apart. This is what the discussion devolved into: "*Because Toyota is 5 years behind Tesla and they know it.*" That lack of substance is great. Repeating a mantra gets old, especially when something new like this comes out of nowhere. I was delighted to fire this back:

How are you coming up with such an estimate? Comparing a legacy automaker who sells roughly 10 million vehicles per year worldwide to a startup building infrastructure with lots of venture capital & subsidies and far fewer sales is pointless. They have little to nothing in common.

Choosing to ignore the current production Toyota is already delivering basically negates claims made anyway. The traction-motors used in Corolla hybrid, Camry hybrid, RAV4 hybrid, Highlander hybrid, Prius Prime, Mirai, etc. represent very solid EV experience, as does the production of all the cells used in their battery-packs. The heat-pump used by Prius Prime is industry leading for efficiency. The electric A/C is quite impressive for efficiency too.

Think about how much that is doing already to drive down production cost and build up a reputation for reliability. Seeing further R&D spent on exploring other aspects of electric benefit actually puts Toyota in the leadership circle. So claims of "*behind*" are just rhetoric passed along without substance.

You're overlooking the most important part too. For a legacy automaker, finding a means of getting dealers (their true customer) to embrace change is absolutely vital. Success in that realm is undeniable. RAV4 sales currently (first half of 2019) show 23% are the hybrid model. That shift away from guzzlers is momentum which will serve Toyota well as plug-in interest rises.

7-07-2019 **On-Paper Scribbles.** A thread about solar is new territory... with the same old tactics. Some work. Some don't. In this case, it has come to everyone trying to calculate outcome. Antagonists are scrambling to show the effort is a waste. To do that, they often just make up numbers. I have real-world data to counter that with. So, I am: That estimate is way off. A full recharge of the EV portion of the battery-pack for me averages just 5.75 kWh. This morning, my JuiceBox Pro reported 5.58 kWh. Remember, I have to brake when approaching my driveway. So, there's no real concept of being totally empty or the same amount each time. Also, summer month deliver an average of 30 miles EV range. That supposed 4.3 kWh return would actually work out to about 22 miles... more than enough for the commute home... which doesn't consume the entire capacity anyway. In other words, on-paper scribbles don't translate well to real-world driving.

7-07-2019 **Doses Of Reality.** It was really nice having someone chime in with one today: "*You realize that even on cloudy days the cells are still packing it into the batteries. The panels now days don't need direct sun or even sunny days to generate power. Just sayin'*." I had overlooked the fact that the antagonist was trying to steer the discussion to an ideal by implying solar would only work in bright conditions. Even with the small dedicated solar panels I have for each of my 4K Wi-Fi cameras, they fact is obvious. But I got hung up in his trap, not stopping to think about how effortlessly they keep the batteries charged. It works so well, that's easy to overlook. I never have to think about them. They just always work. A solar-array mounted on the surface of a vehicle won't be that efficient, but it certainly will be effective. Forced-Air cooling for the battery-pack, even when parked indirect sun without being plugged in, won't be a big deal. The system will simply take care of itself. Heck, that extra electricity while you're driving would come in handy too. Think about how expensive and inefficient Prius was when it rolled out over 21 years ago compared to what it is now. Toyota had to start somewhere... and they are already approaching a point with solar where some people will take notice. There's definite potential. Continued refinements of the tech will get it to that price-parity point. This is where patience & persistence really pay off. The catch is, you have to keep fighting antagonists with doses of reality in the meantime. Otherwise, there efforts to undermine will overwhelm the message of progress.

7-08-2019 **New Chargers, Day 1.** The wait has been so long, I don't remember when it began. 2 of the chargers at the ramp I park on for work lost their network connection, but continued to work. You just couldn't interact with them online anymore. The ramp owner decided to replace all of the chargers there with new models. That was back during Winter, when the effort to do that was futile. When Spring arrived, the change over started. But progress didn't really amount to anything. Blocked off spots meant something would eventually happen. Finally, we got one new unit. It had a "not available" sign on it though for awhile. That quickly changed to having it turned on, but not programmed yet. We could use the 10 grace periods in the meantime though. Finally, it got setup. Complete! Phew! 3 more to come. All of a sudden, they did too. We then had to wait for programming. I had hoped it would be the next day. That didn't happen. 3 of us had to park there without plugging in. I was annoyed, since my drive to the ramp included an errand which ran the available range down to just 0.2 mile. It was barely enough to get there on just electricity. But sadly, I couldn't recharge. To my surprise, the 2 connected to the only working unit couldn't either. For some reason, it lost power after both started to draw from it. Eek! What was to come?

7-09-2019 **New Chargers, Day 2.** It was another strange day. The power on the 1 unit was still off. The other 3 had been programmed though; however, 1 side of 1 of them was displaying an error. Hmm? None of that was the big news though. To my delight, there appeared to be an unexpected change of policy. The charger was displaying "Free" when I checked online status. Could it really be that the fee for charging had been dropped? Since the ramp has an 80 kWh solar-array mounted along the many floors of its sunward side, that expense for electricity would pretty much be a wash. No daily cost to use the chargers certainly would be great!!! The chargers themselves are fantastic. No more messing with cords. The build in screen is incredibly informative. Chances of attracting more use are very encouraging. Sweet!

7-09-2019 **End of 2017.** Having read through the discussion thread a decade ago got me thinking about the end of 2017. Remember then, when things were really starting to look grim for gen-2 Volt? Enthusiasts new 2018 would be even worse. This particular quote is what I close my post at that time to provoke discussion on the old daily blog: "*We all know offering an affordably designed plug-in hybrid system in a small SUV, like Trax, is what GM desperately needs. We also know that the moment it is announced, demand for their traditional SUV offerings will see an immediate negative impact. That corner GM is trapped in has become quite obvious.*" Advice about taking some thoughts with replies fell on deaf ears. It became a desperate effort to defend GM, doing everything possible to avoid addressing the "*range anxiety*" problem Volt was intended to solve but Bolt ended up doing instead. That digressed into Toyota attacks and a refusal to acknowledge the goal of replacing traditional vehicles... which is why I blog so much. It documents how long this problems persist. They learn nothing, which allows the problem to repeat. At this point, so many major battles have been lost (Two-Mode, Volt-1, Volt-2, Bolt) that the entire industry is looking at GM failure as a sign about how difficult it really will be to address change. BMW's step down of their highest executive overseeing their electrification efforts for the past 4 years was a major upset this week. It creates uncertainty among other giants (like VW & Ford) who make lots of announcements for the future but don't have anything laid out for deliver detail. It's all a "*here's what we're working on*" expression of hope. All of a sudden it will be the end of 2021 and we'll be wondering why not much actually happened yet from them. Thankfully, at least the push from Toyota is going well. We can see that quite a bit of effort is being expended to avoid getting cornered. With such an obvious trap, you'd think they'd at least try. Ugh.

7-10-2019 **Registration Fees.** Anyone else ever take the time to actually do the math? Try this, the new proposal for Ohio: "*For a driver who travels 13,500 miles per year in a vehicle getting 25 miles per gallon, the new tax would cost $57 more, or about $1.10 per week. The plan also establishes new registration fees of $200 for electric plug-in vehicles and $100 for hybrids.*" That means if you are driving a 50 MPG hybrid, you'll have to the $100 fee plus $28.50 from the new gas tax. That $128.50 total is more than double what the person driving the guzzler must pay... or is it? The impression of penalizing the person driving the hybrid to that extreme sends a terrible message. For the EV, that's a different calculation, since no gas tax whatsoever (original or the new addition) is paid. But if you do the math, stating a final gas tax of $0.30 per gallon. Those 13,500 miles at 25 MPG would be 540 gallons. That works out to $162 in the end. Sadly, it's easy to manipulate people's beliefs by choosing numbers that misrepresent... a common practice for those spinning a narrative. Be very careful. Always ask for detail. Always do the math. The actual of calculating a variety of scenarios can be quite revealing.

7-10-2019 **Not The Same.** Tactics used to deceive don't often change. Sadly, the majority of people have short attention-spans and don't bother to verify supposed facts. They just accept the information presented to them without question. It's a disturbing reality. We're seeing a lot of that now with the death of Volt. Even though it was a terrible example of what an automaker could deliver, it was the one every used. So, there was some type of baseline discussions could focus on. Now that it's gone, the obvious misunderstanding of how plug-in hybrid technology actually works and how much each design can vary is becoming a cold-hard reality to deal with. That means we see quite a number of posts which wildly misrepresent plug-in hybrids. Even worse, we continue to get evidence that some Volt enthusiasts who didn't know how their vehicle operated. It's quite remarkable to see how they assemble anecdotal observations into an incorrect interpretation like that. That spread of misinformation turns into rhetoric. I keep fighting back the never-ending problem of those not-the-same claims: Lumping all PHEV together is as reckless as lumping all EV together. PHEV that are affordable will continue on just fine. It fact, there's potential for growth now with the market thinning out. That's why MSRP has been so vital, despite the rhetoric here attempting to evade acknowledgement of certain models not having a dependence upon tax-credits. That's simply the next step taking place. Designs unable to compete directly with traditional choices (those sharing the same showroom floor) will see sales plummet when subsidies come to an end.

7-10-2019 **Premature.** It's the same old story. 20 years later, little about how people react to change has actually changed. We simply have new venues to spread the lack of objectivity. Collect a tiny bit of data, then draw a conclusion. Ugh. I dealt with more of that today, in the comments of an article stirring that very rhetoric... which is great for a publisher, since it attracts participation to their media source, but terrible for consumers trying to get constructive material: PHEV availability hasn't even rolled out beyond the reach of early-adopters; yet, some are calling them dead already. It's the same thing we saw in the past. Very limited sampling is used to draw a conclusion about an entire category. That's how narratives come about. Just pass along the same belief as group-think until no one questions it anymore. We saw that play out with GM. What got delivered for Volt was clearly not targeted at mainstream consumers, even though the claim was that vastly superior to Prius. None of that audience cared about the business fundamentals required to support such engineering. They just kept repeating a victory mantra. Sound familiar to now? There's just as much potential for some models of PHEV being embraced by the masses as some EV models. A conclusion about either is far too premature. Heck, we haven't even finished the initial subsidy stage yet.

7-10-2019 **Wider Scale.** Ironically, this attempt to look at the bigger picture failed to look at the bigger picture: "*On a wider scale, I think most people who buy a PHEV want to switch to electric but have range anxiety issues. But after driving a PHEV for 3 or 4 years and they decide to buy a new car, it will be a BEV as charge points become more ubiquitous and they realize lugging around a gas burning engine is not required. PHEVs are a stepping stone to BEVs, not a long term solution to pollution.*" Through no fault of his own, this is basically just a lack of realizing there's more at play then what's been commented about. The difference between a peer attempting to be objective and an antagonists attempting to undermine is awareness. Do they realize their observations are incomplete? That's easy to determine. Just repeatedly present the information. If they go out of their way to dispute or evade, their intent is revealed as trying to impede. If they apply some type of critical thinking with the openness to feedback, they are successfully being objective. I already knew this individual wasn't trying to stir trouble and provided feedback accordingly: That perspective of "not a long term solution to pollution" requires turning a blind-eye to how many new vehicles are placed on the road every year. It's over 80 MILLION. That's a wider scale not to be overlooked. So what if there's an engine included for the next decade still? Being PHEV that only use the their engine from time to time represents a drastic reduction of both smog & carbon related emissions. Being realistic means seeing EV as the future, but accepting the reality that it will take over a decade of hard work to even get to a majority having changed. In other words, there are a BILLION vehicles that will be part of the transition period. Calling them a "*stepping stone*" is imply they are an insignificant stage on the path to EV. That implicit downplay contributes to rhetoric for those fighting to retain the status quo. Don't give them that opportunity

7-11-2019 **They Already Have.** This rhetoric was especially interesting to respond to: "*I still don't understand why PHEV manufacturers didn't follow the Volt model. That is a PHEV (strictly speaking it's a range-extended short-range BEV like the BMW i3 REX) that could be used purely in all-electric most of the time.*" That second sentence was a confirm the person had no idea how Volt actually worked, that for possibly many years he has been spreading misleading information. Without additional context, that's difficult to assess. With a preceding sentence describing PHEV choices, you get a better idea of the mindset: "*But most models on sale now or being introduced have pitiful all-electric range and impotent performance.*" Those colorful metaphors are a dead giveaway of a problem. They are insulting and extraordinarily vague. To belittle & mislead is exactly the type of response antagonists post. Hopefully, my reply to that had some type of positive impact: They have already. The common narrative would have you to believe otherwise though. It's a successful effort to undermine. Prius Prime works exactly as you describe. My EV drive ratio is 87% with 2,261 miles on the current tank. It will only get better over time too. As more chargers become available at retail & grocery locations, the opportunity to recharge while out & about will rise. That will push the EV miles even higher. Don't believe the rhetoric stating "*short*" range and "*anemic*" power. Those claiming that have an agenda to push a purist approach. That's really sad, knowing we have such a diverse market.

7-12-2019 **Your Impact.** Most people don't realize just how much of a difference their contribution can actually make. Some people do: "*I don't mind paying a little more to companies who are putting more charging stations in, after all how much more is it really and will that small amount make or break us?*" That made telling my story quite worthwhile:

Most people don't consider the true impact of that type of mindset... or haven't, until we share more experiences. Here's mine.

Back in 2012, the ramp downtown I park at installed 2 chargers (total of 2 level-2 connections). That worked out great with my Prius PHV. I could recharge for the commute home. That usage fee added up, drawing the owner's attention. A few years later, 2 more chargers were installed, bringing the level-2 connection count up to 6. That was great! They would actually fill on some occasions too. Last Fall, those newer chargers went offline (some network issue), though charging was still available. The choice was to replace all of them with the nicer models. Now, we have 8 connections available. It's really sweet!

That daily charging expense on our part was validation on the owner's part about that having been a wise investment. So, the investment grew. It's too bad that "pay forward" mentality isn't more common. There's no way of knowing if the owner actually made any money from the charging fees, but the benefit to others is undeniable. More chargers for people parking there is a win for everyone.

Think about what the visibility of more chargers does for those considering a plug-in purchase.

7-12-2019 **Neglect.** It makes you wonder how the big blogging website for plug-in vehicles continues to push a perspective like this: "*...but with just 1,100 Prime sold in H1, it's neglecting plug-ins.*" Seeing that on the subtitle of an article posted about Toyota European sales for the first half of 2019 was troublesome. Was that included to stir participation, knowing it would result in some rather passionate posts? I jumped in immediately, with this as the first comment: It made no sense stocking up on model about to become outdated. Those paying attention know that 2019 inventory was extremely low due to 2020 rollout on the way, which is a mid-cycle upgrade. That newer model will introduce center seating in the back (the real thing, not a mock spot like Volt had) along with a few refinements to interior features. The entertainment system gets Apple CarPlay and Amazon Alexa. There is no way to spin that as neglect.

7-12-2019 **Dead.** You can't help but to be amused by posts like this: "*Hybrids are dead, as they should be.*" That's a desperate attempt to spin a narrative of assurance. It doesn't work, since such a reality is fictitious. Nonetheless, you see them on a regular basis. This time, I punched back with cold-hard numbers: 110,267 purchases of Toyota/Lexus hybrids in the United States alone the first half of 2019 contradict that claim. 275,300 purchases of Toyota/Lexus hybrids in the first half of 2019 for Europe.

7-12-2019 **Already Delivered.** Things get really interesting why rhetoric turns to outright lies. It's so easy to disprove claims, you have to wonder if anyone falls for that nonsense. Based on my observations, that type of activity tends to soar interest. That's why moderators sometimes step in to deter the behavior. Bringing down the integrity of their forum will indeed make people lose interest. Anywho, you have to watch for them, then callout their post when found... which is exactly what I did upon seeing a post providing a suggestion of what should be done to make the idea appear untried: 88% is my EV drive ratio with 2,350 miles on the current tank. Your "*Most of the time Drive in electric mode, and use the ICE engine only on long routes.*" has already been delivered. Toyota's focus now is affordability. They are spreading their newest hybrid system, which is easily adaptable to support a plug, across their fleet. That will bring about not only economy-of-scale reduction of cost, that also provides a strong endorsement for the technology itself. Also, keep in mind that size of the battery-pack itself matters less and less as more businesses offer chargers for their patrons.

7-12-2019 **True Change.** The enthusiast trap is a simple one. You become fascinated with a new product, then lose sight of the bigger goal. That's so common of a problem, many fight to a bitter end without ever really figuring out why their dream fell apart. Oh well. All you can do to provide reminders of purpose. Today, it was with regard to how successful the progress forward has been for Europe: The point is to replace ICE choices with HV, PHEV, EV choices. That's exactly what Toyota is very successfully doing. They are transforming the showroom floor, appealing directly to loyal shoppers. This isn't about the subsidized conquest nonsense we saw with Volt from GM. This is about demonstrating to their customers (dealers who purchase inventory to sell) that embracing hybrids will feed a growing demand for more and more electrification. Automakers are a for-profit business. No matter how great a technology may appeal to enthusiasts, is makes no difference to the bottom-line. Far too many don't take challenges of having to achieve high-volume profitable sales from ordinary consumers seriously. Seeing Toyota/Lexus reach that tipping point in Europe, where more than 50% of the sales are now hybrid is a landmark achievement. That's what represents true change.

7-12-2019 **Wrong Focus.** There's an obsession with production capacity to such an extreme, many enthusiasts stuck. They have nothing to contribute... hence being an enthusiast, rather than a supporter. To provide support, something to help the process along must be done. Online arguing for the sake of defending a position doesn't accomplish anything... though, you'd never know it based on the number of chest-pounding posts lately. Capacity focus of the past was for range. So, the problems of being so single-minded are nothing new. From reading their posts, you'd think they were experts. That past will come back to haunt. Repeating the mistake of focus is common. It's about critical thinking. They don't. I try to provide constructive information, hoping some lurker will get it:

Production capacity doesn't matter when there is so much at play to retain the status quo. Setting up infrastructure (in this case, getting an atmosphere of change established at dealers) is far more important, especially when we know newer battery chemistry is forthcoming anyway. That's why Toyota is investing so much toward delivering affordable hybrids in the meantime. They make that next step to affordable plug-in hybrids a small one... which in turn makes the following step to an EV small too.

Remember, the dealer wants something that's easy to sell and the consumer wants something that's easy to buy. The decision to replace a RAV4 with a RAV4 hybrid is quickly becoming a simple one already. There's only a small price difference and the MPG improvement is obvious. It's an effortless step forward.

Think about Prius Prime. It will recharge entirely using nothing but the standard household outlet most people already have readily available in their garage. Plugging in takes no effort to understand. The act of plugging is simple. The benefit is obvious.

This is why having more battery-cells available isn't a priority. Focus currently needs to be on the market itself. Then when demand grows, that helps with the major decisions of where to actually setup that production and how much each location should deliver. Rushing that part can be a costly mistake. Think about how suppliers are already struggling with change.

7-12-2019 **Most Don't Bother.** A few of us on the thread discussing sales in Europe provided some numbers to consider. I was one of them: Avoiding detail is a common tactic from those unwilling to face the reality is actual sales. Pointing out how to best use the limited quantity of battery-cells currently available is an excellent means of stressing how a small number of EV sales achieves far less emission reduction than a massive number of HV sales. Put it this way. 1,152,108 Toyota/Lexus brand vehicles were purchased in the United States in the first half of 2019. Of that total, there were 110,267 hybrids. That's just under 10%, which is pretty much a solid 10% now due to the rapidly rising demand for RAV4 hybrid and the introduction of Corolla hybrid. Take that quantity and say each one uses an average of 1 kWh worth of battery-cells. 60 kWh capacity for EV would reduce supply ratio to just 0.16% of overall inventory. Why would a dealer bother when such a tiny quantity would be available? It makes no sense... which is why most don't bother.

7-13-2019 **Equinox Diesel.** Rather than spreading Volt technology to other vehicles, GM decided to focus on diesel instead. That's something even those wrong focus enthusiasts have a difficult time dealing with. That's evidence of just plain not caring. What a waste. The spin was quite amusing. They try to portray the situation as just one of disinterest. We tried. Customers weren't interested. End of story. It isn't though. Reading though one article on the situation sighted the hassle of "*needing to refill the Diesel Exhaust Fluid*". That's a major downplay, not journalism. Have they provided detail, you'd end up wanting even more. I remember estimates of needing roughly 7 gallons for every 15,000 miles. Think about where that fluid for cleaning emissions (it's urea squirted into the exhaust). You need a tank, a means of filling it, and the pump/squirt equipment for it to operate. That space, weight, and cost never mentioned by any diesel supporters. Curious, eh? By the way, if the system runs out, it is supposed to halt vehicle operation... like when you run out of gas. So, the effort on GM's part to roll that technology out for diesel models of Equinox & Cruze was a means of evading the obvious. Volt should have had a successor. Imagine what things would have been like if Equinox or Cruze would have been given that technology from Volt; instead, all that "*range anxiety*" work was just abandoned. Such wasted opportunity. Ugh.

7-14-2019 **Tax-Credit Phaseout.** There's a lot of mindless comments dominating discussions now. It's a passing along of the established sentiment without giving any thought to how things have changed recently. That makes you wonder how they'll react when recognition finally takes place. Not paying attention is putting it politely. I stated in this way:

Low-Hanging fruit can be beneficial. Tesla used their phaseout opportunity to ramp-up and sell as many vehicles as possible to establish a customer base and reach as far out into the market as possible. That's absolutely fantastic, exactly how those tax-credits were intended to be used. Kudos to Tesla.

Toyota still has tax-credits available and it certainly looks like they are doing the very same thing. Evidence of that is overwhelming. Rollout was limited to just select states. Within 500 miles over the past 2 years, Prime has basically been impossible to get here in the middle of the country and in some southeast states. A truckload would be special shipped from time to time, just enough to acquaint dealers with the technology. That holdback was an obvious wait for the mid-cycle update. Why waste tax-credits when you know that upgrade will be a more appealing vehicle?

Think about it. Phaseout period doesn't have a quantity limit. Toyota waiting until just before triggering that stage before significant ramp-up is exactly what Tesla did. That gives them valuable opportunity in the meantime to build up reputation from real-world data and experiences being shared by owners. Spreading endorsements like that is far more effective than any type of advertising. Again, that's what Tesla did. Their focus was the update too.

I find it quite telling how Volt was omitted from tax-credit discussion. Such a profound outcome from such a fundamental effort is a topic that should always be referenced. The lesson learned from that massive misuse of tax-credit sends powerful message of industry complacency. There's no denying anymore that GM exploited those tax-credits for conquest sales, using them for green praise rather than actually delivering something to appeal to their own customers. Enthusiasts loved the technology. Engineers did their job well. Kudos to them. GM management on the other hand, refused to spread that technology to vehicles GM shoppers would be interested in. No Equinox with a plug. No Trax. Nothing. They just let the phaseout period approach without even trying to reach beyond that niche audience.

Watch what happens in the second half of 2019. You'll see that preparation for ramp-up taking hold. Toyota knows their audience. They understand how to appeal to showroom shoppers, which is what their dealers depend up for stocking that inventory. Neither cares what rhetoric is spread online from antagonists. They simply want to sell lots of vehicles at a profit without a lot of effort... which is exactly how Prius Prime was configured.

It is interesting how those antagonists will spin that careful planning & patience as a narrative about "*dragging*". For that to be accepted, readers must dismiss facts to the contrary.

7-14-2019 **Kicking & Screaming.** Some just plain don't care. They like the narrative and are happy to contribute to rhetoric to keep it going. The usual "*...with Toyota being dragged kicking and screaming.*" was interjected into what started out as a discussion about sales in Europe. As expected, a post without any supporting detail came along. It's just post an insult and wait for cheering. Ugh. I always have something to contribute when that nonsense attempts to derail constructive posting:

Confusing patience for resistance is a common problem, especially online.

That spin tactic is used by enthusiasts favoring other automakers to draw attention away from their silence. Notice how painfully quiet GM has been? Remember the narrative claiming Volt was dropped so GM could go all out with Bolt instead? Nothing happened though. Literally, the only message related to EV sales is that we can expect profitability in 2021. What kind of thing is that for the supposed leader of legacy automakers to say?

Of course, what evidence of kicking & screaming is there? A few point-in-time advertisements mean nothing compared to action taking place. In the first half of 2019, we have seen rollout of Corolla hybrid to new markets and introduction of Corolla PHV. That's a resounding step forward. It is overwhelming confirmation of change. You don't mess with the world's top-selling sedan unless you are serious.

To add a plug to a Toyota hybrid, it's only a matter of adding a one-way clutch. That allows the second motor (usually used as a generator) to contribute the extra power from the larger battery-pack to the wheels. It's a bump to performance with minimal cost... exactly what good design should deliver... which confirms Toyota had planned ahead... making claims of resistance an act of denial.

7-14-2019 **Move On.** Desperate attempts to change the topic are going nowhere. The reason why is simple, lost enthusiast don't have any suggestions. They are just tired of having to deal with the fallout: "*It looks like it is time to move on. The same weak excuses keep getting repeated.*" I had to listen to an endless stream of excuses as to why "*too little, too slowly*" really wasn't anything to be concerned about. They were wrong. Now, there's no reason to listen. I like that how hypocritical things worked out:

Ironically, you sight "*enthusiasts*" as vague, but then vaguely use "*people*" repeatedly in the very same post. That claim of "*Last year the argument was they would fall off a cliff and go bankrupt as soon as the 7500 credit was reduced.*" has no source sighted. I ask, who you are referring to?

Low-Hanging Fruit was the message posted here on a regular basis. Remember that? It's a well fit analogy. It is specifically defined as: "*a thing or person that can be won, obtained, or persuaded with little effort*". In other words, Tesla sales will continue, they just won't be as easy. Sales will simply plateau at some lower rate... nothing resembling a cliff or the implied death from that fall.

Seeing some type of demand reduction as a product innovator becomes a mature player is perfectly normal. In fact, that's what investors expect. Stability is far more important than being on the "*bleeding edge*". Speaking of fitting analogies, think about what "*bleeding*" actually means.

In other words, your attempt to dismiss has fallen on deaf ears.

7-14-2019 **Crosstrek Review.** As other PHEV offerings enter the market, how will the online banter change? Mainstream consumers are so far removed from that isolated perspective, it's like we have 2 entirely different realities to deal with. One is obsessed with power & range, completely out of touch with the priorities not focused on electric propulsion. The other is just an ordinary consumer not really interested in doing anything special to reduce their emissions or consumptions. That disconnect is remarkable. Knowing that, reviews capture my attention. The one on Crosstrek today especially did. It was just a basic review, nicely done. I was first to comment, seeing if I could actually stir some type of constructive return: 118 HP (88 kW) is the output of its electric motor, something most people don't recognize the significance of. That particular specification is important, since it reveals Subaru used a component from Camry hybrid, not Prius. People often see the 8.8 kWh battery-capacity and just assume it is the Prius Prime system reused. It is not, as MG2 power output clearly confirms. That ups the count of PHEV offerings resulting from Toyota's hybrid design to 3... Prius, Corolla, and now Crosstrek. There's a 151 HP (113 kW) electric motor used in Mirai. Think about how nice that would be used in plug-in hybrid or even a electric-only vehicle. Toyota is quietly rolling out components for a wide variety offerings. That's refinement to efficiency & production which will have a significant payoff later. Think about what the upcoming EV model of C-HR will include.

7-14-2019 **Newbie Advice.** I'm really looking forward to the wave of 2020 Prime about to arrive. In the meantime, there are some still jumping on the opportunity to snap up a good deal on remaining 2019 models. One new owner today posting concern about heat resistance, wondering if he made a mistake purchasing something unfamiliar. That's quite typical. Everyone starts out as a newbie. Uncertainties vary though. So, you have to do your best to find out what the concerns are for that individual. That was pretty easy to address in this case. It was also quite informative. His purchase was an upgrade from an old second-generation Prius, the Iconic model. That was a testament to how well Toyota connected with owners of the past. Upgrades like that provide a strong endorsement. I help out by providing a little comforting advice: Park with the car aimed in the general direction of the sun and put up a sunshield for while it's parked. When you are ready to leave, use the all-windows down feature on the FOB to air out the car quickly. (I do that as I'm approach, so venting has pretty much finished by the time I unplug and get settled.) Then use the A/C generously on the drive home. No big deal. That's cool enough to keep the battery happy.

7-14-2019 **Late For What?** I wonder how much longer the "*late*" rhetoric will persist. There's not much of an audience anymore to care. National average gas price is only $2.79, the SUV is more popular than ever, and battery cost has finally fallen to a reasonably competitive level. Seems like an affordable plug-in hybrid like Prius Prime is right on time. With tax-credits no longer skewing perception of demand, the reality of appealing to mainstream consumers should finally get acknowledgement. Refusing to recognize the terrible dependency placed upon subsidies was a terrible mistake. To think of all that effort wasted by Volt enthusiasts fighting pointless superiority battles based upon such a futile approach. Calling it risky is being polite. It was basically just plain stupid. Automakers are a for-profit business. Why in the world would they embrace any green technology that requires extra effort to sale and returns lower profit? Getting stuck with unsold inventory or wasting a ton of time on a lost sale makes no sense. Yet, that was the gamble enthusiasts had hyped as so realistic, it would crush the competition. Of course, they saw the competition as other automakers... not other vehicles sharing the same showroom floor. Some are still trying to keep that belief alive too. Ugh. If anything is late, it is them coming to the realization that hype doesn't appeal to ordinary shoppers.

7-15-2019 **Downplay & Enabling.** There's less and less of an excuse for this... at large, like when you randomly encounter someone and the topic of plug-in vehicles come up. But when online, those posters have no sound reasoning for this: "*Amen brother. Had the same experience test driving this car. Lacked any EV range. The whole Toyota (and Subaru) concept of paying a extra $7K for occasional hybrid assist is lost on me. How about a real PHEV?*" What they are doing is passing along downplay, enabling one and other with rhetoric. It makes you wonder how seriously the casual reader takes those comments. I suspect many just filter through looking for something to agree with. That's unfortunate, but not a surprise. This is why it can be more effective at times to keep replies brief, like: $27,600 MSRP for Prius Prime isn't that much more. Not sure what your definition of a PHEV is either. With my Prime, I have been averaging 27 miles of EV on the highway with A/C running. That no-gas-used driving experience is what?

7-15-2019 **$3 to $5 Thousand.** It is interesting to remind people about the target from so long ago. That's what Toyota had determined for pricing of their plug-in augmentation for Prius. That's exactly what got delivered too. Right now, the price is $4,000 more. All that research seems to have paid off. Based on the direction the market is taking... now that tax-credit influence is fading... appears to reveal the pricing is how ordinary shoppers will be reached. Every person I talk to about plug-in vehicles has price at the top of their decision list. If it's too expensive, they just brush the discussion off as fascinating technology to wait for... rather than something to take advantage of. It's much like other tech. Phones are a great example. You know you'll eventually get something better, but there's no rush to upgrade. There isn't a guarantee of purchasing the best available either. In fact, most people tend to gravitate toward a balance of price. Having the absolute most of something isn't a compelling draw for non-enthusiasts. That's why my concerns expressed about Volt were so dead on so far in advance. Know your audience.

7-15-2019 **27-Mile Average.** We did the trip up to grandpa's today, staying their the entire day. So, there was ample time to recharge. 27.6 miles of EV on the drive there. 26.6 miles of EV on the drive back. We had the A/C on generously and it was highway driving most of those miles. The back of the Prius was stuff silly too. Since we're prepping the house for sale, there's lots of things to deal with. So, each trip home includes as much as we can squeeze in. It's amazing how much cargo that hatchback can swallow up too. The arrival home requires quite a bit of time to unload... which is really becoming a pain. But way, we can properly disperse the items. We try to donate & recycle as much as possible. Being able to avoid a dumpster by transporting all that is really nice... and being able to do it with electricity is even better.

7-16-2019 **EPA Rollbacks.** We can be said about this? The current administration is doing everything they possibly can to not only impede progress, but to also set back the goal posts a much as possible. Long ago, it was sad to see such activity. But back then, damage wasn't a serious concern. It was basically looked upon as a stall tactic. But over 15 years later, we are now facing very real consequences of inaction. Knowing you have technology to significantly reduce impact, yet choosing the selfish course of exploiting resources for personal waste. It's not like anyone is trying to get rid of heavy offenders... like the SUV... it's a matter of getting them to be much cleaner and use far less fuel. This is why there was always so much resentment for GM. It was never animosity for Volt claimed by enthusiasts. It was always the "*too little, too slowly*" concern. Rather than using the momentum Volt had established for pushing forward, it was reaching on laurels... ironically, the very perspective antagonists portrayed for Toyota. In reality, it was an example of reflection. They couldn't see it though. That helped divert attention away from the policymakers working hard to rollback EPA regulations. It's really sad to see so much resulting from not setting clear goals. I warned of the consequences. Bad things happen when you do nothing to prevent.

7-17-2019 **Shipping Fleet.** Ever notice how those dead set against more than battery-power being the source of portable energy storage carefully steer the discussion to only include personal transportation? They work really hard to prevent commercial applications from being addressed... like cargo transport. Sure, you'll hear about the possibility of large trucks someday. But that's just to get you to stop pushing. Don't! Keep at it. All you have to do is ask how shipping across the ocean will take place. Batteries are far too small for that to be feasible. It's just not going to happen. Hydrogen, on the other hand, is already well underway toward replacing oil. That's where fuel-cells will truly be game-changer. We need a cleaner & renewable supply of energy for trade. Commercial applications are realistic for that. They don't require infrastructure changes like our vehicles would. Service stations in every neighborhood is a non-issue. They only need that fuel at ports where they dock. That's far easier to support. It doesn't have to be absolutely clean either. Dramatic reduction of emissions is realistic even if there is some conversion overhead for now. Think about how long these ships will be in service. Getting that fleet to change to the new fuel will make a world of difference. In other words, like it or now, hydrogen will become a major fuel of the future. So, why not have some commercial vehicles using it too? Think about delivery & cab services. Their fleets could take advantage of that fuel being available.

7-17-2019 **Media Misleading.** It's very frustrating to read an article that includes opening statements like this: "*Many consumers appear to lack a basic understanding about how these various alternative propulsion vehicles differ (e.g., what's the difference between hybrids, plug-in hybrid electric vehicles, extended-range electric vehicles, and fuel-cell electric vehicles?).*" Nothing seems wrong with what was said, until you read more. This didn't come from a fake news sight either. It was supposedly a well-informed automotive publication simply conveying information about the variety of vehicles available. Sadly, that wasn't actually the case. Good intentions seemed to fall apart, somewhere along the way. It makes you wonder how much they've been spreading misleading information. This is what specifically got me: "*Offer extended-range versions of EVs. Stop developing and offering Hybrids and Plug-in Hybrids, which are only prolonging the use of the internal combustion engine.*" There is no actual definition of an "*extended-range*" vehicle. Volt tried that spin, but kept changing criteria as new offerings delivered better. It turned into a game of moving the goal-posts. Ultimately, that's how Volt died. The technology wasn't ever marketed with any clarity. Ordinary consumers had no idea how it worked, since the misleading continued to confuse. Media, enthusiasts, supporters, and the automaker itself all had different ideas of how the technology should be identified. It's really unfortunate "*plug-in hybrid*" wasn't acceptable. They wanted to be "*vastly superior*" instead. Ironically, that effort to stand out is what killed it. So now, even after production has ended, many still don't know what "*extended-range*" tells us.

7-18-2019 **Analogies.** This was interesting, since it came from an antagonist. You don't expect something constructive. But every know & then, something thoughtful does emerge. In this case, this is that entire post: "*Everyone loves to use the Kodak analogy. Google waited and copied Apple's expensive, high-end approach to touchscreen smartphones, but made it cheaper and more accessible. Android is now, by far, the most popular smartphone OS in the world. My point is that not all technology roadmaps indicate that the first-mover is the winner.*" Since it wasn't intended as bait, I don't mind providing more context. It can be informative to paint a better picture of how change comes about when the position of an antagonist begins to change. Hopefully, pointing out shortcomings of an analogy help that process along:

That is an excellent point. People forget just how often being first in those initial stages of rollout ended up making no difference at all later. That's why the proper analogy for this situation is the TORTOISE AND THE HARE. Seeing the approach by legacy automakers during the early-adopter phase (subsidized sales) is solid reasoning why it doesn't matter.

Just look at how ineffective GM's exploit of the $7,500 tax-credits were for Volt. Everyone was cheering the sales numbers. No one wanted to admit those numbers were really just conquest sales, not making any impact to the status quo. GM dealers just kept selling the same old ICE offerings to their loyal customers.

Then when you look at the narrative for Toyota, you get a struggle-to-catch-up message without any acknowledgement that their tax-credits have not been used up yet and their plug-in offering is targeted directly at showroom shoppers. Toyota is striving to refine their technology prior to their subsidy expiration... exactly what GM should have done... and exactly what Tesla did.

That "*cheaper and more accessible*" is absolutely vital and exactly when Toyota is doing.

7-18-2019 **No Meaningful Investment.** Claims that Toyota's effort isn't making a difference struggle to provide substance. For example: "*GM did refine their EV technology prior to subsidy expiration. They leapfrogged all their competitors - even Tesla - and released the first sub-$45k EV with >200 miles of range, the Bolt. In contrast, Toyota has taken the same approach as Ford: no meaningful investment in BEV technology, relying on the subsidy to sell only enough PHEVs to meet regulatory mandates.*" That was the entire post. I found that truly desperate, knowing $35k was actually the target for the "*first*" trophy. It was a blatant attempt to distract from the true goal anyway. I was happy to remind them of that too:

Using the word "*refine*" to describe the adding of capacity is confirmation of listening to the wrong audience. GM was catering to enthusiasts, the group sounding off about the supposed need for increased range. Toyota, on the other hand, continues their focus on affordability. They are not relying upon subsidies, which the $27,600 starting MSRP for Prius Prime overwhelmingly proves. That's the "*nicely under $30,000*" target the entire industry has been striving for.

Toyota listens carefully to the audience necessary for sustainable profitability, their own loyal customers shopping dealer's showroom floors. That's why their technology refinement takes place outside of BEV sales. The efficiency of their electric-motors, as well as the production cost reduction, used now for hybrids will directly benefit BEV in the future... when tax-credits are long gone. That's why the extremely efficient cabin heating & cooling for their plug-in hybrids is also a win for BEV later.

The spin about not making any meaningful investment requires turning a blind-eye to all of that, in addition to how much of a gain there is from their push to get their dealers to embrace change by shifting focus away from traditional vehicles with the wide array of hybrid choices. No amount of "*leapfrog*" claims can deny that. GM dealers are still doing the same old thing they did in the past. Neither Volt nor Bolt had any influence on their behavior.

In short, don't claim "*meaningful investment*" without the expectation of being called out to explain how the status quo has actually been addressed. Real change is often not easy to see, especially with "*200 mile*" or "*$35,000*" market campaigns to convince you they are truly making a difference.

7-18-2019 **SiC (Silicon Carbide Transistor).** Remember hearing about this a few years ago? Toyota has been pursuing this improved thermal conductivity technology as a means of increasing efficiency. Since it reduces heat loss, which is an indication of energy waste, you achieve improvement. In this case, it equates to not only being more efficient, it is also faster. A future Prius would definitely benefit from this. Today, Toyota reminded us of their on-going effort by actually providing some detail. In whatever standard measure they were using to denote energy use by the inverter, it was stated that heat being lost was measured at 420 watts currently. Using SiC instead, the loss is reduced to 105 watts. That's a 75% efficiency increase. Without context, that's somewhat difficult to set a real-world expectation with. However, it does pave the way for pushing acceptance further into ordinary applications. Better use of energy is a win for everyone. In other words, it makes electric solutions even more competitive with traditional counterparts.

7-19-2019 **Change.** Flexibility has always been an impressive aspect of Toyota. Of course, having been a major force behind Agile, that should be no surprise. They expect change. It's part of the culture. You plan on adaptation. That's why the dynamic nature of their hybrid design has been such an impressive core to their approach. With that fundamental built in, it was a heck of an endorsement to continuous improvement. Change will happen. That's how I knew Volt was doomed even before rollout. So much was placed upon such a specific deliverable, there was simply no way to promote growth. It was trapped as a niche... hence asking "*Who is the market for Volt?*" hundreds of times. That technology didn't encourage change. Prius was quite the opposite, striving to adapt to a changing market. Toyota's choice to offer nicer rear-seating is evidence of that. They recognized & acknowledged how much their audience had changed. Who knew that just a few years later, even more change would come. Fortunately, Toyota addressed that too. I find it fascinating how some attempt to leave out detail, attempting to spin those changes as a mistake or backtrack. Think about where Uber & Lyft were over 3 years ago when Prime was revealed. A lot happened since then. Toyota brought back the middle-seat to accommodate that new requirement, one that never existed until recently. I have to keep reminding people of that, while also keeping the antagonists from spreading their rhetoric. Here's the latest: Toyota clearly stated years ago they were transforming the model, targeting their now older audience. With the family now grown up, no need for that middle seat. Knowing the sedan was rapidly losing favor to SUV choices, it made sense. Since then, that same audience has introduced a new market twist. They have become Uber & Lyft drivers. Both require a middle seat for the vehicle to be eligible. It's paradigm shifts like that which Toyota is good at being flexible with. RAV4 hybrid has captured part of that audience and the revised Prius Prime should capture another part. It's all about recognizing & understanding change.

7-19-2019 **Shame.** Toyota revealed the 2020 model Prius PHV for Europe. Not only does it include the updates we got for Prius Prime here in the United States, it also adds the choice of 17-inch wheels and the color black. That's frustrating to antagonists, as this sentiment expressed: "*Shame on Toyota.....this is coming up on third yr.....and no increase in range.....thank God we had GM volt.....they gave their customers.....*" That is the very reason I asked that "*Who?*" question for all those years. Enthusiasts didn't care who the customers were. All they cared about was short-term victory. That's why long-term defeat has been so hard to accept. Some never wanted to accept the knowledge of audience. Oh well. That's their loss, which I'm happy to keep providing memories of to prevent that history from repeating: GM's choice to cater to enthusiasts is why Volt died. Those range & power specs made production-cost far too high. As a result, it was a vehicle dealers simply had no interest in selling. With a price so high for a car smaller than Prius Prime, there was no appeal to GM shoppers. Toyota took a very different approach, striving to deliver an affordable balance... which is exactly what they achieved. $27,600 for a 25-mile rating (enough to cover the average commute here) is something Toyota dealers will find competitive with other vehicles on their lot. Your reaction is the typical early-adopter perspective, continuously wanting more for less without consideration of what ordinary consumers have for purchase priorities or what a salesperson actually does. Toyota's strategy for post tax-credit sales to an audience shopping the showroom floor is something GM didn't bother to address. So, if you're dishing out shame...

7-20-2019 **2,669 Miles.** I wasn't expecting the most recent tank of gas to last 2.5 months. It just happened to work out that way. 10 weeks of getting to recharge at both work and grandpa's meant the HV driving was spread out nicely. That EV ratio ended up being 87% for the duration. 9.084 gallons is what it took for the refill. Calculating that to MPG, you get 294. Impressive, but unnecessary. My 2017, as well as the 2018 model, only displays a value up to 199.9 MPG. Beyond that, there's not much efficiency gain to report. It becomes a diminishing return with wild fluctuations... nothing really informative. Nonetheless, Toyota responded to customer feedback stating an owner preference of seeing higher values anyway. So, that changed with the 2019 model. I can simply look it up on the phone-app if I really need to find out what higher-than-200 values are being achieved. For example, the entire month of May worked out to an average of 428 MPG. Do I really find that valuable to know? Not really, but it is an effective means of reaching new customers. So... they find it valuable.

7-21-2019 **Defeat & Surrender.** The steady flow of Toyota advancement forward is beginning to make some so concerned, they are becoming absolutely desperate to impede discussion. You can tell too. For example: "*Is this a grid charging or self charging hybrid. What happened to toyotas fcev challenge. Are they going to accept defeat and sign a will of surrender to Tesla.*" Talking about a scatter shot. You rarely see trolling with such a wide disbursement of bait. That serves as a comforting confirmation of having nothing left to fight with. He's clearly out of ammunition. Sweet! I advanced on that opportunity without hesitation:

Toyota is a legacy automaker with a continuous improvement approach, who has been extremely successful with that strategy choice. Tesla is a startup who has done exceptionally well during this initial stage (sales subsidized by tax-credits). What comes next is anyone's game. Think about that next step. Reaching beyond early-adopters is far more difficult. In fact, some of those challenges are entirely new. How much competition have you actually seen take place on the dealer's showroom floor?

Watching plug-in offerings stand head-to-head with traditional offerings requires a different means of appeal. It won't be a matter of stirring interest online. It will be an effort to draw favor from someone who hasn't done any study, an encounter with a person looking for a good deal on an easy purchase. How much of an effort will the salesperson make to entice interest? How many do you think dealers will stock?

With such a broad variety of plug-in design, do you really think a mainstream consumer will be able to make sense of it enough to make an informed decision within the timeframe they typically make the choice of what to purchase? That's rhetorical, of course. We already know the answer to that is no. They will favor the easier choice. Fortunately, that is a reality Toyota knows how to effectively deal with.

Most enthusiasts despise the continuous improvement approach. Well, too bad. That cold, hard reality of how sustainable business works is what they have to face the music on. Notice how everyone turns a blind-eye now to GM's failure with Volt? I got harassed for years from pointing out a "*too little, too slowly*" concern. GM wasn't doing anything to improve Volt technology reach. Improvement in that regard never happened. Appeal remained a niche.

Toyota is pushing their tech across the fleet. Going from hybrid to plug-in hybrid is an easy step with the HSD design. In fact, that tech has already spread from Prius to Corolla. And now with the strong growth of RAV4 hybrid, that next step of adding a choice of plug is an obvious one.

In other words, there is no "*defeat*" and "*surrender*" when you look at that bigger picture. Remember, Toyota sells over 10 MILLION vehicles worldwide every year. Having a variety of choices available for such a diverse audience is essential.

7-22-2019 **Apologies & Attacks.** This post made things rather interesting: "*I rented the Prius + 2 when on holidays. 2 adults, 2 teens, 2 kids..... It was, without doubt the worst, must under powered vehicle I had ever driven.*" Since I knew nothing about the poster, it was impossible to ascertain intend. I did find it strange though. Why was a comment about Prius being posted in a thread about plug-in hybrids? The absence of any detail or even context made figuring out how to respond even more difficult. I gave it a shot though, posting the following: "*That literally has nothing to do with the topic. Prius PHV has a much larger battery, resulting in much more low-end torque. Dropping the pedal for a quick lane-change delivers that nice EV punch you don't get without having a lot more electricity available.*" To my surprise, shortly after that came an apology. I certainly wasn't expecting what appeared to be an attack to result in that. He simply wasn't paying attention and thought we were discussing ordinary hybrids of the past. Finding out the topic involved power from plugging changed his stance. We were posting about something he favored and totally overlooked that. He was sorry for the error. Cool.

7-23-2019 **EV Panel.** A group of us were invited to host a discussion panel at one of the largest libraries in the metro area. I was intrigued, especially since I was selected as the coordinator. We'd start inside with a computer to display whatever information we wanted to share, then move out to the parking lot by their charger. I wondered how much of a challenge it would be to address the wide variety of topics attendees would have questions about, while also giving the owners participating an opportunity to share their experiences. Turns out, 2 were quite flexible, 1 had a well timed presentation, 1 had no concept of time. I ended up having to lead people outside while he kept going on and on. His stories were great for real-world examples, but the idea of exchanging the most valuable knowledge. You can't just dump that much information without consideration of goals. We were there to promote the variety of plug-in choices available. In the future, I'll allocate a specific amount of time to each participant to guarantee we don't lose sight of purpose. That move to the parking lot went extremely well. We had passers-by join in. Too bad I didn't thing of getting some flags or a banner to help stir interest. Oh well, those who stopped to ask questions or to simply look thanked us. The owners didn't mind my push either. We all wanted to get to the show & tell part anyway. I would like to cover a more carefully planned out agenda at some future opportunity. Long story short, we're still getting a feel for the emerging market. This current stage isn't that far from the early-adopter stage. As tax-credits phase out, there is no clear message of next steps. The chance to find out what ordinary consumers what to learn more about helps guide us in the right direction.

7-24-2019 **Tesla Trouble?** Yesterday's event to show off the cars and answer questions for people made it all too clear that Tesla facing many challenges, in addition to what the industry as a whole has to deal with in regard to electrification. Tesla's offerings are perceived as "*too expensive*". I heard that message over and over again. So, topics like how to purchase & service one or even charging standards are never even discussed. The pricing barrier spells trouble. Will it remain that way? Who knows. The real trouble is seeing sales of both Model S and Model X flat line. Interest in Model 3 is souring their appeal. That lack of diversity creates a variety of business problems. Not having dealerships and not having tax-credits makes the situation eve more difficult. This next stage in market growth is the very thing I expressed concern about for GM. They bet the farm on Volt. Remember all those "*one size fits all*" posts? That was all about expansion. It didn't matter how. It just needed to happen. That necessity of reaching out to a wider audience is absolutely essential for a niche product to become a standard technology. This is why antagonists fought so hard to keep attention on Prius. Acknowledging the success of other Toyota hybrids meant admitting GM really wasn't leading the way. Seeing Tesla fall into that same trap isn't encouraging. But then again, not being a legacy automaker does present some advantages. Whatever the case, this is a clear change of perspective. The idea of government-subsidy & investor-capital being the primary means of advancing forward is no more. The next step will be a challenge without that extra help. Perhaps the low-hanging fruit (early-adopters) will be able to promote the technology enough on their own to achieve that sustainable business need.

7-25-2019 **What Now?** News yesterday for Tesla was grim. Despite all those recent sales, quite a bit of money is still being lost. As a result, the CTO (Chief Technical Officer) announced today that he'd be stepping down. The expectation is a drop in stock prices... which means someone will provide a positive spin on the situation. Sure enough, it happened: "*Tesla Sold More Model 3s In Q2 2019 Than GM Sold Chevy Bolts Worldwide Since Its Birth*". Realistically, that doesn't actually say much. It's both vague and without context. We know that GM was all hype, never intending to make Bolt a major player. Seeing that should be easy. It was a compact wagon. Since when does GM have any interest in that type of vehicle? Without any desire to push that platform, their dealers couldn't care less. It's all about selling Pickups & SUVs, not a small car. That was rather blatant with Volt, but fake news sources (like that daily blog) maintained a narrative stating otherwise. As a result, GM had faded away. All those attacks claiming Toyota was hopelessly "*behind*" didn't alter GM's perception either. So, the expectation Tesla will somehow be propped up from comparisons to GM are futile. Unfortunately, online comments show the bait was taken. There was mostly just senseless bickering with no look forward. In other words, there is still no "*next step*" defined.

7-26-2019 **Kayaks.** I learned a lesson the hard way last time we went kayaking. While lifting the wet & slimy kayak onto the roof-rack, a gust of wind caught the mat (a piece of foam exercise padding) and the kayak itself. I ended up putting a fine set of scratches in the past on a small suddenly unprotected area above the door. Preventing that is easy, now that I see the outcome of not doing that. Just pinch a tiny bit of the mat in the door. Having transported kayaks on my Prius for 13 years now, that need hadn't ever come up. It was only a freak circumstance. But I won't be strong enough forever to ensure all goes well during those precious moments of potential contact. Today, I got to try that. We had an absolutely beautiful day to get out on the water. This lake was one was new for my wife, so having everything related to transport mastered is helpful. I wanted to make a good impression. After all, living in Minnesota means there is an enormous number of locations available to kayak. Long story short, today ranked among her top experiences. Our picnic out on the island was the highlight. 8 ducklings approached us. We had dried fruit to share. It was a good time for all. Being able to just pop the kayaks on top and drive out there for a day of fun like that is great.

7-27-2019 **Our Own.** It's really sad when photos are posted of plug-in vehicles parked in charging spots, but not actually using the charger. This is how one of those posts sharing a photo of one such situation ended his comments: "*You'd think our own would be more willing to do the right thing. Nope.*" My attitude toward not recognizing competition is well known. It's not other plug-ins or even other dealers. It is those who still favor traditional vehicles. I stated my observations with:

As time goes on, it becomes easier for others to see what I've been conveying for many years... know your audience.

Watching Volt enthusiast "*vastly superior*" attitude spread was a sign of not recognizing we were on a team all working toward the same win. They would fight and fight and fight, claiming victory against those who were trying to be players on their side. That effort to squash all other PHEV efforts was a clue about the trouble to come with EV efforts. Sure enough, we saw that same pattern coming from Tesla enthusiasts. They dominated plug-in events and didn't take tax-credit dependency seriously they same way, creating barriers for supporters (the rest of us) to overcome.

Fortunately, things are finally changing. Most enthusiasts have lost their voice due to tax-credit phaseout so significantly influencing market shift. There's still the reality of much needed agreement having been stalled... to the point of undermining efforts causing widespread disenchantment. Absence of a common approach for shared chargers is overwhelming evidence of that.

Notice there is still nothing in regard to a common message with regard to parking in those spots? Heck, we can't even agree upon what to do when one of our own parks next to a charger but doesn't use it. That basically invites non-plug-in vehicles to park there. If we don't care, why should they?

7-28-2019 **Back To Basics.** This step back is even further than just new owners asking about how their Prius operates. Someone brought up hypermiling and that stirred this: "*I think you have a much too narrow view of what hypermiling really is.*" Which continued with a vague reference to choices & circumstances, then concluded with: "*But too many people focus on just a couple controversial items and use those an excuse to demonize the whole concept.*" Remember my focus? I looked up one of my blog entries for an example and effortlessly found this: "*Among many things, he was the one that used to pump up his 44 max PSI tires to 50 PSI in his Corolla and drive only highway miles with it. That made his MPG abnormally high, in no way representative of what the typical person would actually get.*" He later bumped the PSI all the way to 60... hence becoming so controversial. Other things, like throwing the vehicle into neutral and drafting was promoted. I wanted no part of that and made it quite clear of not wanting to be associated with any of that. My push was how the word originated. Being so anti-hybrid, he really didn't want that to be associated with Prius anyway. I posted the following in response to today's post: Remember, that term was coined from an argument with me. That very specific first ever mention in a post way back in history was when the fight was about how superior a Corolla was to Prius. He was dead set against hybrids. He later discovered how well thought out Toyota's approach actually was and changed his tune rather profoundly. In fact, he even very politely apologized years later when we met in Detroit. So, of course the view is far wider now. The original problem still remains though. Promoting a driving technique or approach to squeeze out greater efficiency sends a confusing & misleading message to ordinary consumers. Setting realistic expectations is how mainstream buyers are reached. Hypermiling does not. That is what enthusiasts do. So, it is very important for everyone to understand what actually takes place. By looking a wider view to recognize the concept, you make the situation worse. That fundamental flaw has never been overcome.

7-28-2019 **Too Simple.** Someone else joined into the discussion: "*His logic was simple, he stated not to lump all hypermiling techniques as deadly or puts other motorists lives in danger. Not all techniques are deadly or let alone even cause a wreck.*" Even back then, I struggled with generalizations. Remember all those "*not the same*" posts? Intention omission of detail is unacceptable still. I replied back with: Not identifying what those techniques actually are is the problem. Being vague contributes was always the underlying issue. It should be crystal clear at this point. Remember, that all took place prior to gen-2 of Prius rollout. Not being concise confirms understanding is still a challenge. Keep in mind, the goal is to grow the market. That means reaching out to a new audience... which cannot require any assumptions. In other words, simple is not always a good thing. We must seek & promote a balance. Wisdom from owners is what sends the strongest message. I suggest only mentioning techniques we want to endorse and not even bother with labels. The term serves no benefit anymore. Think about how worthless the label of "*hybrid*" has become. It's too simple.

7-28-2019 **Fantastic Timing.** For years, I have been talking about how Toyota is refining their technology while waiting for GM fallout. That's exactly what we witnessed too. Played out right before our eyes, the supposed "*laggard*" achieved a great deal. Legacy strategy can't be a hope-for-the-best gamble. Yet, we watched it happen. Ugh. Now at the Volt is dead and Bolt is going nowhere... as confirmed by second-quarter sales results... the mid-cycle upgrade of Prius Prime has begun deliveries. Not having to deal with any of that GM rhetoric is fantastic timing. Every time plug-in Prius was mentioned, some Volt enthusiast would attempt to overrun the comments with a superiority claim. It was so annoying, since it wasn't going to accomplish anything... because GM wasn't investing in the technology. Volt just flopped around like a fish out of water, unable to achieve anything other than conquest sales. It was good reason for Toyota to steer clear. GM's terrible dependency on tax-credits made the fallout timeline easy to predict. No plug-in hybrid Trax. No plug-in hybrid Equinox. Nothing at all became of GM's huge investment in technology to blend engine & motor. What a colossal waste. Anywho, not getting pulled into that wake from that ship sinking is such a relief. Toyota can proceed unimpeded. Yeah! Looking online, I see 643 listed for the entire country. That inventory seems to be making its way here from the West Coast. There are some available in Colorado. I haven't found anything closer yet. Most everything else I see listed as "nearest" shows New York, New Jersey, and Maryland locations... which is 1,000 miles from here. Looking further, I see Arizona. Interestingly, there are some in Florida. That's a market formerly unwilling to carry any inventory of Prime. Perhaps they are ready to jump on board now... which adds to the fantastic timing. California obviously has a bunch, but that inventory is normal. What's expected to be new is stocking them in the Midwest. Only special-order shipments ever made it here. Hope is that will soon change.

7-29-2019 **Charging Infrastructure.** An article with a rather gloomy stance was published today. It pointed out waste from a lack of new thinking. There isn't much benefit to speak of still. Other than Tesla SuperChargers, most of the public chargers either get little use or get no attention at all. There's a variety of reasons why. Location & Pricing were among the most obvious. Very real challenges face business support still. Who? When? How? All those details need some type of common message, once the obvious challenges are addressed. It came down to not putting much reliance on public availability for market growth. Banks of charging stations will happen someday, but we shouldn't put emphasis on that. This is what I posted in response to reading the article: That's why I have stated tax-credits for vehicles should not get renewed. If there is to be a next batch, let it be for home upgrades. Keep in mind, most households can just barely support 1 vehicle. So, there's a very real limitation that will holdback market growth later.

7-30-2019 **Suffer? Lagging?** This popped up out of nowhere: "*Market forces are going to drive Toyota to release a BEV or suffer lagging sales.*" Well, not nowhere, it was actually a thread from 6 years ago someone bumped with a recent post. It was an intriguing place to stir old discussion with an audience of changed perception. Quite a bit has happened with regard to plug-in sales so far this year. I jumped in with:

0% sales are without subsidy here still. Of those sales dependent upon tax-credits, how many are actually profitable?

That criteria alone informs us the "*lagging*" is a long time coming still, even without consideration of the actual competition... traditional vehicles. With many provide high profits with very little effort to sell, the idea of a hard push for a vehicle requiring lots of information sharing to entice a purchase and razor-thin profit in return is futile.

Then when you consider the rest of the problem... home charging... the situation becomes almost pointless still. Much work needs to be done to stir those household infrastructure updates. How many people have nothing but a single 120-volt line available in their garage available for overnight charging? That's an ugly best-case scenario... and very much a reality, presently.

Toyota's push for PHEV penetration into the mainstream helps move that process along. The choice to get a Prius Prime is painless. It really is plug & play. It also stimulates the household consideration for upgrading. Being able to benefit from a 240-volt line becomes more and more obvious over time. Having it available paves the way for a BEV purchase later.

In the meantime, Toyota will be building up a solid reliability reputation for their plug-in offerings. Elimination of the engine later is not scary in any regard once that customer confidence takes hold. While that is taking place, there's also the gain which comes from refining production and preparing for ramp-up. These are all vital business steps the "*suffer*" forecasts don't ever directly address.

Put another way, evidence of Toyota positioning itself for the upcoming paradigm-shift is stronger than most other legacy automakers. They are doing something now, rather than just rolling out a token offering or releasing a lot of press info. Notice how TNGA is on-target to reach 80% of their fleet by 2023?

7-30-2019 **Forward Thinking.** It's a lot harder than most realize. I'm constantly having to explain why a perspective just provided is not that of an ordinary consumer. People participating online usually lose touch with what it's like to not be well informed. You just naturally learn about the market by getting a daily injection of new information. Catch is, that information isn't necessarily the bigger picture. In fact, most of the time it is about the immediate next step only. Fortunately, it is now getting easier to deal with that... so much so, I don't really even need to include the quote that provoked my post... since most is just the same old rhetoric, but completely absent of substance at this point. Speculation of the past now no longer applies. We have outcomes to refer to. Anywho, I kept the forward-thinking response rather generic today: This is why "*know your audience*" gets brought up over and over. As an early-adopter, you have little to nothing in common with a showroom shopper. Anyway, strategy is long-term. A purchase now isn't part of that. Remember the 2030 plan Toyota laid out? Think about how obsessive GM enthusiasts were about the first 200,000 sales, how no attention was being paid to WHO would be next to purchase. Look what happened as a result. Toyota isn't going to play that game and Tesla isn't a legacy automaker.

7-30-2019 **Future Influence.** This perspective is quite understandable: "*Early adopters, like me, you and others who bought gen 1&2 Prius models, influenced many future Prius buyers in the next decade the time came for them to consider a new car.*" However, it isn't helpful. Hopefully, this is:

That's a red-herring. Prius Prime is setting the same stage. Again, know your audience. Ordinary consumers, those showroom shoppers that are looking to replace their aged Toyota with a new Toyota, will see the plug being presented as a new choice. Quite unlike you and I, they won't be well informed. They will simply trust the reputation of Toyota and measure it against the price they are willing to pay for a new vehicle. They won't cross shop. They won't get a tax-credit. They won't have a charger.

Think about what it takes to achieve mainstream popularity. It's not going to be a standout vehicle like Prius (though Prius will still very much be a player on the team). It will vehicles that are basically just another vehicle on the street, only there will also be a small badge indicating it is somehow different. That will be Corolla and RAV4 as hybrids, then plug-in hybrids, recognized as "one of those" influencing others.

Toyota is targeting the masses by working their way up. It's the continuous-improvement approach they are well known for. It's entirely possible Prius only be available as a PHEV for the next generation. Whether or not an EV from Toyota is widely available yet won't make any difference on that front. Think about what an upgrade to battery chemistry & capacity would do for its draw for the Prius audience. Think about how much it would do to promote other plug-in choices.

Rushing to market is the monumental mistake GM made with Volt. They wasted tax-credits on conquest, only to lose those potential repeat customers later. Sales to the wider audience that are both sustainable & profitable is worth having to deal with the appearance of lagging. Notice how Volt enthusiasts claiming exactly that about Toyota have completely vanished? We faced their rhetoric on a regular basis. Now, they've grown silent... quietly watching what happens with the mid-cycle upgrade to Prius Prime.

Sorry about the push from time to time with reminders of scope & purpose, but you are the type of audience who takes the time to consider the bigger picture. So, the discussions are worthwhile for all of us. Think about how much has changed and how much we've learned since this particular thread was first started.

7-30-2019 **Not The Same.** It's amazing how much problems repeat. Today, it was: "*and yet, bolt and prime sales are similar*" That premature conclusion draw in terms so vague, it's difficult to readily identify intent. Of course, I know this person. He has just recently exceeded 80,000 posts on the big Prius forum. He just uses the venue for entertainment now. It's a big waste of everyone's time to have so many posts daily coming from someone who doesn't try. It's just a chatroom from his perspective. No time is taken to share posts of value. That contributes to enablers & misleading... which I find very frustrating. Anywho, this was my response to that today: Comparison of a vehicle with nationwide availability for years to one with limited inventory & market should not be taken seriously. Those sales have almost nothing in common. You know all too well Toyota held back 2019 offerings due to the mid-cycle upgrade for 2020. Remember those discussions back when 2018 inventory burn down was taking place? Even then, approach was difficult to deny... which is why similarity claims now don't hold any merit. Some still argued though, trying to convince us Toyota's patience was really disinterest. Watch what happens as 2020 models roll out.

7-30-2019 **Pointless?** Sometimes, drawing attention to puzzle piece doesn't actually help finish the puzzle. I noticed a potential clue about Toyota's entertainment system upgrade, but didn't know if raising discussion about it would be useful. I've learned at work, some people never really understand technical design no matter how much information you provide. It is sometimes a reality of them lacking the background to relate. They simply don't make the connection... like a puzzle piece. In this case, we never really had any detail explaining why Android Auto has been limited to just a few select vehicles. But to me, it seems obvious. A switch from phone-centric to automotive-centric is a really big deal, one that represents too fundamental of a change to taken lightly. In other words, it will be more of an introduction for a new native format rather than being an upgrade. It's similar to the shift from phone to tablet. Most people were blissfully unaware of how much actually changed. So, bringing up this shift could be rather pointless. Regardless, I did anyway: Being a software engineer, one who has worked very closely with many rollout challenges in large enterprise, that type of announcement raised red flags. Why the hold back? What weren't we being told? Today, that omitted vital bit of info became obvious. Toyota didn't want to commit to an outdated version. Android Auto hasn't been upgraded for 4 years. Pushing that out with the 2020 Prius Prime as an introductory offering would have been absurd. Toyota would have been lambasted for using such outdated software. Google just began rolling out the new version today. Think about how complex software upgrades to just phones are. Carriers routinely take a very long time to provide a new OS. Having to wait 6 to 9 months is quite common... and quite unrealistic for a vehicle model-year. See where I'm going with this?

7-31-2019 **Next Steps.** I am so looking forward to Prius Prime finally rolling out beyond the initial markets. Toyota's choice to hold back until after GM's inevitable fallout, then taking advantage of that timing to introduce a mid-cycle update, is fantastic. Areas which haven't ever had any Prius Prime on dealer's lots, like mine, will start from day-1 with a compelling configuration that doesn't have to compete with hype. The price makes it realistic. True, the decision to go with robust & affordable made cargo space limited. But that does a great job of setting the stage for whatever comes next. 2.5 years of real-world exposure (in my case, that means 35,000 miles of driving) is proof the design is sound. Time is the only means of achieving reputation. This certainly looks like it was time well spent. With only a single week of inventory listed online and much of it questionable (available already or en-route still?), the handful of deliveries mentioned in posts make July a month to exclude. No statistic from such a limited scope can indicate what's to come. August may not reach nationwide either. My expectation is to watch inventory in the established regions grow to available-for-immediate-purchase levels, prior to the usual next-year model rollout timeframe. That's usually in October or November. So, by 4th quarter things should be get rather interesting.

8-01-2019 **Squandered.** It's amazing how things can change: "*I really thought that GM was a market leader back in 2010 and 2011. Now? Not so much. Nissan? Dead in the water. So the early leaders have squandered their advantage*." That reflection of my concern is a sad validation of recognizing market factors correctly. Remember how often I got attacked for that very sentiment years ago? I kept posting "*too little, too slowly*" with evidence if opportunity being missed. Later, that turned to the use of "*squander*" to point out how tax-credits were being wasted. Rather than use their momentum to build a market by spreading that interest in their technology to other vehicles, all was lost. It wasn't even really a gamble. You cannot expect sustainable profit to come from a single vehicle. Voltec should have be diversified; instead, enthusiasts fought to retain the status quo. They became their own worst enemies. Battle after battle was to keep focus on just that one vehicle. Any mention to offer it in a vehicle like Malibu or Equinox was met with hostility. It's amazing to look back into the blog entries here documenting just how fierce the resistance to change really was. They allowed the squandering to persist, becoming enablers of a failed approach. Ugh. Of course, what's worse is not recognizing who. Those Volt enthusiasts blame GM, not themselves. Taking no responsibility for the obvious rhetoric they posted is terrible... and how history ends up repeating. Remember Two-Mode?

8-01-2019 **Extreme Denial.** Reading posts like this had become such a norm in the past, it was an expectation: "*Wait, as mature as the Prius is, and as big as Toyota is, they are still only "limited to specific markets"? That screams like "Compliance car" to me ..... LMAO.*" Reading it now though, you have to wonder. That smug attitude serves no purpose anymore. We are well past the stage when there was any type of required quota. Focus has turned to the entire fleet can be improved. That pushes attention to design. This is why range isn't considered as important anymore. Obsession Volt enthusiasts had with a minimum EV range collapsed when it failed to lure new interest. In other words, they came to the realization that "*compliance*" equated to "*enthusiast*". As much as they fought my "*Who?*" question, they can no longer deny the association. Some extreme attempts still take place though, as the "*LMAO*" clearly confirms. I'm done with that nonsense. Dealing with it isn't necessary anymore. Their days of feeding fake news are over. I put it this way: Scream whatever you want. Who exactly will care? Reality is, the choice to wait to align national rollout with a mid-cycle update and avoid GM fallout looks to be an extremely wise decision. Getting some compliance credits along the way is just a bonus.

8-02-2019 **Trying?** I was a bit befuddled to read this: "*The truth is, neither manufacturer is really trying to sell very many of these cars.*" I thought that particular individual, who routinely posts on multiple forums and seems rather well informed, would recognize the change taking place. It was in a discussion comparing Clarity to Prius Prime. Being an owner of a Prius Prime and an active participant there, I didn't expect such a statement. Apparently, he hasn't been paying attention. Oh well. There's a chance of getting something constructive in reply. This venue is a source of useful discussion... quite unlike some I've dealt with in the past. We'll see if this stirs anything useful: The reality is, inventory from Toyota for the 2020 model (which is a mid-cycle update, for those not paying attention) is growing nicely. Just 2 weeks ago, there weren't any. Now, the nationwide search shows 750 available. August should be interesting for Prius Prime.

8-03-2019 **Lame.** There is still some damage-control taking place for Volt. With failure on a such a monumental scale, there's hope GM's mistake will be absurd... since there's no way to forget it. That's exactly what happened with Two-Mode... which is why some of the same mistakes were repeated. Misrepresentation of what actually took place is how you enable that. I was always amazed how foolish of a choice that was. Now, they're doing it again! Ugh. Oh well. This post yesterday about July sales results started with: "*1875 PiP's is lame*" then went on to claim: "*The Leaf and the Volt have had much better years than this way back in the day. The Volt sold more than 24,000 in 2016 or 2,000+ per month on average. And the Volt did nearly as well in 2012 and 2013.*" I was not surprised in the least upon seeing that. That repetition of behavior is quite predictable. I wonder if he expected this in return:

That selective portrayal of Volt sales history paints a distorted history, since it doesn't take into account temporary surges caused by price-cuts when inventory piled up. The proper depiction of demand was the measure taken during steady periods. Those sales averaged between 1,600 and 1,700 per month for gen-1. It was a very consistent result, making the growth for gen-2 demand an easy measure to gauge. Volt failed to grow though. Sales remained at that same level... which is below what you label as "*lame*" for the plug-in Prius.

Reality is, supply of Prius Prime is still limited to the initial rollout markets (roughly a little under half the country). Delivery of the 2020 model (which is a mid-cycle update) didn't begin until the final week of July either. No mention of those supply factors is distorted history in the making. Omission of vital detail is not helpful in any regard. In fact, it provides material for anti-plug rhetoric.

Volt was doomed from the beginning anyway. Having such an extreme dependence on that $7,500 tax-credit for sales and those sales coming only from conquest buyers sent a clear message GM would need to take serious steps to push the technology prior to reaching phaseout... very much like what Tesla did. That never happened though. GM never even tried to spread Voltec to a choice GM's own customers would find compelling, like Trax or Equinox.

Prius Prime is an example of taking a very different approach. The technology was designed from the start to be offered at a MSRP low enough to compete directly with other vehicles Toyota dealers, giving it far more potential to achieve marketshare those who once favored Volt could only dream of. The technology was also designed to easily be spread to other vehicles, as Corolla hybrid has already proven with rollout of a plug-in hybrid model.

Put in a completely different perspective, your effort to draw a parallel of the past to Tesla results now is what should be labeled as lame. As successful as Tesla has been (kudos!), it's still tiny in comparison to legacy automakers like GM and Toyota. Absence of a dealer network adds major challenges to growth too. Reaching mainstream consumers is far more difficult than early-adopters taking advantage of tax-credit opportunity.

Watch what happens as the effort to appeal to fickle-shoppers attempts to step forward. There are many difficult challenges to face still in the realm of plug-in

appeal. Change doesn't come easy and far to much focus as been on results of picking the low-hanging fruit.

8-03-2019 **Downplay.** Here's more from that damage-control effort: "*My Volt and your plug in Prius are both nobodies. They don't matter.*" There's an element of fear at play too, That's harder to detect, until you notice how many facts the person is willing to dismiss along the way. The desperate enthusiast ends up going way out of their way to avoid dealing with some important point you bring up. When you confirm that pattern of evading, it becomes an invitation to hit back fairly hard. They reach a level of uselessness like a troll who should no longer be ignored. It's especially good if you can constructively use their own words against them, especially in the form of a question: Attempting to portray Toyota's approach the same as GM is wasting everyone's time. Toyota created a far more flexible design and still has an ample number of tax-credits available. GM has nothing anymore to offer in the category of plug-in hybrid. Prius PHV gen-1 was only rolled out to 15 states, then production was halted when gen-2 design got far enough along to show that it should be the first nationwide offering instead... especially considering the plug-in market back then. When gen-2 was rolled out, restricting inventory to select regions meant tax-credits could be saved for mid-cycle rollout later. So, claiming it has already seen "*sales peak*" cannot be taken seriously. As for the muscle-flexing nonsense, that is incredibly weak... ironically. You know that the ability to augment any Toyota hybrid for plug-in operation is just a matter of adding a one-way clutch... which has already happened with Corolla. Just think of what that means. How many of those who "*most guys wouldn't want to be dead in*" won't be interested in a RAV4 hybrid with a plug?

8-03-2019 **LOL.** The smug is really getting bad. That's a clear sign of the next stage. Enthusiasts who took the gamble and lost are trying to make themselves feel better by laughing off the situation. In this case, it's those who bet everything on GM and now finally recognize that wasted opportunity I had pointed out countless times. Oh well. After years of getting attacked for expressing concern, seeing this outcome play out is great. It's confirmation of progress... clearing the path forward, as I expressed this way: Corolla has already become a PHV. Both RAV4 and C-HR are likely next candidates for the plug-in upgrade. Attempts to divert attention away from them by making the discussion about Prius is blatant desperation, a damage-control effort to make Volt look less of a failure. It's the same old rhetoric as whenever I asked when Voltec would finally get spread to another vehicle, like Malibu or Equinox. Face reality. Legacy automakers must design & distribute a green technology capable of competing with their own current traditional offerings. No amount of tit-for-tat will change that cold, hard fact of business necessity. Again, we see that RAV4 hybrid has the opportunity to become a plug-in hybrid by getting the same upgrade as Prius. With the addition a one-way clutch, the existing system can utilize its generator motor for added propulsion power. That's an elegantly simple approach with lots of business potential.

8-04-2019 **Expired HOV Stickers.** Rhetoric that never caught on, but still gets attempted on a regular basis is the claim that plug-in hybrids never actually get plugged in. Their spin is that HOV stickers are so valuable, people are willing to spend a premium just for the sake of getting an improved commute. It's difficult to argue with someone who just outright lies like that. There's data to support such a stance. But even lacking merit, they still accomplish their goal of diluting & interrupting discussion. So, it has been a lose-lose situation... until having the thought about what happens to the vehicle once that valued special-lane access expires. Knowing the person exploited incentives, it only makes sense that they move on to something else. Such a move puts a used plug-in hybrid on the market... which is a fantastic means of achieving market growth. It's just like holding out until mid-cycle for highly wanted features. Some owners will upgrade because they have the means & desire. It's a brilliant approach... something I can't wait to point out the next time an antagonist attempts that deception again.

8-05-2019 **Unused Capacity.** I'm on a roll. There was an article published today titled: "*Electric Vehicle Efficiency Explained*". It covered all the basics. The same old content about EV benefits will get distributed over and over like this. That's unfortunate, since some will just lose interest. But then, it is nice having a readily available source of information like that. What differs are the comments. This specifically caught me eye today: "*You are always either carrying around the extra unused capacity of a battery, or the extra unused weight of a gas engine, or both.*" It hadn't crossed my mind to punch back with something rather terse. Shutting up EV enthusiasts who do anything they can to belittle PHEV is becoming more of a problem now though. Rather than looking upon them as a simple means of getting people plugging in with much greater numbers and much sooner, they don't want anyone to produce or purchase PHEV. The idea of plug-in hybrids is counter-productive in their minds. So, they spread whatever nonsense they can to impede. But now, with EV range so much longer and the spread of public chargers, it raises the question of necessary. Do you really need that much unused battery capacity? This situation is becoming the same "*needed to tow my boat*" argument. Does your daily-driver really require that ability? Why can't an infrequently used old vehicle serve that purpose instead? Remember decades ago hen people had recreation vehicles, like the old pickup? That was capacity set aside for a specific purpose... a far lower cost option than driving around day after day with an ability you'll rarely actually utilize. In other words, park the aged guzzling SUV and start using a plug-in vehicle with a right-sized battery. Think about how much appropriate to be using close to its entire capacity each commute.

8-06-2019 **Clarity Pullback.** Seeing Honda take the step to pullback current inventory has invited narratives to be spun. Remember when that happened with Prius PHV when Toyota stopped production? Antagonists made up stories, claiming whatever they wanted. I suspected Toyota simply reached the stage of a next-gen design where they could confidently commit to it. They won't disclose that, to avoid the fallout related to new announcements. They'd simply burn down current inventory and wait. Sound familiar? That just happened again with Prius. The mid-cycle upgrade for Prime followed that same pattern. So when I saw this, I got rather annoyed: "*In a few years, PHEVs will just be overcomplicated EVs with woefully short range. These are Hondas. With careful maintenance they'll still be serviceable well into the 2030s. But they'll be obsolete well before then.*" It's a narrative attempting to downplay the upcoming surge of PHEV sales, led by Toyota. I find it amazing how the patterns play out. You can see it coming. They respond in textbox style. Oh well, it's not like I don't point out my observations: The word "*obsolete*" does not carry any weight. It's just a buzz word used to make early-adopters feel better about the slow progress. We've seen that for 20 years now. Reality is, a PHEV like Prius Prime is less complex than a supposedly competitive traditional vehicle. Rather than all those gears to make the old-school guzzler more efficient, there's nothing but a power-split-device... which has overwhelmingly proven highly reliable. Addition of the one-way clutch to allow the system to disengage the engine entirely adds to engine longevity. That leaves you with a weak argument of "*woefully short range*" which falls apart as more and more destination-chargers become available. It becomes an even more difficult of an argument as the popularity of RAV4 hybrid grows. The idea of it later offering a PHEV model will drown out any last hope of "*obsolete*" having any impact. In other words, ordinary consumers simply won't care. Look at how indifferent they have been up to this point about what happens under the hood.

8-07-2019 **Attacked.** Sure enough, it happened. I saw this coming: "*You are just a Honda and Toyota shrill.*" Just like our president, make it personal. Attack the messenger so the message itself gets lost. I suspect he'll be relentless too. That's when I get my best insight & confirmation. Sometimes, you'll even get a revelation out of it. The person will be so desperate to get you to stop providing data, they'll post something revealing. My experience with confrontations like this in the past has been fruitful. This is what happens when you feed the troll. So, sometimes I take the bait and run with it: Your reaction to the growing reach of Toyota has been interesting to observe. It's proof of the potential. So what if Honda pulls beck to regroup in the meantime. We're still in the early-adopter stage (clearly defined by tax-credit subsidizing) anyway. When the true competition begins (direct sales against traditional vehicles), then it gets real... and none of your nonsense will matter.

8-07-2019 **Labels.** Exactly as anticipated, he turned to insults & name-calling. That's a textbox response and quite telling. It reveals he has nothing to actually argue with anymore. Every avenue of argument has been exploited already. I felt vindicated and posted: Doing everything possible to draw attention away from the topic, especially when that content is nothing but insulting the poster, confirms identification of a weakness or concern. In this case, you see the potential that mid-cycle update for Prius Prime has on the PHEV market and recognize how powerful of a message it will send for RAV4 hybrid. Seeing a plug added to an extremely popular vehicle is the dream for Voltec which GM was never able to fulfill. Labeling the current offering from Honda as "*compliance*" and labeling me as a "*shrill*" won't change any of that. The march forward for PHEV continues.

8-07-2019 **Still Clueless.** When a post this this goes unchallenged, there's reason for concern: "*In the i3 you just drive it any way you want and you're still 70% more efficient than a Prime.*" It's that group-think taking hold again. You end up with a bunch of enablers never questioning the merit of claims. They just go along with whatever is posted, reinforcing a rhetoric nature. The venue ends up becoming a source of fake news eventually. That's exactly what I witnessed with the daily blog for Volt. Grrr. Not bothering to check validity of supposed facts should be a red flag. I doubt my response will change anything. I tried anyway: Talking about not understanding how the consumption of electricity is measured and reported efficiency. Whoa! 32 kWh/100mi = BMW i3 ReX. 25 kWh/100mi = Prius Prime. It should be obvious how much more efficient Prime is in EV mode.

8-07-2019 **EV Misleading.** This attempt to mislead is getting old: "*As we know, many who buy the plug-in hybrids do so for the tax incentive and the ability to drive as a hybrid.....no need to ever plug it in.*" I wonder who actually believes that. Hmm? With online posts looking for enablers attempting to push a group-think, I suspect its an on-going effort spanning any venue offering the opportunity to submit comments. After all, most claims are never verified. That's why I refine my rebuttal to be short, to deliver some type of takeaway detail, and to ask a question. In this case, it was: Even with just 25 miles of range, annual EV miles would be 9,125. That is a lot of gas not consumed from just overnight charging using a standard household outlet. Why are you making the act of plugging in sound like a chore?

8-08-2019 **Propaganda.** When a supposed trusted source of information publishes this, you have to wonder: "*In a PHEV, the internal combustion engine remains the main energy source, with the battery and electric motor used to improve overall efficiency; the PHEV is propelled by the electric motor when the ICE is less efficient and otherwise runs on the ICE. Again, during braking, the electric motor works as a generator, recharging the battery. Since they rely less heavily on the electric motor, PHEVs can use smaller battery packs than BEVs.*" This is when raising doubt is legitimate. How could any reputable source spread such misinformation? That is just plain wrong. Fortunately, several people sounded off about it right away. I joined in: It has already been pointed out that definition is incorrect, being the definition of a hybrid, not a plug-in hybrid. Everyone overlooked the final sentence though. Less heavily simply isn't true. A plug-in hybrid like Prius Prime propels itself entirely with electricity. Unless you force it out of the default EV mode, the engine won't start (electric heat-pump operates in temperatures down to 15°F). My entire commute is all-electric, just like an EV. Just because it has a combustion-engine available for when the smaller battery-pack becomes depleted does not mean the operation while using plug-supplied electricity is any different from an EV. It's really unfortunate we have to deal attempts to wash over detail like this. Not all designs are the same. Notice how few EV supporters ever bring up electric efficiency, treating all as if there was no difference? Notice how the "*kWh/100mile*" rating is absent from discussions?

8-08-2019 **What The Numbers Tell.** That revelation happened. Sweet! I got thinking about what his "*compliance*" push could equate to. Most arguments of this nature don't actually have any substance. There is usually just some narrative being fed, rather than some source of issue. Antagonists will just exploit a buzz word or manta. Watch for that absence of detail. Merit requires it. I wanted to know what a compliance vehicle would deliver for the automaker. What do they get from having to fulfill a regulatory requirement? Knowing that GM hasn't been able to meet California minimums, being forced to purchase clean-credits from Tesla is a bit of important information evaded. None of the enthusiasts want to acknowledge Volt & Bolt not being able to achieve the goal, that some type of compensation is needed instead. In my search, I found the actual equations. The resulting numbers tell a story. I bet this will stir even more emotion: In your haste to label the car as '*compliance*" and me as "*shrill*", you overlooked something very important. Like they always say, the devil is in the detail... Bolt delivers a 2.88 ZEV credit. [(0.01 X 238) + 0.50] Prius Prime delivers a 0.55 ZEV credit. [(0.01 x 25) + 0.30] That looks tiny in comparison, until you come to realize just how many Toyota stands to actually sell. The potential is enormous, knowing a profitable platform was used... quite unlike what GM did with Volt, which delivers a 0.83 ZEV credit. [(0.01 X 53) + 0.30] Think about how much that would drop trying to provide a Voltec version of Equinox, something GM costumers would actually be interested in. In other words, labels are meaningless. It's the numbers that really make a difference... and I'm watching the inventory of 2020 Prius Prime grow. It looks like Toyota is preparing to take a position of leadership in the affordable plug-in hybrid market... far more than just compliance.

8-09-2019 **First Real EV.** There are some who now feel comfortable speaking out against what had previously been unheard of. GM knew what it was doing and there was no possible way we could be better informed about the market... is the nonsense I continuously had to deal with. It was basically a exercise in insanity. They'd fight you in every conceivable way to discredit & dismiss. It was an amazing example of denial. Well, not anymore: "*If GM had any ability to forecast trends, their first real EV would have been a compact SUV similar in size to the Equinox. The Bolt is too small, and it looks and feels like a $10,000 sub-compact econobox despite costing more than 3 times as much. The drive train is great, the packaging is not a good fit for the US market.*" That is why I asked the "Who?" question over and over and over again. It was madness. Volt had no audience. Even enthusiasts were moving on. GM nothing viable to proceed with. The design was far too expensive and there was no strategy. So upon seeing a comment posted like that from the disenchanted, it's a bit difficult to reply with anything constructive. All the bridges were burnt so long ago, there's to path forward anymore. I don't have a suggestion to contribute, just observations: Introducing Trax with an EV would have brought about chaos. Worry about the Osborne effect has always haunted legacy automakers. That's why their is so much hate from GM enthusiasts about Toyota... who has figured out how to deal with the paradigm-shift. RAV4 hybrid sets the stage. Corolla hybrid adds to it. Both later becoming plug-in hybrids will help bring about a smooth transition to electric-only.

8-09-2019 **Incentivizing Charger Installs.** Many online fall into the trap of rhetoric. They'll follow a red-herring rather than do some critical thinking. It's quite counter-productive... and sadly, quite common. As a result, today's comments posted related to EV dominance timing completely overlooked what should be obvious. I tried to interject some logic: The fundamental flaw in tipping-point discussions is not looking at the entire equation. Even if a miracle happened overnight and battery density/cost reached that level, it still would represent market change. That potential for high-volume production & sales cannot be achieved until infrastructure is also upgraded. Tax-Credits for the automakers should be allowed to expire. In their place, we should all get behind federal subsidies going toward the encouragement of homeowners & landlords. Incentivizing the installation of level-2 chargers where people park overnight will make a massive difference. That's the key to drawing interest for plugging in. In the meantime, we will all see a massive growth in the PHEV market. A plug-in hybrid like Prius Prime is profitable and already has an audience to tap. Dealers know how to sell Prius and the ability to simply use an ordinary 120-volt outlet for overnight recharges makes that promoting that next step an easy one. During ownership, it makes the consideration of upgrading to 240-volt a far less stressful decision. There's no rush. There's no uncertainty It's a decision on their own terms. There's also a greater likelihood they'll upgrade with enough capacity for multiple vehicles. Despite seeing the meltdown of GM efforts and other automakers struggling to make something directly competitive with traditional guzzlers, no amount of in-vehicle technology will overcome the barrier faced still for overnight charging. Don't overlook that challenge of simply plugging in. With over 70 million new vehicles purchased every year, it makes a lot of sense to get a wide variety of PHEV choices to market as quickly as possible. EV will naturally follow.

8-10-2019 **Rise & Fall of Prius.** Media sources thrive on attention-getting material. That often meant targeting Prius, knowing it would generate lots of traffic to their content. Today provided a good example of that. It was a 9-minute presentation about how Prius is now dying. To believe that, you cannot look forward. Limiting scope like that is how most narratives work. Rather than just cherry-picking information, they formulate a seemingly comprehensive story to back their claim. That old technique of "lying by omission" has been used to mislead since long before Prius was around. But being such an online-centric formula for success, that exploitation of undermining opportunity has been popular... to the degree seemingly credible sources join in. Basically, it's the fake-news phenomenon growing to the point where people have no idea what constructive journalism is anymore. You'd think the evidence of not looking forward would be obvious. It is not. Needless to say, I'm quite curious what the posted comments related to it will be. Here are my initial impressions:

The report forces a strange perspective. You are led to believe the driving force behind any success is by pushing limits, rather than just simply selling a really good car at a really good price. In other words, they only see market change in the form of breaking new ground... which was never what Prius focused on. Not recognizing the purpose of Prius means not understanding what comes next.

Toyota's goal with Prius has always been to get mainstream buyers to change. For those who have been paying very close attention over the past few weeks, you've noticed what has been happening with the 2020 model of Prime. Inventory is quietly building. Toyota appears to be preparing to fill that void the others have left behind. The supposed "*leaders*" haven't been able to reach ordinary consumers. Prius Prime is designed to target that very audience. It's affordable, reliable, and easy to sell.

Put another way, the video closes history on Prius for those who knew it. A new chapter is about to begin, one that exceeds what happened many generations ago... reaching much further into the market of ordinary consumers than we've seen so far. The approach of "*elegantly simple*" that Prius was so well known for is about to become obvious for those who are just looking for a good car with a plug.

8-10-2019 **Mistakes.** This was the comment emerging from that rise & fall article that I chose to address: "*Given the mistakes made with the gen 4, I am hopeful (maybe unrealistically so) that the next gen can attract more buyers by a combination of going back to it's roots and advancing technology*." That's exactly the perspective I expect to routinely encounter in the near-term from casual observers. It's what we call anecdotal evidence. They take the information they have collected to draw a conclusion. Unfortunately, that means information is incomplete. You cannot learn everything necessary to be well-informed without study of the past. That knowledge comes from research, not anything you'd stumble across without digging. However, there are people like me who attempt to provide that missing background:

The narrative of "*mistakes*" is one that doesn't recognize Toyota's approach. Anyone who truly knows the automaker understands this. Most people are blissfully unaware. For those who have studied the process Toyota has taught us, the term "Kanban" is quite familiar. It's a totally different means of managing & improving. There's an inherent aspect to taking risk as a result. Failure is not looked upon as a mistake.

The reason why is simple. You try something. If it works, great. If it doesn't, you try something else. The key is to keep the scope of that change small. Notice the careful rollout to select markets and within limited timeframes? Toyota is always planning ahead, expecting one of many next steps to take place depending upon outcome of the previous. That flexibility is what most people completely overlook... seeing the changes made along the way as a mistake. It's adaptation.

Toyota saw the market for sedans & hatchbacks crumbling... hence the amazing RAV4 hybrid. This is why taking the risk of attempting to upscale Prius Prime a little by reusing the middle rear for comfort & convenience was worth taking. If it worked, great. If it didn't, the uproar would indicate demand for the old is still strong. At the same time, risk with the no-plug model had to be taken... knowing the plug-in model should become standard by gen-5.

Once you recognize the perspective Toyota has on the industry and how they have been applying it to their entire fleet as a whole, you'll see a very different picture than what the media has been painting... as well as antagonists, or anyone who wants to retain the status quo.

8-11-2019 **Watching Inventory.** Looking to the big Prius forum for feedback about that rise & fall video has been a problem. The website is down for weekend maintenance. So, there's no sharing of impressions amongst the group. That knowledge-sharing venue is silent. My own knowledge continues though. I have been closely monitoring Prius Prime inventory. It's easy, you setup the online app with saved search. A quick refresh gives a basic oversight of activity. Remember how I mentioned the available count climbed to 750 a week ago. Late last night, it exceeded 1,000. That number doesn't tell the entire story though. You have to watch for drops. Those represent sales. In other words, not only am I witnessing overall growth, I'm also getting a general impress of increased demand... which is exactly what has been hoped for. The careful planning to ramp-up both production & interest based around the timing of both a mid-cycle upgrade and tax-credit fallout is a very sensible business approach. Toyota doesn't care about hype. Toyota doesn't cater to enthusiasts. Toyota's interest is changing their own status quo. Seeing their fleet move beyond traditional vehicles is true progress forward. That's why I pushed those so hard who endorsed Volt, but fought against GM spreading that technology to one of their own mainstream vehicles. It was the move of an automaker simply not interested in actually making a difference. Dependency on those federal subsidies was obvious. There was no sincere attempt to configure a system with a competitively priced MSRP, something to challenge their own traditional inventory. Volt, then later Bolt, were token offerings which bared no resemblance to anything GM customers expressed interest in. Ironically, the result was a "*halo*" effect. That's when a vehicle creates a draw to the automaker, but the vehicle responsible for that credibility isn't what people end up purchasing. That's why the subtle approach Toyota is taking with Prime is so different. Sales are not just listed within the "Prius" category. There isn't a breakdown anymore. This will allow Toyota to shift away from the no-plug model without much disruption. Rhetoric for the supposed "*fall*" will be forgotten and the naysayers will deny the rise of Prius Prime was anything but inevitable. Ugh.

8-11-2019 **Seemingly Forever.** That's the sentiment we get from those who don't have much (or any) background in how long it actually takes for change to happen. In this case, it was from someone well informed, but annoyed at the timeline: "*Toyota always had the vision of making all their models optionally hybrids, amazing how long it took.*" He was painfully aware of the challenged faced when up against those fighting to retain the status quo. I jumped in to help out:

No surprise though. I always told people it would take an entire life-cycle to even get mainstream interest stirred. That meant a minimum of a decade. More realistically, the dealer-lot to sell-for-scrape duration is 12 years. In terms of generation, that equated to waiting for two of them to pass. Since the first-gen was really just a limited mid-cycle update, the start began in 2003. Bringing us to 2015 (that 12 years later) was right on schedule. At that point, the vision was falling into place... but still not complete.

The next-gen upgrades to Prius, Camry, and RAV4 have all been well worth it. The technology has proven robust & affordable, as well as very easy to sell. It's a winning formula.

What comes next is what this "*rise & fall*" curiously avoided any mention of. For those paying attention, it's not much of a stretch to see Toyota striving to make the PHV option standard for the next-gen of Prius. The design focuses heavily on being cost-effective. Dealers must have a choice that brings in easy profit... a goal none of the other automakers are in a position to address yet.

It's all about high-volume sales, not breaking new ground. That's why the perception of "*fall*" isn't actually a problem. Toyota's goal is to transform their fleet. Narratives of a necessary to push limits are just hype from enthusiasts. What happens for ordinary consumers is what matters. Remember, automakers are for-profit businesses with salespeople who aren't well informed and work on a commission.

For those of us who watched GM pursue glory through the exploit of tax-credits understand & appreciate Toyota taking a very different approach due to having a very different vision.

8-11-2019 **Awaiting Delivery.** It's nice to see posts that start with: "*So far 236,000 miles...*" He was telling us about his current Prius and the looooong wait for deliver of his Prime. Since he's nearby (metro of Minnesota), I'm well aware of the lack of inventory. Only a handful have been sent to each dealer. That's the way it has been all through Toyota plug-in history. The center of the United States and Southeast Coast are not part of the initial rollout regions. The expectation is that will change upon 2020 ramp-up. Supply of that mid-cycle update is only now growing in the established markets. That limitation is somewhat bothersome, but quite understandable. So in the meantime, we share stories and ask questions: What will you be doing with it when your Prime arrives? btw, I have been watching the inventory. Lots of new arrivals and sale removals have had the availability count all over the place. There's about 10 listed within day-trip distance of us now. It's looking like Toyota is well prepped to go all out, with the choice of delay being a very wise one. Not having to deal with any of the past hype leaves you and I a clear playing field. I'm excited about starting up gatherings again. Not having any local inventory put quite the damper on things. But now, it should be a reboot of how Prius got started. That was really fun the first time around. Soon.

8-11-2019 **Internal Trolls.** When a popular forum poster gets out of hand, what do you do? I responded to this today on that very topic: "*Nobody guessed --- would hit 80,000 posts by 2020.*" I did. I pointed out his overwhelming of the discussions too: "*Seeing so many posts per hour everyday, it raised concern about drowning out participation of others.*" My lead up to that wasn't well received either. He got quite annoyed with me repeatedly posting know your audience comments... because it drew attention to his desperation for attention. It was an ironic means of making others aware of the resulting dilution of value... especially due to the laziness and lack of concern. His posts don't include quotes. It's always in third-person to avoid confrontation. All the words in his posts are lowercase too, making them further standout. The sheer volume is the biggest problem though. He literally posts over 100 times per day and has been for over 2 years now. So, most of the content is meaningless sound-offs or contradictions for the sake of keeping the dialog active. It's just him using the forum for entertainment. That's sad. Others who join to share their experiences or ask questions get pushed aside by his effort to retain the spotlight. Needless to say, I don't like him... and feel quite good about others finally noticing what's been going on. Trolls of that nature bring down the reputation of the venue.

8-12-2019 **RAV4 PHV.** There was a set of spy photos that began circulation on the internet today. Supposedly in Spain, there as a plug-in hybrid model of RAV4 being tested. That makes sense. It is a logical next-step with the spread of PHV technology. After all, the hybrid system was designed to readily adapt to using plug-supplied electricity. The simple addition of a clutch allows the larger battery-pack to supply greater power output to the wheels. It's an elegantly simple approach that supports the absolutely vital need to deliver a reasonable profit to dealers. They won't bother trying to sell something that isn't affordable. It must demonstrate sustainable interest. Toyota's approach is quite compelling. Proof of that is undeniable with RAV4 hybrid. It's next-gen upgrade has been showing strong demand already. That makes it easy to see the effort to refine an offering with a plug is a sensible move. That will most definitely help to bring the entire fleet forward, something all other automakers have been struggling with. The subsidized one-hit-wonder can't compare to a variety of profitable offerings. Needless to say, I was delighted to see those spy photos and the excitement they stirred.

8-13-2019 **Nonsense.** Reading this brought a feeling of vindication: "*The Volt died because the factory it was being assembled at was closing, and it was closing because the traditional cars made there weren't selling and were being cancelled.*" It was just more of that desperate nature to provide damage-control. Whether the act is to convince oneself or others of the outcome, it's a disconnect with reality I'm happy to point out: Circular logic is evidence of something gone awry. In this case, it was the fact that Volt sales were supposed to grow to the level of takeover. The goal was for Volt to become the replacement. Production of that traditional car was expected to end anyway. Volt failed to achieve that. For 12 years, we had to put up with claims of "*vastly superior*" technology from GM becoming the dominant force in efficiency sales. This followed the disastrous hybrid offering known as Two-Mode. We were besieged with the message of needing to patiently wait for this new plug-in hybrid technology to crush Toyota. I endured countless attacks stating my concern for GM's expensive & inefficient were unfounded, just an effort to save the reputation of Prius. Needless to say, any attempt to portray a false past will be called out. Volt died because GM didn't really want to sell it. Why would any automaker continue on with such expensive & inefficient technology... especially seeing how well Toyota is setting the stage for plug-in hybrids? Looking back at how hostile Volt defenders became just 6 months ago, absolutely desperate to provide damage-control for GM by pushing a narrative of Toyota "*falling behind*" so much, the automaker may never recover. We now see both Prius & Corolla have PHV models and its looking like one for RAV4 is one the way. 19 years of that nonsense from those hoping to undermine Toyota accomplished what?

8-13-2019 **The Key.** I was surprised to get backlash from posting this: "*You try something. If it works, great. If it doesn't, you try something else. The key is to keep the scope of that change small.*" It makes sense that the perspective of being cautious gets highlighted. But no effort to see beyond that is concerning. After all, that is the trap Volt enthusiasts fell into. So, getting this stirred memories: "*This is a great strategy to keep from making a major mistake. It also insures that you'll probably never find the next big thing. In math, this is known as getting stuck in a local minimum.*" That sounds sensible. But having proven false, it cannot be used in such a blanket way. The market is far more challenging to deal with than that overly simplistic perspective takes into account. I pointed that out with: Actually, that has been proven false. The act of being willing to refactor (take on all those small risks) will often lead to discovery. It's a constant state of looking for improvement opportunity. Eventually, you find one. In math, that's known as a complex equation. Think about what happens when you add, subtract, multiple, and divide in a variety of different ways. A small poke in the right direction can lead to enormous change. To put this in terms of the automotive market, you must recognize it is a moving target... one that doesn't follow any particular path or destination and will continue to alter as you travel. Knowing that, ask yourself what the "*next big thing*" could mean? If it is a battery technology, what penalty is there for Toyota working to establish a culture of change at their dealerships highlighting the benefits of electrification? Building momentum for moving away from traditional vehicles is perfectly fine taking small steps. Put another way, I'm approaching my 20th year of pursuing greener technologies. With such a strong background in that effort to engage ordinary consumers in the acceptance of true change, I see a lot of repetition... including some major mistakes. The strategy of staying true to goals is what wins every time, even if that includes very small steps along the way.

8-14-2019 **Notice.** I'm back to the "*notice*" posts again: "*I think Toyota had made a similar strategic mistake with its Prime availability. Kind of a self fulfilling prophecy by limiting these vehicles to specific areas of the country*." That begged for them. It's because most people don't. So, I end up sharing my observations. I collect lots of data spanning a wide array of influence and watch for patterns, which requires a lot more effort than simply agreeing with a trend. It means what I observe commonly goes unnoticed by others. In this case, it meant I had this to share: When looked upon in a vacuum, it may appear that way. But when looking at the bigger picture and longer duration, the prophecy to insulate themselves from market fallout appears to have been quite wise. Notice how both Ford & GM are preparing for difficult times? Notice how Ford & Honda are getting skittish on hybrids? Notice how GM & VW have given up entirely on all but EV offerings? Notice how Toyota is ramping up Prime availability?

8-14-2019 **Low Sulfur.** Remember the diesel insanity way back in 2006? That's when ULSD (Ultra Low Sulfur Diesel) was rolled out. It was to be the savior of diesel, a means of competing with hybrids as a clean solution. That obviously didn't actually work. True, it did indeed reduce emissions. But the reality was, that wasn't enough. Diesel was still dirty in comparison and no where near enough to be called "*clean diesel*" as the campaign to deceive tried to make you believe. Well now, that necessity to reduce emissions coming to the shipping industry. The new regulation coming for January 1, 2020 from the International Maritime Organization (IMO) will be requiring lower-sulfur fuel oil. That will help considerably; however, it's not a perfect solution. It will be expensive too. To be more clean, more refining is necessary... which increases cost for the fuel and cost to retrofit some existing equipment. This is why there is still on-going research into the feasibility of fuel-cell use for large container-ships. They must find a means of cleaner transport. Think about how much fuel each one of them consumes.

8-15-2019 **Oops!** I really like where this took the discussion: "*EV's may indeed become the dominant mode of ground transportation, but that evolution will not happen overnight either. It has the be competitive with the current technology and work within an evolving infrastructure...*"

In the automotive industry, that term "*overnight*" equates to a generation-cycle. Which means, being able to take the market by storm still takes 6 to 7 years. That's why Prius is still the only single vehicle in modern history to bring about a paradigm-shift. Tesla can't be included, because it started fresh, there was nothing for it to change from. Tesla was also very heavily subsidized by both tax-credits and investor-capital. Being a start-up means lots of low-hanging fruit, but major challenges after those picks are gone.

That brings us to the legacy automakers. Even if there was a will, there is not a way. We are now seeing the same desperation for profit as we did in the past. That pattern repetition can no longer be denied. In fact, it appears to be even worse this time. Anyone else remember how heavily Ford & GM relied upon SUV & Pickup sales for sustainable business?

This particular discussion is yet another component to the market taking a downturn. Notice how many announcements we get about a far better options than hybrids coming, but no detail whatsoever? Those incredibly vague promises of amazing future technology is exactly what we got in the past. Remember how GM attacked Toyota with all that "*stop gap*" propaganda? What about Two-Mode? What about ULSD vehicles?

It's about to get ugly for some automakers. All the belittling of Toyota for having prepared for such an "*unlikely*" turn of economic influence of the plug-in market is gone. Anyone else notice how the "*leader*" and "*behind*" insults have vanished from comments? For that matter, notice how antagonists themselves have disappeared? That's a sign of problem recognition... like, oops!

8-16-2019 **Setting Expectations.** Today's discussion was interesting. Out of the blue, someone just wildly threw out there what they believe EV range for the next Prius Prime should be. Of course, it didn't take audience into consideration. In fact, cost was entirely absent from those posts. There was nothing related to automaker or market either. That lack of any effort to recognize big-picture need is a red flag. Missing any reference to sales goals is a warning that scope & timeline weren't included in the calculation. That's even worse than being unrealistic. You can't exclude the fundamentals of business and expect to succeed. That's is why I get eye rolls from my posts though. Few, if any, in online forums really want to discussion economics, marketing, or accounting. There's nothing exciting about those non-engineering aspects of the automotive world. So, many just pretend that stuff just magically works out if you have the right design. Ugh. I hoped to get the discussion back on track by providing a basis of analysis, giving them some actual numbers to consider back pointing out background: The unit-of-measure for a vehicle designed in Japan is metric. In this case, kilometers. For gen-1 Prius PHV, that target was 20 km. For gen-2 Prius PHV, that target was 40 km. For gen-3 Prius PHV... knowing that affordable & reliable has been higher priorities than range... would put it at 60 km. That's 37 miles.

8-16-2019 **Cost Reduction.** When Toyota designs something, there is always that quest to reduce cost. Achieving that through high-volume is an effective approach. The benefit is well proven. Think about the product-line as a whole. RAV4 PHV using a 13 kWh capacity battery-pack would be ideal to share with the next Prius PHV. That would fulfill an expectation of 60 km. It's in the realm of realistic options to pursue. That's why real-world research with mules takes place. They give the design a try, hoping to gain a confidence of it being a wise choice. If so, great. If not, you try something else. The key is to consider as many factors of influence as possible before committing. Reducing cost is challenging enough. Oversight can be costly. This is why was see Toyota rolling out to limited markets. They go to great lengths to validate decisions about stuff related to size & capacity.

8-16-2019 **Realistic.** It's nice to see hope growing for new PHV models to come from Toyota, but there's much people have yet to "*notice*" about the design. Some of it comes from outdated or incomplete information. Some of it comes from rhetoric. That means responses to new threads on the topic are all over the place. I saw that coming today and jumped in as quickly as possible to provide some background. Sadly, the antagonists are usually faster. And sure enough, that happened this time. But I still managed to provide an intercept: Keep in mind, purpose of that original plug-in Prius was to boost MPG and an affordable MSRP, not to provide any type of all-electric drive experience. So, there was never a sound reason to compare it to Volt. They were from entirely different categories. The initial rollout of Prius Prime was limited to select regions of the country, knowing the mid-cycle update (2020 model) would be the one to deploy nationwide. For those watching inventory recently, that ramp-up is now underway. Remember, the upgrade from regular Prius to plug-in Prius to create the "*Prime*" model (known as PHV in other markets) was to just add a one-way clutch. That enabled the second electric-motor (usually used for generating electricity) to contribute to propulsion power instead while also disengaging the gas-engine. Combined with a larger battery-pack, it pushed EV limits to provide an all-electric drive experience. Doing the same for RAV4 hybrid is quite realistic.

8-17-2019 **Sales Decline.** You gotta love seeing posts starting like this: "*PHEV sales are declining in nearly all markets...*" How long did that sentiment persist for hybrids? Needless to say, having over a decade of experience seeing such efforts to mislead & undermine has taught me to keep on pushing. That nonsense has very little impact. Understanding change is not something anecdotal observations can teach you. I fired back with: Generalizations tend to give misleading conclusions. Failing to recognize data is why. In this case, we see a major decline due to the exploit of GM coming to an end. Volt was clearly a niche, targeted at enthusiasts who took advantage of the tax-credit. That early-adopter audience has nothing whatsoever to do with the mainstream market. Demand for such fundamentally different groups cannot be compared. Prius Prime was only available in limited markets, waiting for this mid-cycle update (the 2020 model) before going nationwide. Corolla PHV isn't even available anywhere in the United States yet. Both are targeted squarely at ordinary showroom shoppers sharing nothing in common with early-adopters. The same will be true for a PHV model of RAV4. Keep in mind, appealing to those who would be content purchasing a traditional vehicle is far more difficult than winning favor by someone reading these comments. Their priorities have little to nothing in common with this group. Many couldn't care less about many of the arguments posted here. Know your audience.

8-17-2019 **Baby Steps.** Focus on Toyota has really become a hot topic: "*Toyota still making baby steps while others are racing forward.*" It's a sign of impact. Antagonists see the potential... and don't like it. So, they attempt to belittle & insult any opportunity they get. It doesn't work though. I gladly point out why: Toyota's goal is to convert their fleet, replacing traditional offerings with hybrids. So what if it is looked upon as a baby step? It's a move on a monumental scale. Others are not racing forward in that regard. Focus on low-hanging fruit (subsidized token offerings) gives a false impression of change. The status quo isn't actually altered. GM's failure with Volt is the ideal example. Enthusiasts argued for years about how that "*leadership*" was winning the race. Those naysayers who absolutely refused to acknowledge it was a tortoise & hare situation have since grown silent. They were wrong, very very wrong. The culture at GM dealerships didn't shift to electrification. In fact, we have seen sales of guzzling SUV & Pickup choices grow. Don't be fooled into thinking what's in the spotlight at the moment represents progress forward. It's all about lifting the base. Appearance of being a leader doesn't take into account what it actually takes to get difficult customers to embrace change. Baby steps are almost always what's required to get them to accept a paradigm-shift. In other words, setting the stage for BEV by first getting the base to purchase PHEV offerings will likely be a much more effective means of achieving large-scale change quickly. Remember, Toyota sold 10.7 million vehicles worldwide last year.

8-17-2019 **Vague & Ambiguous.** Statements like this are a common problem: "*It's easy to implement hybrids. Implementing a true BEV is much harder and more expensive, as Tesla found out with the massive development costs of the Model S, Model X, Model 3 and soon Model Y.*" They do nothing to look forward. They gloss over detail too. That "*soon*" is basically meaningless. It you are waiting to purchase one, how long does that actually mean the wait will be? Needless to say, I get annoyed by the lack of critical thinking. Many just post to make themselves feel better, rather than making an effort to help advance the masses forward. In reply, I posted: Since the topic is PLUG-IN hybrids, not regular hybrids, that claim is a red-herring. It's also quite ambiguous. What does "*implement*" actually mean? Getting dealers to train mechanics to support and salespeople to sell anything with a battery-pack is a major challenge. Also, Tesla's reach beyond the early-adopter market has yet to be observed. We have no idea how ordinary consumers will respond to a Model 3 without that generous tax-credit available. Heck, we don't even know how they will purchase a Tesla vehicle. So, that could be considered a red-herring too. It's what happens with legacy automakers who sell millions of vehicles per year that will shift the market. With worldwide sales well over 70 Million, turning a blind-eye to the established biggest players to instead focus entirely on a small-in-perspective startup isn't a balanced approach. Think about what next steps are required to reach beyond early-adopters.

8-17-2019 **Now, it's just a "Hybrid".** I find it quite amusing how intensely the Volt enthusiasts fought for "*EREV*" as the identifier of technology for Volt. Long before rollout began, they pushed to make it unique from any other offering other automakers would later rollout. And when that happened, the definition would be altered accordingly. Ugh. That happened twice, for both Ford Energi and BMW i3. It was so obvious that attempt to build demand for Volt while belittling all others was a desperate marketing move. Without any operational difference to actually distinguish it, that was just a meaningless label... as Prius Prime has overwhelmingly confirmed. Again, ugh. So now that the table has turned, I find the hypocritical nature of the claim quite fulfilling. To promote Bolt as the future of GM electrification efforts, Volt has been re-categorized as just a hybrid. No one refers to EREV anymore. In fact, antagonists get very frustrated when you bring up that past. They want to pretend that ugly chapter in their history never happened. Efforts to divert attention and downplay the situation are abundant. I particularly liked this one: "*There has only been one hybrid that did any good and that was the Prius. Even now sales on it have tanked. The hybrid was a compromise that just seldom worked out well.*"

8-17-2019 **Effective Marketing.** It boggles my mind how the difference between want & need is so confusing. As a software engineer, that distinction has been absolutely vital for a successful career. You must carefully listen to the customer, correctly identifying the type of request. Are they specifying a requirement or a nice-to-have? Design with mistaken priority can be quite costly. You should balance what's delivered. Too much of either won't be a product the customer will enjoy using. Sadly though, marketing doesn't work that way. It heavily favors want, to the extend need isn't even addressed at times. The definition of each should be easy to understand. The reason why should be too. Sadly, I have to post that information from time to time, when an argument grows to an extreme due to a failure to distinguish the difference. Hopefully, today's attempt will provide some insight: Want = Feel, Opinion; Need = Fact, Necessity; Not seeing the difference is why the topic (snow tires) gets brought up so often. But then again, this is why Prius has been able to sustain for so many generations. Campaigns have come and gone, each trying to convince us of "*need*" based up what is actually a want. People have moved so far out of touch with recognizing or even questioning the difference, that lack of distinction is now normalized. Some would call that effective marketing.

8-18-2019 **For The Boat.** After all these years, that excuse still lives on. Someone who owns a giant boat justifies their purchase of a giant guzzler as necessary. They feel that logic validates their choice for daily commuting in that vehicle. It's what I heard today at the barbershop. You could tell he had absolutely no interest in any opinion from others. That was what he would continue to do, period. That's how Two-Mode came about, offering a solution for exactly such a situation. Only trouble was, the technology was far too expensive. It worked, but simply wasn't worth it. Ironically, the "gas saved" campaign went nowhere. In fact, that's why any attempt to try the same for Volt simply fizzled. It is what happens when emotion is the basis of a purchase.. the whole need verses want problem. They find ways of justifying the irrational. So, the fact that I encountered the very some "logic" all these years later is no surprise. People are compelled to follow their heart, rather than their mind. They may work out fine with other things, like relationships, but it's typically an expensive choice when it comes to lifestyle. Those are the facts of life...

8-19-2019 **Finally, It's Dead.** Today marks the final moment of that daily blog for Volt. 2 months ago, the very last topic was posted. You could submit comments, but nothing ever got approved. That pending status became impossible now too. A moderator removed the ability to do anything. It is marked as read-only. All activity has halted. That terrible source of misleading, a training ground for enablers & antagonists is now day. I had no idea such rhetoric could have transformed into a fake news outlet. So much hate emanated from there. I knew that would happen from long before Volt even first rolled out. The big clue was when the look of Volt changed from concept to production. Anyone who had submitted an interest form was not allowed to update their status. The count continued to grow, despite such a dramatic shift of expectations. That number became the first big source of spin. It had no association whatsoever with GM itself, yet was promoted as a commitment to purchase. There was no obligation of any sort. No deposit. No salesperson. No dealer. It was just a survey that grew way out of hand. Any familiar with such information knows only a small fraction of those who express interest actually follow through. Those numbers were treated as sales, long before any specifications of the vehicle was even revealed. That's how I knew this day would eventually come. You cannot run a business on hope. Enthusiasts gambled everything on meritless claims and group-think. It was doomed. Each ambiguous bit of information provided by GM fed them. I witnessed spin and damage-control on an incredible scale... or so I thought, until witnessing this president. He actions resemble the same behavior I had to deal with on that daily blog. That's why "*know your audience*" is so important. Fortunately, his ability to play a crowd will someday come to an end too. In the meantime though, just like GM did with Volt, there will be a lot of damage caused along the way.

8-20-2019 **Not Really News.** The dashcam footage from Tesla owners and all the hype about autonomous driving is starting to dilute plug-in news to the point of people losing interest. It's the quantity over quality issue. News organizations commissioned to deliver a quota of content every single day is counter-productive to the mission of cleaner transport. They push whatever content they can find to stir participation. Reads & Comments are more important than having a compelling story... which of course, dilutes the compelling story when it finally comes along. That loss of value is how many blogs fall. People simply become disenchanted with either the content or the vehicle itself. It's a very real problem for those trying to make a business out of the emerging plug-in market. What draws sustainable interest is a very real problem. If the vehicle simply works, like Prius, people naturally just participate for a short amount of time anyway. That's the sign of a good product. New owners check in for tips, share a few experiences, then move on. You don't actually want a product that endlessly requires some type of on-going effort. So, I'm watching the EV news struggle with lack of anything actually taking us forward. With so much ground broken now, focus needs to switch to building market, not pushing for faster & further. Recognize that problem from the past? You should... Give us real news!

8-21-2019 **Administration Rhetoric.** Just like we had to deal with when Prius was new, the current administration is dead set against promoting green technology: "*Trump said company founder Henry Ford would be "very disappointed if he saw his modern-day descendants wanting to build a much more expensive car, that is far less safe and doesn't work as well, because execs don't want to fight California regulators."* That's really sad. It's the same old scare tactics. Say whatever it takes to prevent the move forward from being considered. Remember those claims of the past, where they said countless jobs would be lost if this new risk were considered? Not only was it meritless at the time, it was later to be proven false. Not adapting to a changing world is how so many careers were destroyed. They held onto the past as long as they possibly could. The same old fight to retain the status quo is taking place now. This is easy to see too. The desperation is manifesting itself the same way. Well being of the automaker is placed on the gamble that high-profit guzzlers will continue to sustain the business. That will inevitably fail. Change is essential to remain competitive. Our president knows they are safer, knows they work well, and knows they are overall less expensive. He'll ignore all that in favor of rolling back regulations and encouraging consumption. There won't be any way to hold him accountable for the extensive damage that will be caused for future generations to deal with. The rhetoric will obscure most of that effort to undermine anyway.

8-21-2019 **Declared Failure.** Whenever something about Lexus hits the news circuit, rumor mill, or just gets a random stir, there is always someone to push the resistance narrative. Wanting to portray Toyota as if it has the same audience as Lexus is what makes that effort standout. It comes from GM having normalized the multi-target approach with Volt & Bolt. We never really knew who the market was. Having a distinct market for mainstream and a distinct market for luxury seems beyond the grasp of some... hence the continuous mantra of one-size-fits-all. I replied to today's post that claimed "*kicking & screaming*" with my own message. Remember how the initial worry with Volt was that it would struggle to achieve mainstream sales, resulting in GM abandoning it with the claim of no interest? No one seems to anymore... now that the concern has come to fruition. That's exactly what happened. GM simply moved on to their token EV without any looking back. All that "*range anxiety*" campaigning was for what? I kept my reply brief, hoping the hypocrisy trap would keep any type of retaliation in check: It's interesting to watch the "*kicking & screaming*" rhetoric play out as the herald leader, GM, did a "*declared failure*" rollout without anyone complaining.

8-21-2019 **Waiting For Profit.** It didn't work. Focus was simply diverted to another antagonist topic: "*Kodak and Blockbuster waited until there were sustained profits to be made also...*" That is also a hypocritical trap. There's no possible way anymore to claim Toyota is behind without acknowledging the lack of progress from GM. Exactly as predicted, no effort to reach mainstream consumers would be made. GM built a vehicle with no appeal to dealers. What possible incentive is there to stock Bolt inventory? We have been told directly from GM that Bolt will not be profitable until next-gen rollout. That means the next few years will remain stagnant. Without a tax-credit available, such a high sticker-price, the pressure from other automakers, and the lack of dynamic-cruise, lane-keep-assist, or super-speed charging, what's the draw? GM is clearly resting on its laurels. Looking at the bigger picture, seeing an effort elsewhere in the fleet could justify the stall. But there's nothing, quite unlike Toyota's push of hybrids across the entire fleet. So, I responded with another short post: Turning a blind-eye to GM doing that is what? The rest of us see how Bolt's push has stalled until profit can be made.

8-21-2019 **Intent Reminder.** It was a decade ago when the hype of pre-release for Volt when expectations turned into rhetoric. The reason why was simple... there was nothing to back the claims. Statements claimed as fact were meritless. There was no data. There wasn't even specifications yet. They had nothing. I got attacked when pointing that out. So, I tried to keep discussion focused on the business aspect. How many Volt does GM intent to actually sell? To whom? When? It was a push without a plan. Knowing the tax-credit was limited, it should have been obvious some type of plan would be necessary... otherwise, opportunity would be wasted. You want to build up demand to a sustainable level prior to expiration. The reason why is simple. After the 200,000 sales, phaseout is triggered. That switches the tax-credit availability from quantity to time, allowing the automaker to flood the market. It's an opportunity Tesla capitalized on and GM wasted... exactly as predicted. All that "*too little, too slowly*" concern I got relentlessly attacked for has been confirmed as valid. I am vindicated for having been sincere about sales. I really was the looking out for the best interest of business & consumer. Sadly, none of that history is remembered. Looking back, you get a very different perception of what subsidy use should have been. That's understandable, considering how much has happened with the plug-in market over the past decade. However, not recognizing the "*2020*" perspective (what an interesting cliché twist) is a very real problem. Technology changes. Technology improves. It takes time though and you must best use resources available for that period. I provided all that history summarized into: Intent of the tax-credit was to establish a technology, allowing each automaker to build up production & reputation by their own choosing at their own pace. The catch was to complete that process prior to triggering phaseout. Tesla did a wonderful job of that. GM simply abandoned their entire effort to blend engine with motor. Voltec was never spread to any mainstream offering, like Trax or Equinox, as was expected. That was a colossal waste of opportunity. Remember all that "*range-anxiety*" campaigning against EV choices?

8-22-2019 **History Disagreement.** It is intriguing to find someone disagreeing with you when they have nothing to offer in support of their claim. I have this massive collection of blog entries, written back at the time of those events playing out. That provides an incredibly valuable perspective, one of not knowing what comes next. When you already know the outcome, any reflection upon that history is distorted & bias as a result of that uncertainty having been removed. You must take into consideration material from that time, documenting what people felt & believed would occur. That's why the "*intent*" discussion is somewhat pointless. It teaches you how to make decisions about the future, but does not in any way alter the past. Whatever happened, happened. That's the way it is. Wise or Stupid, it doesn't matter. The outcome is not for debate. In this case, the demand & reputation for traditional guzzlers remained untarnished. Legacy sales continue as they did back then. Ugh. Annoyed, I posted: You can disagree with intent, but that won't change it. A decade ago when the tax-credit first became available, the market was different... hence the relevance of pointing out the bigger picture. Again, that bigger picture is important. The tax-credit is only for 200,000 vehicles. Focus on the highly profitable with annual sales much higher wouldn't appeal to the true customers, the dealers. True change (actual impact to the status quo) means focusing on the more difficult challenge.

8-22-2019 **Overcoming Assumptions.** Setting realistic expectations is a means of preventing assumptions. Problem is, people continuously supply misleading information. It never ends... which is why trolls thrive in certain venues. It probably isn't intentional. It just happens. But then they become addicted to the resulting attention. That's the problem I have now with a certain Prius owner who has decided the big forum is there for his entertainment, rather than being a source for exchanging detail about ownership and the market. When it becomes that, you know there will be trouble... since overall value is lost. Newbies don't find it helpful and stop participating. Sadly, that's exactly what our current president is doing too. Making people become disenchanted results in less pushback when he does whatever he wants. Notice how many tweets we actually get daily now. Ugh. It's just like posting. Quantity rather than quality is a red flag. That's why when you encounter comments like this, it makes you wonder how much disinformation was spread to give such an impression: "*I don't understand why Toyota doesn't add a plug to these models and thus gaining eligibility for government incentives.*" There are only 200,000 credits available per automaker. So, there is no gain. The finite quantity cannot be changed. For that matter, eligibility doesn't require more models. The only option available is to seriously ramp up production just prior to reaching phaseout. That's where the assumption part comes in, which I stated as: How do you know Toyota isn't planning to do exactly that? It certainly looks like they are setting the stage for high-volume availability to happen the same time as triggering phaseout... which would make it ideal, since that is when the tax-credits switch from quota to unlimited. After all, that is what Tesla did with great results. Just because GM blew it by not having anything in place doesn't mean Toyota will do the same thing.

8-22-2019 **Constructive Questions.** Sometimes, you get lucky. My assumption response resulted in: "*Curious then what is your prediction for when they hit the phaseout and what models will they have in place in the US at that time?*" I appreciate that type of post. It shows critical thinking. Rather than attacking the messenger or attempting to draw attention elsewhere, it's a worthwhile question. Yeah! That's so much than the usual nonsense, especially when the rhetoric is so brainless. To that, I gladly answered with: I have no idea. Toyota has a reputation for carefully monitoring markets and responding in its best long-term interest. I have been watching inventory of 2020 Prime models grow in the established markets over the past 3 weeks. The impression based on counts appears that sales are already off to a good start there. It suggests the same will happen as new markets finally get decent delivery. While that's happening here, Corolla PHV owners elsewhere will be providing data to gauge rollout potential in other markets. I suspect we'll get a PHV model of RAV4 first.

8-23-2019 **Watching Inventory.** I have been watching the ups & downs of inventory for the 2020 Prius Prime. It took less than 2 weeks for another 500 to become available as ready-to-purchase stock. That's doesn't account for those sold during that same time period. So, I'm actually witnessing the number rise, then fall. The point is to see an overall growth. That's how I know the market reach is taking place. Sales are very important, but so is being able to reach new customers. That requires supply to be on dealer listings. The phone-app shows that data. It's quite handy. I can already see August will be a good month for existing markets. New markets (like the 500-mile radius from me, here in Minnesota) hasn't seen any growth at all. We have a dozen vehicles listed, all special orders. Not being part of the initial rollout regions was a test of patience. Getting 2020 models as the first ready-to-purchase stock is fantastic. Customers (as well as sales staff) will only ever know this newest offering. Not having any type of legacy to deal with has benefits. That means a bit more waiting. I suspect new region rollout won't begin until close to the end of the year. Oh well. There should be a few announcements/reveals in the meantime. That gives Toyota ample opportunity to see the stage while we wait too. Stuff like training at the dealers is quite helpful. Hopefully, that's what some of those special-order deliveries are for. It takes a bit of real-world exposure before you get enough experience to feel comfortable promoting something so new. In fact, that's part of the reason why Toyota decided to rollout to individual market schedules, rather than to the entire country all at once. Experts for training are limited. So, while I wait, I watch inventory grow.

8-24-2019 **Today's Future.** It has been interesting to read some impressions of what the future is expected to bring. I hear comments that have no basis upon any market effort. People just see a need and expect it to somehow be fulfilled. Who will do that, when it will get done, and how it gets paid for doesn't get addressed. They just figure it will somehow be dealt with. That type of "magic" is pretty common. It's the basic non-enthusiast perspective. Stuff just happens. That's why there's such a fascination with Prius. It simply works. The future is "today" regardless of when you start paying attention. This is something mysterious & questionable by early-adopters. Some now, especially as Tesla phaseout is well underway, just expect an effortless growth to take place. Catch is, it's not like Prius Prime. The discovery process isn't as simple as coming across one while wandering around at the dealer. Pricing keeps in the "someday" category too. In other words, stuff like this coming up randomly in discussions is how you know a new chapter has begun. Rhetoric of the past is fading away... hence, the future arriving today... for some.

8-25-2019 **True Change.** This was an interesting observation posted about a rather odd new thread: "*He sees all the competition... He just doesn't want to spend the rest of his life waiting.*" What made it odd was the critical thinking. This was starting out as a constructive discussion. Woohoo! I jumped in with:

You have been enlightened and now sit at the doorway of early-adopters. It is a "*grass is greener*" situation. You see better choices, but don't have enough exposure to really assess what that really equates to.

Think about where I started 20 years ago. I was watching electrification struggle to break out beyond a niche through the PNGV (Partnership for a Next Generation of Vehicles) program, a federally funded effort to help research & deliver 80 MPG vehicles. Prius came about as a counter-measure as a result of that. Toyota's technology revealed just how difficult it would truly be to provide via choices for the masses. That's why GM was doomed to fail with Volt from the very start. I made a lot of enemies by taking on the enthusiasts who pushed aside real-world data in favor of hope. Their desire to embrace the idea of a miracle break-thru clouded their judgment to an extreme, enabling a group-think which ended with disastrous results. What a waste of opportunity.

Looking for actual merit in the advancement forward is rather disheartening, if you want a solution for the masses right away. Status Quo has remained intact, despite the successful rollout of Model 3 from Tesla. It's an amazing vehicle without any real influence of change for our greatest barrier, legacy dealers. Understanding how they are the true customers of legacy automakers brings about the next-level of enlightenment for you. Think about who the "*competition*" actually is.

Knowing that is how you will begin to see Toyota's "*death by a thousand tweaks*" will overcome the barrier. It's not exciting to watch the seemingly glacial pace forward, but it sure is assuring to know that there is no turning back. Toyota's electrification push is across the entire fleet. With the newcomers of Corolla hybrid and the seriously impressive next-gen Camry hybrid and RAV4 hybrid, that should be easier to see.

Looking forward, we can set focus on Prius. For anyone who has closely studied the history, starting even before the dramatic reveal of Prius back in October 1997, will know how much Toyota plans ahead and builds flexibility into their approach. We can see how the stage is being set for Prius to become a PHV by default. Having the plug be standard, and the no-plug optional, is that paradigm-shift many have been dreaming about for a very, very long time... except, it will then be realistic. 25 years is a freakishly long time for a consumer, but not from the perspective of an automaker. This is why "*know your audience*" is so important.

Toyota's goal is to deliver an affordable & robust design. That's why this generation of plug-in Prius has that rather awkward sized battery-pack, but has a tradeoff of production-cost being low enough to compete directly with other vehicles on the showroom floor... an absolutely vital aspect of true change. We won't see status quo budge until without that profit reality... which informs us as to the design for the next-gen Prius... a better fitting pack, with a modest capacity increase and faster recharging, at a highly competitive price.

That may or may not be the greener grass you are looking for, but it is certainly what legacy automakers need to move forward.

8-25-2019 **True Leadership.** My contribution to the discussion included:

Also, don't lose track of what true leadership is either. Unlike what enthusiasts try to convince us of, it's not about bragging rights.

Toyota has been quietly introducing unique gains to give them an edge later, when legacy automakers suddenly discover HSD is an very effective means of delivering PHEV choices able to compete directly with traditional vehicles without any subsidies.

It's amazing how often the carbon-fiber hatch and the dual-wave glass get overlooked. Both require very high levels of quality, something that takes quite a bit of effort to achieve at both low-cost and high-volume. Combined that with the refinement needed to deliver both a highly efficient traction-motor and highly efficient heat-pump, you've got a winning set of technologies beneficial to plug-in vehicles.

So whenever you seem to get a little frustrated, seeing greener grasses for enthusiasts, remind yourself how Toyota is quietly striving to get an edge on the larger consumer market as a whole. Their pre-work to set the stage, prior to the masses taking an interesting in plugging in, to prepare their entire fleet. That readiness of design we see in Prius Prime and Corolla PHV clearly demonstrate the massive amount of potential. It's not far-fetched to consider a plug-in model of RAV4 hybrid becoming enticing enough for dealers to stock them as regular inventory.

Unfortunately, just like all the other successes of the past, a great deal of patience is needed in the meantime.

8-25-2019 **Playing Offense, again.** Having history unfold in such a familiar pattern is fascinating. The repetition now is just like I remember from years ago: "*Anytime there's an article pointing out Toyota's failings in the EV world, John's boilerplate, anti-GM, regurgitations appear. It's his defense mechanism.*" When absolutely everything failed with Two-Mode and it was totally hopeless, the attacks dwindled to just claims that I was really just out to get GM. Doing everything possible to avoid address any aspect of what GM did to bring about such a monumental fail is confirmation of positions having switched. The same thing happened again, this time with Volt. So, I started playing offense again. There's so much real-world data in my favor, why not? There's nothing new to spin. Every exploit has been exhausted. It's over, as I witnessed firsthand today. The attack was so desperate, I couldn't help but take the time to really push back hard. So, I did:

You clearly didn't actually read the article. Instead, it was choosing to attack the one who not only expressed concern about GM's impeding failure, but also quite accurately predicted how it would play out. I was dead on about GM's squandering tax-credits for the sake of conquest sales... sacrificing Volt technology along the way, rather than establishing something able to achieve sustainable profit prior to triggering phaseout. Production has ended and there is no vehicle using that technology anymore for GM's own home market.

That combined with the obvious move Toyota is making toward electrification is making you crazy. Your beloved Volt, which you abandoned for a Model 3, simply could not compete with what Prius Prime was evolving into. Toyota had already delivered a superior system, more efficient with both EV and HV drive, in addition to delivering a more efficient system for heating the cabin. And now that the model 2020 has delivered a mid-cycle upgrade, the inventory build-up in established markets and rollout to new markets is too much to accept. Adding to that, we now here of an EV concept on the way from Lexus.

All those years of having to deal with that nonsense about GM being the ultimate legacy leader and Toyota being hopelessly behind is about to pay off. Your lack of patience and refusal to acknowledge the bigger picture will be a hard lesson learned... and I'm happy to play offense on this one. Go ahead, dig dipper into that pit of denial. What do you claim Toyota has failed at?

Remember, we aren't even out of the early-adopter stage yet. That means mainstream acceptance hasn't started yet. That stage is defined by competing directly on the showroom floor, traditional against plug-in, without any subsidies. Watch what happens with Prius Prime. That starting MSRP of $27,600 is the dream "*nicely under $30,000*" goal GM was never able to deliver.

8-25-2019 **Lexus EV.** There is something on the horizon. An article today posted about a reveal coming in October stirred the rhetoric. Right away, there was trouble. It usually starts from cherry-picking, to portray some type of narrative. That avoidance of the bigger picture (what a legacy automaker with do with the technology as a whole) is a clear sign. With the tax-credit phaseout underway, anything new is looked upon with fear. Status quo disruption is on the way. I pointed out what was going on with: As this becomes a post tax-credit market, most of that GM damage-control effort no longer has an audience. GM's heavy dependency on subsidies became undeniable. It's over. The technology was too expensive to be spread to other vehicles in the fleet. Two-Mode made that mistake. Volt gen-1 made that mistake. Volt gen-2 made that mistake. Not being affordable is a very real problem. That's what brings us to Lexus. It is a luxury brand, serving consumers willing to spend more. So, expensive is ok. That makes a hybrid like the Lexus UX 250h, starting at $34,150, a sensible choice. Increasing battery-capacity and adding a plug still keeps it within the pricing of competitive scope. People looking to get an upscale plug-in SUV will find this, which sets the stage nicely for an EV luxury offering to follow. It's all a realistic path follow. Looking to the mainstream market, we see Toyota offering Prius Prime at a MSRP starting at $27,600. That is well within the reach of ordinary joe-average customers looking for something from Toyota with a plug. RAV4 hybrid starts at $27,850. Increasing battery-capacity and adding a plug will work well for it too. With Corolla hybrid starting at just $23,100, the effort to deliver affordability is easy to confirm. No amount of rhetoric can hide that cold, hard reality.

8-26-2019 **No Chargers.** A new type of grocery/convenience store was built just down the road from where I live. It was to be a much smaller version of the grocery store I could see from my house, but at the same time quite a bit larger than anything you'd ever buy gas from. And yes, it also sells gas. All that, combined with an attached coffeeshop spelled great opportunity for that chain which already took pride in offering chargers right from the start. Problem it, those chargers also had issues right from the start. One had never, ever been usable. The construction crew accidently painted the spot with the disabled markings. So unless you have a handicap placard, parking there is impossible. That meant one charger went to waste. I contacted corporate and got a convoluted response that was just a lame excuse to cover their mistake. Nothing ever became of it. Still not fixed. So, I had little hope of this new facility built from scratch in a corn field would be done to actually support chargers. Sure enough, opportunity lost. My first stopped, I was greeted by a manager. My comment about the lack of chargers baffled him. In his mind, it made no sense to stop at that location for more than a few minutes. I silently just pointed to the coffeeshop, waiting for the view of the seating there to register. He finally responded with an, "*Oh! I send that suggestion forward for you.*" I didn't say anything. It was far too late. No new work after just finishing up for a grand opening would obviously happen. That premiere new type of store had blown it already. Ugh. That would have been a great way to attract new business, especially in such a competitive area.

8-27-2019 **Unintended Outcome... Plug-In.** My own response to this brought about an unintended outcome: "*Yes, but that begs the question: Why is the Prius no longer considered cutting-edge eco-conscious technology?*" It was that type of "*halo*" spin of the past that fueled much of the debate. Purpose of Prius was constantly being misstated for the sake of undermining goals. Knowing this was a general audience and a fluff piece about Tesla, the attempt to portray Prius in a different light was to be expected. I responded several hours later (waiting for others to comment in the meantime) with:

No, that was never a question relevant to Prius. Anyone who has taken the time to study the history (or even better, witnessed it firsthand) knows that Toyota's purpose for Prius was to bring an affordable solution reducing emissions & consumption to the masses. That's why the other hybrids have been just as important. Corolla, Camry, and RAV4 hybrids are all part of the stage being set for the next chapter, that look forward the article fails to address.

Those next steps should be obvious. But those who by into the "*competitive*" narrative are choosing to disregard the current chapter in history coming to an end now. That low-hanging fruit (subsidized early-adopter sales) have little reflection of demand from the mainstream market. Those consumers are entirely different. That's why Toyota has responded accordingly.

Prius Limited, Prius AWD-e, and Prius Prime (mid-cycle update) are those changes... all new offerings within the last 8 months. It's all about targeting showroom shoppers, Toyota's own loyal customers, not appealing to those who seek cutting-edge technology. Know your audience.

Put another way, Toyota is moving toward that paradigm-shift, when Prius becomes a plug-in standard. To achieve it, the technology must be proven mature, not cutting edge. Being able to deliver an affordable plug-in (meaning it can compete directly on the showroom floor, no tax-credit help) is something none of the legacy automakers have been able to achieve yet. It's the type of leadership the "*innovation*" crowd is still unwilling to acknowledge.

Watch what happens with Prius Prime as it rolls out beyond initial markets. Large areas of the United States have been limited special orders. That lack of inventory was Toyota's choice to delay until the mid-cycle upgrade, which began the last week of July. So, it's going to take some time to get supply even to just the initial markets. But it is quite clear there's demand for an affordable plug-in hybrid and the Prius Prime sticker at $27,600 is about to test those waters.

8-27-2019 **Superiority, part 1.** I saw this and immediately detected trouble brewing: "*people have no concept of how loud their gas engines are until they ride in an EV. When i first started driving my Volt, the silence was eerie.*" Being a post on a thread about the electric-car coming to age, it would inevitably attract a wide variety of participants. So, I carefully thought out how to approach the obvious absolute perspective that message was attempting to push. It was a good idea to keep the response short and to the point: Best to rethink that claim. The 12 million Toyota hybrid owners know. They discovered city & suburb electric bliss long ago, no plug necessary.

8-27-2019 **Superiority, part 2.** He was either totally clueless or a Toyota antagonist: "*as they chug dino juice every day?*" That's a dead giveaway objectivity wasn't going to be possible. His mind was already closed. This had already become an example of the "*vastly superior*" attitude I dealt with on a regular basis in the past, the heyday of Volt... when enthusiasts just plain didn't care about facts. That was the birth of fake news in the plug-in world. A website became an enabler. They would repeat rhetoric so routinely, it created a narrative telling the story of a false reality. I was blown away how they would outright lie. Those naive to their actions would get sucked in, helping to spread the misinformation. It starts with efforts just like this. Again, I carefully thought out how to reply: Doesn't matter that gas is used to generate that electricity. Once the engine shuts off to use it, the driving experience is just like an EV. That smoooooth & silent operation has been inspiring consumers for decades already.

8-28-2019 **Superiority, part 3.** Yup. I got my confirmation: "*doesn't matter that gas is used to generate that electricity. it matters if you care about pollution. Prius burns gas and pollutes every day.*" He clearly just plain did not care. He wanted to portray Prius a particular way, intentionally misrepresenting it. With the death of Volt, there has been an expectation of spin emerging to make it seem more than it was. The start of that comes from lowering the bar. Claims of Prius not being able to deliver any EV drive experience whatsoever is an obvious path to that deception... since it was a common claim in the past. Only then, it was about Prius PHV. But now that even the regular Prius can deliver even faster EV speed on the highway, there's reason for concern about how Volt is perceived. GM had potential, but ended up squandering for praise instead. What a waste. I posted back with: That has nothing to do with the topic of experiencing EV drive. That also attempts to misrepresent Prius by omitting the fact that the Prime model is an EV for the first 25 miles... full electric-only driving up to 84 mph.

8-28-2019 **Superiority, part 4.** He then got angry: "*Sure it does. You will be polluting most every day via the gas guzzling Prius, especially in winter. It is called a fact, ALL versions of the Prius guzzle gas and pollute the environment. Prius owners are virtue signalers.*" That attitude was easy to detect at that point. The insult to ALL owners of Prius made it undeniable. He wanted his superiority to remain untarnished. I was threatening his position. So, it was time to push back: Typical, changing the topic upon getting caught trying to mislead. Prius Prime (the plug-in model) dramatically reduces pollution to the environment. Entire commutes can be done using nothing but electricity, including winter. It delivers EV speed up to 84 mph and has a heat-pump that will electrically deliver warmth for the cabin in temperatures down to 14°F. Claims of virtue are an attempt to evade those facts by twisting it to an ALL absolute. Again, they discovered city & suburb electric bliss long ago, no plug necessary.

8-28-2019 **Superiority, part 5.** No surprise. It got quite a bit worse: "*typical, a Toyota propagandist deflecting the fact they have no EVs and all their cars and trucks are destroying the environment. Where are the fuel cells? ROFL!!!!!*" The back & forth had become a great example of nonsense just like I had to deal with in the past. It was history repeating itself all over again, again. I always find that repetition fascinating. There's an aspect of the human existence which people tend to follow. It can be remarkably predictable. They refuse to acknowledge facts not in support of their beliefs and respond with insults as a defense. Efforts to change the topic are nothing new. That's been done for ages. Catch is, there is now a term for it. That label coined for such behavior is the "*What about?*" technique. Belief is sighting something else that is worse will forgive whatever issue is being discussed. That's classic evading, now with an means of drawing attention to the effort. I wrapped up the posting with: Thanks for providing the "*What about?*" example. That literally has nothing at all to do with the topic of experiencing EV drive.

8-29-2019 **Superiority, part 6.** Sure enough, there was no response. He gave up the fight. I called out his attempt to mislead. It served as a great reminder of how rhetoric persisted for so many years. There was always a hope of squashing early-adopter competition by false pretense. That was a bad sign, evidence early on that Volt would face serious challenges. Overcoming them never, hence its death. Spin will lead you to believe that wasn't way. But there's simply no way to justify such a massive investment in technology to blend engine & motor only to abruptly abandon it mid-cycle without any means of succession. No passing on to a preferred platform, like Trax or Equinox. GM just let it die when there was no longer any means of sustaining what had been given the impression of superiority. Having such heavy dependence on the $7,500 tax-credit was overwhelmingly clear evidence of not being "*vastly superior*". Nonetheless, this owner felt the need to defend it. 12 years earlier, I sighted concern for the "*trophy mentality*" ...and that's exactly what kept it from making any progress. My ask of "*Who is the market for Volt?*" was on-going confirmation of a vehicle unable to reach the mainstream audience. To be superior, you don't have to do anything fancy. Prius introduced EV driving to a large population, period. It did. That's a fact. I enjoyed "*Stealth Mode*" a little over 19 years ago. No plug necessary.

8-29-2019 **That Attitude.** It lives on, despite Volt now being dead. Sadly, that makes it even easier to mislead about. Detail like how poorly it was loaded with safety features compared to Prius Prime is very difficult to show or even draw attention to. So, there will be a lot of assumptions in that regard. Fortunately, most enthusiasts never bothered with items on that level. They stuck to the basics. For example: "*You must have missed the 160k+ Volts sold over the years.*" Reading that today was annoying. It reminds me of the tax-credit for Prius, which was half that, was only for 60,000 vehicles, and remaining available at full value for only 9 months. That's a significant difference often evaded from discussion in the past. So now that this is in the past, I suspect it will too will be ignored. I'll keep providing the detail anyway: All heavily were subsidized. GM exploited the $7,500 tax-credit opportunity for conquest sales... none of which impacted the status quo. Their dealers still push as many traditional SUV and Pickup guzzlers as possible. Notice how the technology was simply abandoned as the subsidy phaseout approached? It was a massive opportunity wasted. Just imagine if GM had actually rolled out that design to a Trax or Equinox. As for the narrative about a Prius coffin, you in for a big surprise. This year brings about a new look for the regular hybrid, a mid-cycle update for the plug-in, and an AWD model. Combine that with MSRP low enough to compete directly with other vehicles on the showroom floor, it reveals the game is far from over... quite unlike what happened with Volt. Think about how many sales each automaker has each year. Notice how insignificant 160,000 over 8 years really was? It's important to keep focus on the bigger picture, how much true change is actually taking place.

8-29-2019 **Electric Car Age.** An article with that title was published today. This was among the first comments posted: "*It amazes me how much the average person overthinks and complicates the whole EV purchase...*" That's ironic, since the typical guzzler purchase is basically with little to no consideration. How many people do you know of who didn't focus on other detail of there purchase decision? What any technical aspect of the propulsion system even considered at all? If so, did that decision of engine size take more than just a quick glance at the window-sticker? Heck, I've known countless people who didn't even take that much time when choosing not to get a hybrid. It was pretty much thoughtless. That means the plug choice must be with a simplistic approach if you want to appeal to ordinary consumers. The whole KISS philosophy is priceless advice. I responded to that comment accordingly: Actually, you are also overthinking it. Reality is, the average person will notice whether or not is has a plug. If interested, they'll ask if it is one of those with an engine back up. That's all. This is why I continuously state "*know your audience*" as a vital bit of information when discussing the post tax-credit stage, where major growth without subsidies is essential. Reaching mainstream consumers is dramatically different from enthusiasts, which means that growth us going to be far more difficult than simply appealing to early-adopters.

8-30-2019 **True Growth.** How many times you seen a variation of this: "*ICE sales are in the early stages of collapse, a situation that will not be helped by any upcoming recession. EV sales are booming with a growth rate...*" The understanding of statistics has been a fundamental problem with hybrids right from the very start. So, it goes without saying plug-in vehicles will face the same challenge... if not more so. Still to this day, 20 years later, many people have no idea the MPG measurement is fundamentally flawed. That's why most of the rest of the world doesn't use it to measure efficiency. In fact, that's why the "*kWh/100mi*" rating for electric-only operation was introduced here... to overcome that flaw. Sadly, many EV owners don't understand it still. Anywho, those are common examples of how numbers can be misinterpreted. Data alone isn't enough, as I attempted to point out: Don't allow percentages or subsidies distort expectations. It's more informative to look at actual quantities instead, especially those post tax-credits. The initial boom is low-hanging fruit, catering to enthusiasts. Shakeup of some sort as that stage comes to a close was anticipated. Tesla will likely plateau. GM and Nissan are already there with their EVs. GM's entire plug-in hybrid appears to be dead in all but the market for China. And we are in a holding pattern for VW. As for legacy automakers seeing a threat from EV, that doesn't make any sense. It's the need to end dependency on oil and the need to reduce environmental impact, not battery operation. In fact, the reverse is likely. Growth opportunity in the plug-in market will be their path to survival. How some legacy automakers travel that path will be interesting. Each will end up taking a different route. There's a massive potential for reaching deep into the mainstream to come from Toyota. Plug-In hybrid models of Corolla and RAV4 present strong potential, as Prius Prime is about to soon demonstrate with its mid-cycle update rolling out right now. It basically comes down dealer appeal. If you can draw showroom shoppers with very little effort, without sacrificing profit, you've got a winner.

8-30-2019 **Ford Explorer Hybrid.** The 2020 model will introduce hybrid tech to a platform which should have got it well over a decade ago, following Escape hybrid. After all, Highlander had a hybrid model, even as the platform continued to grow in size. In fact, next-gen about to rollout in February. Efficiency bump is anticipated to be in the mid-30's too. That makes today's reveal from Ford a bit of a head scratcher. 25 MPG is the combined rating for the AWD model. How is that competitive with anything? It's somewhat bizarre how the automaker thinks premium for a hybrid system is worth that. Of course, this is for the domestic market here in the United States. Over in Europe, a plug-in hybrid model is on the way. With a 99 horsepower electric motor, it won't be as EV centric as Prius Prime with a 91 horsepower, since Explorer is so much larger of a vehicle. Oh well, at least it's something.

8-30-2019 **1,000 Posts.** End of tomorrow will mark 3 weeks since he hit the 80,000 post count. This morning, it was already up to 80,966 total posts. That's an average of submitting 48 responses per day. He's posting so frequently, content is beyond lacking. It's just mindless clicks at this point. No one else comes even remotely close. I get really annoyed when quantity is valued over quality, especially at such an extreme. More is not better. All that activity on his part takes away opportunity for others. It's one of those lessons which should have been learned in kindergarten. You know, sharing. Ugh. I'm glad others notice how much he was altering the dynamic of participation. (That's a polite way of stating he has become a troll.) Overwhelming a forum with thoughtless banter brings down its value. Those looking for a venue to actually gain from the sharing of observations & experiences have a harder time finding it when so many posts contribute nothing to the thread. I know, my complaints do little. He clearly has no intention on posting with any type of critical thinking. However, there is an ignore feature. So those that do find so many unconstructive posts a pain to deal with can simply make them invisible.

8-30-2019 **Unrealistic Expectations, criteria.** Here we go again: "*If they can bring EVs with 200+ miles range, 125KW, and prices in the low $30+K range...*" I know this is going to anger some Volt owner. It's inevitable. Goal setting was a fundamental problem for them. They'd measure success with arbitrary values. What are they basing those requirements on? 300 miles has been the distance to match for over 2 decades... since that was the basic minimum back in the 90's. I remember being satisfied with 300 back than and blown away when hitting 500 with my first Prius. Now, automakers include a massive tank to deliver similar range. (18 gallons at 30 MPG is 540 miles.) As for the charging speed, most consumers have no idea what that number means. Heck, even many EV owners really don't know what that equates to in terms of time needed for a full charge... or even partial. Price? Really? How are you going to convince someone looking for a sticker-price in the 20's that spending so much more up front is really worth it? That's incredibly difficult if the person simply scans the showroom floor to reveal there's only 1 plug-in choice offered. That's not a good endorsement. Think about what RAV4 hybrid is selling so well now. Everyone knows about Prius, but many would prefer the technology in a different body style... and such a popular SUV presents a golden opportunity. That's the ideal for attracting those who would not have otherwise been interested. Paying a little more up front delivers effortless efficiency gain, without requiring the exchange of any knowledge. The consumer already knows a plug isn't required. That's why adding a plug to Prius first sets the stage so well for a plug-in hybrid model of RAV4 later. It's the same pre-education effort... the very thing that was recommended to GM with Volt. Just think about how popular a plug-in hybrid Trax could have been . Oh well. That is what happens when you set unrealistic expectations.

8-30-2019 **Unrealistic Expectations, familiar.** My response to the nonsense (lack of critical thinking) was as follows: That sounds painfully familiar. Remember 12.5 years ago? There were similar categories of criteria, setting expectations for a paradigm shift. If this could happen, this would result. Unfortunately, that placed the bar too high. There was no way it could realistically happen. And as we all witnessed, GM fell well short of that criteria. Seriously, how is the situation with VW any different? A small, expensive car doesn't stand a chance in this market, the land of giant guzzlers. Success in Europe means what for the VW business here in the United States. For that matter, how will success be measured? There's a profound difference between appealing to enthusiasts and actually changing what loyal customers purchase. Seeing a real effort being made with ID now is what was said about Volt prior to rollout. It was to be the start of real change; instead, it became a popular niche among early-adopters. The end result was production ceasing and no change at all to the status quo. Keep in mind how much effort there will be to fight plug-in progress. The technology achieving certain specifications is far from enough to get people to switch their purchase preference.

8-30-2019 **Unrealistic Expectations, hype.** You want a great example of it? Go no further than GM's homepage. Oh my! It's all loaded with hype. There are several promotions for AV (Autonomous Vehicle) and EV (Electric Vehicle) technologies, making it appear as though that's the dominant product for the automaker. When you try to get actual vehicle information by clicking on the "Brand" link, a photo of Bolt covers your entire computer screen. (On a phone, you have to scroll down to see the rest of the image.) Then when you finally click on "Chevy", you see nothing but guzzlers... Silverado... Corvette... Blazer... without any trace of efficiency offerings. In other words, if you go directly to the Chevrolet homepage instead of GM, there's no trace of Bolt. I found that discovery fascinating. I tried the same for Hyundai. What a profoundly different experience. It was a variety on the homepage, a wide selection displayed up front. I tried the same and got the similar results with Honda, Toyota, Ford, VW, BMW, Nissan, and Chrysler. The hype we get from GM is very much a standout. That's why when I recognize the pattern repeating, I point out those red-flags right away. Enthusiasts of GM have been the enablers, allowing ambiguous releases to fuel hype, resulting in unrealistic expectations being set. This is why I pushed so hard for goals over the years. Enthusiasts would declare victory, sighting success on measures without any accountability. They simply claim that measure achieved had been goal all along. When it reality, it fell well short of what had been hoped for. That formula for disenchantment is what doomed Volt from the beginning. That's why there is concern now about the same emerging for EV merit. Rather than consider what mainstream buyers will actually buy, they fixate on values are somewhat arbitrary. Remember the "*40 mile*" expectation?

8-31-2019 **Android-Auto.** The process is beginning. 2020 Camry will get it, but detail hasn't been provided yet. There was only a vague mention, enough to stir discussion. I suspect that is in preparation for the upcoming Auto Show circuit. Those types of "*it's coming*" announcements are common practice to raise awareness that preparation is underway for reveals. I get frustrated at times with those online who pride themselves for being well informed, but don't actually bother to demonstrate critical thinking. They fall into the trap of assumptions. Ugh. Usually, it's the quest for detail that drives participation online. But sadly, fallout from propaganda of the past... like Volt hype... lowered the bar so much, there isn't much call for merit anymore. Vague is accepted as enough. That's why I get attacked when pointing out assumptions. People don't like when you draw attention to the fact that they made have made a mistake. In this case, it's an oversight related to what is actually included in the infotainment suite. The assumption continues to be that navigation will be the centerpiece of the system. No where has that ever actually been stated. That's a problem. I pointed out that missing detail asking how the HUD would be integrated: Navigation instruction not provided via the heads-up-display would then appear to be a rather major oversight. Those not understanding why Toyota didn't switch years ago now have an additional complication to consider. Loss of a feature, especially one that useful, isn't a good thing. We all know Toyota waits to do it right, rather than rushing to market like some other automakers. It's like any other type of upgrade. There are tradeoffs. Short-term gain can result in a long-term setback or an additional cost later.

8-31-2019 **Understanding Software.** More and more, it appears most people complaining about the lack of Android-Auto from Toyota didn't include any real thought about what that actually would require. That's based on the assumption I keep encountering with regard to navigation. People expect that to be the heart of the infotainment system... hence the seamless integration everyone desires. Doing that would mean customization to get the HUD (Heads Up Display) to present driving instruction. Those distance & arrow illustrations would be lost without some extra programming to work with the projection hardware. This is why first waiting for the software switch from phone-centric to car-centric was so important. Work could not even begin until that new platform was delivered. It simply made no sense trying to adapt deprecated coding. I kept my response less technical though, attempting to provide a simple analogy to help with the understanding of the software involved: Let's not forget how new large data plans are to most people. Being restricted to just a small amount or not even having data, was the norm prior to the last few years. In terms of vehicle ownership, that's extremely recent. So, there wasn't really as big of a market as those sounding off about falling behind actually made it out to be. People simply weren't in the mindset of bridging to their phone yet, which meant the benefits of doing so were still an unknown to them. Experience with Bluetooth should make that clear. Notice how many here complain about Toyota's software only to find out their phone is extremely old? Knowing that, it makes no sense rolling out any faster. You end up paying for it from having to deal with fallout from that older tech. My own experience is finding people at home having issues because they are still using a very old router. So even though their modem is providing great speed, the signal over Wi-Fi is severely impaired, resulting in a terrible user experience. As a software engineer for over 25 years, I'm well aware of how painfully long adoption of applications truly takes. You may get the user to upgrade, but that in no way means they will actually use the new features you provided. In fact, more often than not, they won't. Toyota is obviously also aware of that problem. Most customers embrace change very, very, very slowly.

9-01-2019 **Horribly Inaccurate.** Makes you wonder what the intent was upon reading an article so inaccurate. Was the misleading content intentional or did the writer research so poorly he was basically clueless? This was the title that caught my attention: "*Is the plug-in hybrid beginning a long goodbye?*" It posted July counts and arbitrarily compared them to 6 months ago. That's a bizarre metric. Seasonal cycles distort number naturally anyway. That's why everyone else uses annual comparisons. Anyway, this is what made me sigh: "*The plug-in hybrid came to Americans' attention in 2008 with the introduction of the Chevrolet Volt. Unlike prior hybrids like the Toyota Prius, which relied on a gas engine with a battery backup, the Volt reversed the formula and depended first on an electric motor that refilled by plugging in. That battery could power a trip of about 25 miles, after which a supporting gas engine would kick in.*" It was a long-winded claim with false information. Ugh. The year was 2007 and the promoted distance expectation was 40 miles. It was the following sentence that clarified the writer's purpose: "*Fast-forward to this year, with all-electric models like the Tesla Model 3 and the Chevy Bolt gaining traction, and the outlook for plug-in hybrids is hazy.*" That's not a fast-forward. If it had been, mention of the much anticipated mid-cycle update of Prius Prime would have been included. Also, Bolt sales have been terrible, dropping not gaining. Nothing about Leaf sales struggle is a dead giveaway either. This was clearly a propaganda article. Cherry-Picking like that makes it un-debateable. The clincher, though, was the close of the article: "*In July, Tesla Inc. sold more than 13,000 Model 3s, more than four times as many as the next most popular electric car, the plug-in hybrid Prius Prime.*" Lack of regular 2019 inventory to make way for the updated 2020 model is good reason for sales to be lower. Though, some select dealers took advantage of the clearance opportunity, so there was actually a very short-term spike. It all comes down to sustainability in the end anyway. Volt was doomed due to it limited reach. There were only so many early-adopters interested in a conquest purchase. Tesla had a much larger audience, but there is uncertainty of what level sales will settle at. A single offering isn't enough to sustain the business as a competitive automaker either. Tesla could end up relegated to being a specialty vehicle without a diverse product-line. Toyota, on the other hand, is quite different. We already see Prius & Corolla as plug-in hybrids and expect RAV4 to eventually become one as well. Needless to say, I was quite annoyed with the propaganda stir. It's some of the same old nonsense emerging, yet again.

9-02-2019 **Properly Selling It.** That infotainment upgrade is stirring a new category of discussion. Most people have no idea how to market something. Enthusiasts of the past I battled with for over a decade learned that process the hard way, in a very painful manner. It's not like I did try countless times to share insight. They just plain didn't want to listen. So when I see that same behavior playing out again, I have to wonder what the outcome will be this time. Today, it was: "*Android auto is amazing. I use it on my phone which is mounted next to the useless 11-inch screen...*" It went on from there, but lacked substance. I provided this in response:

You see what makes Android-Auto better, but misrepresent the built-in screen to promote it. How is that actually constructive? The preferred means of conveying that better message is to point out why it was worth waiting for. What improvements does the interface switch from phone-centric to car-centric bring to make it a compelling choice to say goodbye to the existing interface? This is very important when it comes to upgrades, since some existing features people like will change. You want to make the tradeoff so appealing, the user welcomes it.

Fundamental shortcomings in the way people promote change is a very real problem faced in the automotive market. Look at how disastrous Volt was. The way GM handled that technology upgrade basically doomed it from the start. They had no clue how to draw interest. That "*230 MPG*" campaign collapsed almost immediately. The "*40-mile range*" campaign fell apart when real-world data was finally revealed. The "*1000-mile tank*" campaign lacked any type of cohesive message. And of course, the campaign to claim superiority to Prius depended upon outdated information.

See what was in common with each of those failed campaigns? None of them stated provided a clear ultimate goal. What exactly is the overlying purpose of that technology? Without understanding that big-picture intent, it just becomes a boondoggle to the consumer. Don't forget how powerful that "*good enough*" attitude can work against you. Why would they bother when it appears the existing system is working just fine?

9-03-2019 **Soon.** The wait is almost over. Sales results for August will be posted tomorrow. It will the first month when the mid-cycle update to Prime was actually available. Though limited to those initial rollout markets still, it's the step forward everyone recognizes as an obvious improvement. Toyota's stance within the affordable-for-all category is becoming very difficult to deny. This comes at the same time as GM is about to face another 50% reduction of tax-credits due to the next stage of phaseout being reached. That puts them in a position where attracting loyal customers to Bolt is basically impossible. Their hope-for-the-best strategy is beyond excuses. It failed, miserably... which begs the question... will Toyota finally get recognized for perseverance of patience? Rather than give in to conquest like GM did, it was a matter of refining technology and holding back ramp-up until it could reach the right audience. There's no way to argue Prius doesn't target Toyota's own loyal customers. But now that enthusiasts see Corolla PHV doing the same thing and the potential RAV4 PHV could have, it's time to move on. The trophy fight is over. Only early-adopters cared about the supposed "*leadership*" within the stage of subsidized sales. Very soon is when the true race begins, the one to win the hearts of ordinary consumers in the form of actual change to the status quo... when we witness plug-in offerings replacing traditional offerings. When that inventory on the dealers lot begins to embrace change, clearly moving beyond just being a niche, we can call it a successful next step. The first big moment in that next stage is about to happen... very soon.

9-04-2019 **Real Impact.** This was interesting: "*Get ready for year-over-year monthly declines until something changes. The 2020 Bolt EV will help a bit, but both GM and Tesla are going to struggle to really make an impact unless their full Federal Tax Credits are restored. Outside of the Bolt EV and Model 3, the only really compelling EVs are either too expensive or too limited in availability to see high-volume sales.*" Notice how far we have come away from cannibalize comments? That concern of automaker choices competing amongst themselves was given up so long ago, most people have forgotten that was actually the point. It wasn't conquest. Group-Think has become so bad, they have completely lost touch with goals. This is why I was so hard on Volt enthusiasts, asking for that very think. Clearly state what the objective is. You wouldn't expect such a constructive request could erupt into a personal attack. I just wanted to know why the design was being promoted. What was it to achieve? Ugh. Having no clue anymore what it means to make a real impact, you don't stand a chance of moving forward. Which direction is that? In other words, where do you want the technology to take you? They obviously don't know. Efforts to scope a points has obscured what the race is all about. I keep trying to get them back on track with the reminders: To make a "*real*" impact, sales cannot be subsidized. It's all about changing the status quo, which means competing directly with vehicles people find on the showroom floor. We're stuck in the early-adopter stage until that happens. Realistically, if there are new tax-credits, they should instead be used for installs/upgrades to where people park overnight. Once a household/apartment gets a that 240-volt connection, purchasing something with a plug or something with more capacity is a no-brainer.

9-04-2019 **Purists Fighting.** The idea of absolutely no gas consumption is an interesting one. Those pushing it couldn't care less about how their electricity is generated or how efficient their electricity consumption actually is. They just try to demonize all vehicles that having anything more than just a battery for supplying power. Stuff like this is really starting to stand out: "*You still contribute to accelerating global warming. So you do make a difference for the worse. That is the inconvenient truth about hybrids. They are not zero emission and that is the problem.*" It's becoming a real problem for those simply trying to end the reign of traditional guzzlers. The idea of transition is unacceptable. The discussion of electricity source is unwelcome. They only support EV purchases, period. I keep my responses to them brief & bitter: That short-sighted attitude is how efforts are lost.

9-05-2019 **Drawing Conclusions.** When the time is right, you'll know. Sales don't tell you that. They only inform you the technology itself is worthy. That's why the long enough claim is pointless: "*The point is that hybrids are *not* "reaching the masses" although they have been on the market far longer than attractive BEVs. I know more pure BEV drivers than hybrid drivers, and sales speak for themselves. You would be right if 20, 30, 50% of all cars were hybrids by now. They were around long enough.*" Remember the difference between want & need when drawing conclusions: Prius Prime isn't even available nationwide yet. So that vague "*reaching the masses*" with a generalized "*hybrids*" claim is pointless. Reality is, the $27,600 starting MSRP combined with the mid-cycle update rolling out now is that formula for reaching the masses. Toyota waited until the heavily-dependent-upon tax-credit Volt was no longer a market impediment before even bothering. It simply made no sense to, knowing GM was only just milking market for conquest sales. And with an end so predictable (phaseout trigger), it was easy to set the stage in the meantime with the introduction of Corolla hybrid & PHEV along with the upgrade to RAV4 hybrid. After all, what reason would there have been for rushing to market?

9-06-2019 **Falling Japan Sales.** Nissan Leaf is struggling. There are a variety of reasons why, especially here. But over in Japan, influencing factors are uncertain. So, we're having quite a discussion about that related to August results. Naturally, the topic grew to include Toyota... and the "falling behind" narrative: "*Toyota say BEVs are no good and that fuel cells are the future and unfortunately Japanese consumers buy into that absurdity. Japan's auto industry will be destroyed in the coming decade as they will be too late to the BEV transition to be able to catch up.*" Even the term "*BEV*" reveals evidence of the push for a specific technology, rather than just embracing EV propulsion in general. The "B" is for Battery. And type of on-board generator is looked down upon by purists. It's really turning into a counter-productive issue. And since they refuse to even listen, I've given up on the hope for any type of objective response. So, replies are for the sake of conveying information to lurkers: Pushing that narrative becomes harder and harder as the rollout of Prius Prime continues. Even with inventory in the United States limited to just half the regions, growth of demand is undeniable. When the center and southeast of the country finally gets supply, the plug-in push will finally be underway. Of course, the announcement back in June about Toyota introducing 10 BEV models in the early 2020's should have put an end to the FUD effort anyway. That's 6 global models coming bases on the e-TNGA platform. Those are all-electric vehicles spanning a variety of vehicle types & sizes. In other words, what you claim Toyota is saying simply isn't true. If fact, their plug-in aspect resembles the approach VW is taking. The fact that Toyota is also pursuing fuel-cell vehicles is called product diversity. They are an automaker not putting all their eggs into a single basket by spreading risk and offering choices. Lack of patience and the hope readers are not well informed is what some here hope to exploit.

9-07-2019 **Fighting Design.** Problems like this are quite common. What for key phrases, such as: "*...it can be really helpful.*" Drawing a conclusion requires detail to support it. We didn't see that; instead, it was an inquiry that turned into a debate without substance. It's surprising how things like that get out of hand. Newbies fall into that trap. As well informed forum participants, we do our best to provide insight as to why the conclusion is incorrect. That happened this week with a question of whether or not owners put an additive in their coolant to reduce temperature. Having never even encountered such a product, I suspected that was something for people who race or use heavy-duty equipment. This was my post, with the hope of bring the posts to a close:

Fundamentally flawed assumptions are very much a part of Prius's rich history. The first of which was that more EV (engine off) driving, the better the efficiency. That may seem wrong now that there's a plug-in model and faster EV speeds, but back when there as only the regular hybrid, we would routinely see new owners attempting to squeeeeeze out as much EV as possible. They didn't understand that the gas-engine provided electricity could return higher overall MPG when blended instead.

In this case, the assumption is that more heat is bad. Informed owners know that Toyota went to great lengths to provide a system that generates as much heat as possible as fast as possible. Heat is necessary for cleansing emissions. It is also used to warm driver & passengers. The higher temperature is an essential element of the hybrid system. Countering that by adding a chemical agent to reduce temperature will fight the very design Toyota strived to deliver.

You may have grown up and been taught that maximum cool is very important. In fact, that may still be true for older technology. It is not for the system in Toyota hybrids though. Acts to override intended configuration will result in a penalty. With this additive, the system will have to work harder to reach & maintain expected operating temperature, resulting in lower overall efficiency.

9-07-2019 **Familiar Attacks.** Looking through the long series of posted comments on the August sales article, I found this: "*PHEV with less than 20 miles of AER are pure horseshit.*" With such a wide audience on that general EV venue now, rather than the daily blog for Volt in the past, there's hope of trolling success with that same old bait. I'm curious what the results will be now that GM's supposed plan to abandon Volt in favor of Bolt is proving to be yet another "*over promise, under deliver*" situation. I combat those efforts with facts. Today, it was: Notice how the topic of "*kWh/Mi*" is rarely ever mentioned and an arbitrary cutoff value is brought up instead? Seriously. It is really unfortunate the guzzling of electricity gets a blind-eye but the topic of small capacity gets the spotlight. Enthusiasts of Volt hated the inconvenient truth of their prized vehicle delivering an EV rating of "*31 kWh/100mi*" compared to Prius Prime at the much more efficient rate of "*25 kWh/100mi*". They'd do everything possible to draw attention away from that to focus on range instead. Since when is using a lot of electricity less impactful to climate change than a system with EV drive which strives to deliver the most efficient means of electric travel? Wasting cleaner fuel is still waste. Most electricity does not come from carbon-free sources anyway. If an person buys a PHEV with a small-capacity battery but mostly drives within its EV range, how can you criticize that with a profane label?

9-07-2019 **Get With It!** That demand from a "*gotta laugh*" comment about the speed at which progress is taking place was yet another one of those individuals not considering the big picture. It was a continuation of understanding the difference between want & need. Enthusiasts don't ever really get it. That's why I had so much difficulty in the past trying to have constructive exchanges. Their priorities were focused on desire, not necessity. That interferes the understanding of change and recognizing challenges. That's why the rush to market can be futile. Not being properly prepared has consequences, as I try to point out:

How is that different from other legacy automaker schedules? Mainstream impact is many years away still for all of them. For that matter, why must progress be measured in any particular manner? Change of the status quo is still change. If a compliance offering leads to a for-the-masses offering, great.

Consider the approaches from the non-luxury choices. GM is well known for "*over promise, under deliver*". Volt didn't lead to any actual change, the plug-in hybrid technology was just abandoned. VW is a lot of talk now, seriously lacking sustainable substance. Their building of hope seems realistic though. Most enthusiasts can't stand Toyota's focus on moving their entire fleet forward, rather than focusing on extremes. But their opinion means little with regard to ordinary consumers. There's a good outlook from Hyundai/Kia, once they are finally able to increase production.

In other words, debunking myths is just a start. There is far more to address when it comes to being able to reach showroom shoppers. Remember, the point is to achieve sales able to compete directly with traditional choices without incentives or subsidies.

9-08-2019 **Advertising Campaign.** We are starting to see both television & online advertisements for the new Prius, specifically the AWD model. With a refreshed look and that ability to handle snowy conditions better than a typical sedan, there's new opportunity. The commercial I have seen repeatedly already features a drive on a snow-covered road where the available roof-rack is taken advantage of to transport skiis to a mountain resort. It's a compelling ability most people probably wouldn't even consider. Thinking of a Prius as something for recreation like that isn't typical. Promoting that helps to draw attention to the new look too. For those who haven't been paying attention, they're a new audience. Hopefully, it will aid with the redefine of car choices. Seeing sedan options fade away is rather odd. But as the RAV4 hybrid continues to confuse messages by becoming a new crown holder for mainstream efficiency by delivering 40 MPG, despite being a big midsize SUV, there's a growing need to highlight what Prius still has to offer. This is especially important, since Prime is preparing to step into the spotlight.

9-09-2019 **Discontinued Support.** We get word every now and then about a charging-station having issues. It is usually because the parking-spot is often abused by people who just plain don't care. Some are traditional vehicle owners who feel plugging it isn't important. Some are plug-in owners who feel the same way. The latter is especially disturbing. When they park there but don't bother to actually use the charger, it sends a terrible message to everyone. In every case, we don't get squat for support. There simply isn't any input from whomever oversees the well-being of the chargers. Other reports related to support are about vandalism. I know of several chargers that the handles have been broken in a way that would never happen from actual use. It's quite obvious someone smashed the latch intentionally. Sadly, that sometimes ends up becoming news of it getting removed. The expense of repairing or replacing isn't ever part of the plan. That's why new of upgrades is on the level of miraculous. It almost never happens. Installing more is a rare event as well. Older charging-stations simply vanish. Hopefully, that will change... someday.

9-10-2019 **Upgrades.** There's a lot more to the upgrade of the infotainment system than people realize. Aspect ratio of the screen is yet another impact that had been overlooked. It's a reality that makes the hope of retro-active updates a problem. Some features simply won't fit. So, some of the new convenience improvements can't be taken advantage of. That hardware verses software difference is what being backward-compatible means "it will work, but not entirely". That isn't all bad though. Knowing new the design of Android Auto is auto-centric makes it a worthy upgrade. Phone advocates should take note. They don't though. This is why things get overlooked. Another example is wirelessly connecting. Did you realize most phones won't get. That upgrade is still to come. Having to plug in with a cord each time is easy to dismiss as an inconvenience while arguing online. But when you get in the car to drive, that's an entirely different matter.

9-11-2019 **Abandon Spin.** I liked coming across this: "*Toyota becoming the "standard" for PHEVs when pretty much every other auto maker is abandoning PHEVs in favor of putting all EV development money into BEVs?*" It's a statement ending with a question-mark. What is that supposed to actually mean? Having an outcome of misleading is the point. Antagonists make efforts to feed a narrative. You only notice it when stepping back to look for patterns. The consistent message of abandonment becomes obvious then. The easiest to see late last year was when GM annouced the end of Volt production. The message conveyed by enthusiasts was solidified, GM would embrace Bolt as their one-and-only strategy forward. EV, the very antithesis of EREV, would become the new standard. It was easy to claim when nothing was actually happening. The entire world was watching Tesla, since it only had a few weeks remaining of full tax-credits. But now as GM is also in the phaseout stage of tax-credits, the situation looks much different. That heavy investment in Volt technology was for what? Nothing changed at dealers. In fact, the dependency on SUV and Pickup sales to sustain the business is becoming a critical liability. Union strikes are expected as a result when negotiations officially begin next week. Sound familar? We saw the same disaster 12 years ago... only this time, the situation looks worse. Falling back on tradition isn't an option this time. It's about to get ugly. That means more spin is inevitable. What will its focus be? For now, it's on PHEV becoming the standard for Toyota. That's a classic diversion tactic. Pay no attention to GM... I posted this reality reminder: Refinement to EV operation is a benefit for both types of vehicle, PHEV and BEV. That electric technology is interchangeable. Claims of Toyota not investing is just rhetoric, efforts to divert attention from Toyota's hybrid success to rapidly move away from traditional offerings. It's that **how to appeal to existing customers** which others have not found a way to address. As for the other automakers abandoning PHEV itself, that's a cold, hard reality of design choice. Toyota found a means of delivering very high efficiency for both EV & HV operation at low cost. A simple look at Volt, you can see GM simply couldn't match. That technology was expensive and wasted both electricity & gas in comparison. So, it was abandoned.

9-12-2019 **Solid-State Recharge.** Ever think of the potential possible with better battery technology? The elimination of liquid or gel electrolyte from regular rechargeable batteries to create the solid-state type should allow dramatically faster charging. A solid electrolyte wouldn't be anywhere near the fire risk. There is the potential to store much higher energy densities as well. It changes the way we look at how much capacity is really needed for a plug-in vehicle, especially if the expectation of longer cycle life proves true. You could recharge more often for shorter durations. We're still a few years off before the experimental chemistries now show a practical means of becoming commercial products. Costs will be high even when those designs become worthy of using in vehicles. Our transportation outlook will change of when that finally happens. So, all the crazy now is really just a chapter in history... ramblings of enthusiasts and early-adopters.

9-13-2019 **Good Grief.** Seeing a new perspective is difficult, in general. You tend to fall into the trap of not expecting big change. Ironically, that's what holds back the enthusiasts. They suffer from a group-think of believing change only comes in the form of "more" of something. That's why range & speed is so dominant of a discussion topic. In fact, that's basically all I ever heard from early-adopters. This is why their attention to the needs of business was basically non-existent. Good grief. You learn in Economics 101 that more is not necessarily better. Heck, that's true for introductory Engineering class as well. Ugh. That's why what is happening with Ford is so easily overlooked. I pointed out my observation: Ford pushing the EV model of Mustang as a SUV marks a fundamental shift in marketing. Here in Minnesota, niche cars like that gets stored away during the cold season. That would be a profound waste with an EV, especially since Tesla has proven capable on snow & ice. So, we see Ford attempting to rebrand. Why not? After all, you're going to see a lot of advertising for the AWD-e model of Prius. Able to handle adverse driving conditions is a selling point, something not to be ignored with the move to electrification. In fact, that is likely a big contributor to the strong appeal for RAV4 hybrid. It's an AWD platform edging closer and closer to offering a plug. That means redefining Mustang for it to survive in this newly emerging market.

9-13-2019 **2021 VW Golf.** A pre-production next-generation Golf was spotted without camouflage. Since ID 3 is expected to replace the EV model, this will become the dominant plug-in hybrid platform for VW. There is supposedly a current generation with a slightly smaller battery-pack as Prius Prime (8.7 kWh verses 8.8 kWh), but it's not available in the United States. The expectation is a larger capacity for this market. Though, that would consume much of the cargo area, which is smaller than Prius to begin with. Thoughts are that the higher horsepower output of the engine make it terrible in regards to both efficiency & emissions. So, there's no telling what will ultimately happen. It may simply never rollout if all goes well for the ID family anyway. The 4 is expected for market, a taller body for those here who overwhelmingly prefer SUV over hatchback styling. That impacts cost, weight, and efficiency... In other words, it just more to add to the pile of speculation & hype. We really won't know until actual production starts. And even then, that doesn't guarantee high-volume sales.

9-14-2019 **Watching Inventory.** I'm still watching inventory Prius Prime. The counts goes up more than it goes down. That over change is a climb. They are all 2020 models all limited to the initial rollout area, with the exception of a very small number of special-order deliveries elsewhere. It's that long awaited ramp-up. Seeing market spread will be next. But as next year's model, that puts it ahead of the game. Early September is several months ahead of the schedule anyone should expect. Though, I can see antagonists already anxious to attack on the basis of it not being complete yet. There is always that spin. No matter what happens, they'll find a way of making it sound negative. That's how you know they have nothing of any merit to combat with. Getting the established markets in a position of being well stocked prior to moving into new territory is a sensible business move. After all, the measure of success comes through sales. Achieving change in mainstream purchases is the goal. So, seeing the coasts get all the initial delivery is a logical first step. Advertising is pointless until everything is in place. That means the secondary market, those of us in the central part of the country and that region in the south-eastern states will indicate when the time is right. When we (I'm in Minnesota) start seeing ready-to-buy inventory on dealer's lots, that day has arrived. I remember it happening in May 2002. That was a long time from me taking delivery in Early September 2000. Over 2.5 years of waiting. It was the same strategy then too, limited to special-order delivery until the market had reached an acceptance point. That's how reaching ordinary consumers is achieved. You push the technology to those who can help establish and work out details of how to combat antagonists. This well-proven approach is worth what seems an agonizing wait. Keep watching inventory. That's a key indicator of progress.

9-14-2019 **Electricity Storage.** The hope is this becomes more and more of a problem: "*But while it's not as efficient as direct electric powertrains, it is a clean and dense way to store power. Especially in countries like Germany, which currently has more power than it needs and nowhere to put it, there's a case for producing hydrogen with renewables when there's extra capacity in the grid.*" It simply isn't realistic to build massive bank of batteries for that excess. Keeping in in tanks though is a different matter. We already do that with gas anyway. Being able to deliver that to customers either as hydrogen itself or doing the convert on-the-fly to power chargers makes sense... especially when you consider the expense of a bank of chargers. Serving high-demand use that way could be more realistic than the expense of infrastructure for transmission. It's an interesting challenge to address. What is the best way to store electricity in the wide variety of situations we face? Sadly, that type of critical thinking doesn't happen often online. In fact, most commentary suffers from group-think.

9-15-2019 **National Drive Electric Week.** This is what I shared on the big plug-in forum, as the first post in the topic: The big event in Minnesota yesterday that I participated in was great. It was a well represented ride & drive, offering wide variety of vehicles to learn about. I got to park nice to the flashy red Model 3 with my flashy blue Prime. On my other side was the Pacifica. Price was overwhelmingly the question most on attendees' minds. That meant I got quite a number of "*beautiful, but too expensive*" comments directed to the Tesla. Interestingly, the Chrysler minivan price was less of a concern due to it's very generous interior size. Starting with 120 volts for charging, then later upgrading to 240 volts, was the approach I heard the most often in conversations. It was clear many would be more than willing to try something with a plug, but unwilling to take the level-2 plunge right away. Range seemed a total non-issue. The "*switch over to gas*" aspect of PHEV operation seems to have become well understood at this point. Perhaps the inherent nature of Prius being a hybrid lends itself to the mastery of electricity & gas blending. So, adding a plug is just an obvious upgrade to the design. Overall, this year was an amazing experience. Market perception from just a year ago has changed rather significantly. The combination of climate change awareness with the attention tax-credit phaseout has stirred has been quite helpful toward move away from traditional offerings. It now seems a much less intimidating step for the ordinary consumer to take now.

9-15-2019 **Solar Improvements.** Today we got a glimpse of Toyota's advancement for their next-gen solar design. These improved solar panels bump efficiency from the current commercial standard of 23% to a very impressive 34%. That is quite an upgrade, more than the typical generation refinement. It delivers the potential to add as many as 27 miles while parked during the day. In a bizarre sense of looking at the situation, that's an impossible perpetual machine actually built as a working prototype. You wouldn't ever need to plug it in if that's all the farther you wanted to drive... especially since charging can also take place while you drive. Realistically, cost & efficiency won't be that perfect. You get the idea though. It increases the green factor. Being able to contribute less to carbon emissions is helpful. That's a genuine reduction worthy of continued research & development.

9-15-2019 **Coming Disaster.** It should be no surprise that GM is at the center of our automotive mess. They are again putting the well-being of their business on high-profit guzzlers. That's was a big problem yesterday, when Drive Electric events combined with the auto-show launch in Frankfurt. But then news came this morning of drone attacks in Saudi Arabia, crippling half their oil production. That will cause oil prices to surge. Adding that to the pressure from both electrification and climate-change sure makes things interesting... knowing an old problem is about to return. Tomorrow, GM union workers will likely strike. That's 50,000 wanting fair wages, affordable healthcare, job security, and a few other issues resolved. How can months of negotiations failing be dealt with when so many other pressures are growing? This is why the push for consideration of the bigger picture is always so important. Laughing at Toyota for taking such a different approach certainly doesn't so bad in that perspective. Focus much be well balanced. Simply pushing a technology because it is "*better*" doesn't mean business will thrive as a result. This is why so many of the arguments online are meritless, not worth wasting time on. Advancements forward are complicated. Don't be fooled by enthusiast posts. Ask how the claimed superiority will actually help all the players involved. If something is omitted or overlooked, there may be problems to come. In this case, we expect the coming disaster to be morning headlines confirming a strike has begun.

9-16-2019 **Controversy.** After all these years, you wouldn't think issues like this continue to come up: "*I have also been confused about the charging to 80% vs 100% to reduce battery degradation controversy. Reading the forums most of the opinions seem to be...*" That word "*opinion*" is frightening. There should be no doubt whatsoever. It has been well established fact for many, many years now. Nothing remains to speculate about. Ugh. This shows the effectiveness of FUD. Efforts to confuse are on-going. Antagonists never let up. They feed discussions with subtle hints to make you question the wisdom of those who are well informed. It's quite frustrating. That's why I keep pushing for higher and higher quality video with lots of detail, as well as commentary embedded along the way. That is a means of communication to convey wisdom those hoping to undermine haven't figured out a way to attack. Video has proven a very useful weapon in the arsenal against their efforts. It's quick & comprehensive. It also means I don't have to go into great detail when posting. I can just provide a more-info link. That kept this response short & sweet: The pamper zone should have been common knowledge since day 1. For me, that first observation came way back in 2000, with my first Prius. That avoidance of full or empty was part of the design for battery longevity.

9-16-2019 **Self-Charging Attack.** Looking for an excuse, an article was published to draw in participation. That's a bad sign. I remember in the past when a media source would publish something just for the sake of getting attention. It was rather obvious too. A simple search of their past showing they had no interest whatsoever in Prius, Toyota, or even green technology was a dead giveaway. Many of the performance magazines feel into that category. They were losing some of their audience and started to become desperate to restore interest. That ultimately failed. People move on just as quick as they appear. The enigma of Prius is unique to only certain venues. That's why the big Prius forum has not only retained massive audience, it as also remained true to the quest of clean & efficient transportation. Needless to say, I was annoyed by the blatant attack today focusing on "*self-charging*" as the means of stirring post activity. Ugh. Oh well, stuff like that is always an opportunity for exposition: Prius & Corolla both have PHEV models now. CH-R will be getting an EV model next year. There is an expectation of a Lexus EV reveal at the upcoming LA auto show. Claims of no interest from Toyota to deliver plug-in choices have no merit.

9-17-2019 **Cylindrical.** News about Toyota using cylindrical battery-cells for their other plug-in hybrid was the big discussion today. I was curious where the topic would be taken. Most of it was related to Tesla, since they have the same supplier, Panasonic. No one touched upon what I thought would have been addressed, the difference that shape would make with regard to overall physical packaging. Focus was entirely on business, rather then engineering. That was a odd switch. After the day came to an end, I finally jumped in posting: No one has posted the most obvious still, after all this time to comment. Interesting. Look at the battery-pack for Prius Prime/PHV. The packing favored affordable & robust. The design of the stacks didn't fit well as a result, due to the size & shape of the prismatic cells. Giving cylindrical a try in Corolla PHV was the logical next step. Remember, Toyota likes spreading upgrades across markets & vehicles.

9-17-2019 **GM Strike.** It is well underway now, unfortunately. Intriguingly, the highlight outside of the usual pay and healthcare coverage concerns is preparation for a mostly electric future. The union is well aware of how that will require fewer workers. That's a big deal when there are over 46,000 workers spread across 33 sites. How should that impact be handled? This is something that was never addressed. GM management avoided the topic, choosing to isolate efforts with Volt, rather than integrate them into the fleet. It was very much a niche. Never being part of a bigger plan is how Bolt was handled too. From the outside, the plug-in tech appeared to be the future. But from the perspective of production & sales, it was nothing beyond an experiment to test market acceptance. There wasn't ever a next step. This unknown is how negotiations fell apart. They saw the "*too little, too slowly*" concern as a very real problem. Executive action was to just stay the course and hope for the best. That trust enthusiasts put in them was sadly misplaced. Despite all the evidence showing how terrible of a choice that was, they did it anyway. Some people refuse to accept warnings. Now, the sadness is placed upon those workers now on strike, hoping their future includes electrification efforts... even if it means fewer doing that work.

9-17-2019 **Compliance.** Don't you just love encountering this: "*They're just compliance cars.*" It's meant as an insult, to belittle the technology. That's fairly effective too, since most people never question the assessment. They just accept that label without consideration of facts. Online posting helps with that type of propaganda. It's the type of rhetoric used with the hope of normalizing... you know, downplay to conceal importance. That is how detail gets overlooked. Vital aspects of design are simply never addressed as a result. That provides an easy means of dismissal. I do all I can to call out those attempts, like the one today: Compliance implies the vehicle is sold at a loss to compensate for a regulatory requirement. Proof that Prius Prime or Corolla PHV are not profitable simply hasn't ever emerged, since both designs leverage existing hybrids that are part of ordinary production. Adding a plug through a simple upgrade is a very meaningful way to deliver even cleaner emissions and even higher efficiency. In other words, it's yet another meritless claim.

9-18-2019 **2020 Honda CR-V Hybrid.** It's nice to hear about Honda's effort to move forward, but today's announcement really didn't tell us anything vital. It was the usual press release focusing on engine size & horsepower. What I found intriguing was the speculation that it would deliver higher efficiency since Accord hybrid has a combined rating of 48 MPG. Huh? The combined rating for Camry hybrid is 52 MPG. It simply made no sense; yet, no one called out that statement from the article. Comments posted just praised CR-V hybrid for the expectation of being more efficient than RAV4 hybrid based on that incorrect logic. I was annoyed that no one bothered to actually check the claim. It was a sad statement on how lazy we have become. Accepting what you read at face value, without ever questioning merit, is a terrible idea. Ugh.

9-18-2019 **California Waiver.** Our awful president, who has become hell-bent on the idea of undoing everything related to bringing us forward, has raised the stakes yet again. Now, it is an attack on California. He wishes to pull the emissions waiver they've had for decades. The claim is this is necessary "*in order to produce far less expensive cars for the consumer, while at the same time making the cars substantially safer.*" Then he went on to say "*there will be very little difference in emissions*" if emissions are managed on the federal level instead. And of course, none of that would be complete without adding "*you will be out of business*" fear if you don't accept the change. We have seen this very thing playout in the past, over a decade ago. The very opposite resulted. We got vehicles that were much more dangerous than ever imagine that guzzled gas... and sadly, jobs were lost from the struggle to sell enough of them. Ugh. It's the presence of evil. He just plain does not care about the logic. It's all about finding ways to make more money by eliminating regulation. That's such an embarrassment. I never imagined having to deal with such greed & stupidity. Destroy what you could have long-term for a short-term gain.

9-19-2019 **2020 Ford Escape Hybrid & PHEV.** Today's announcement was strange. The market for Europe will be getting a plug-in hybrid model of Escape. Why we won't here in the United States is a mystery... a bizarre decision without any reasoning. It's a big "*Huh?*" Of course, the strange expectation of an underpowered traction-motor is a mystery too. Will it really be as small as previous press releases have hinted? Though lacking in detail, there was a mention of having more than 30 miles of all-electric range from a 14.4 kWh capacity pack. That battery size could deliver that, potentially. But the question of how is unknown. But then again, the measure of efficiency from the European measure is different. Their testing results always result in more miles than what we get here. So, perhaps it all makes sense for there. After all, we already saw that very thing playout with Mitsubishi's Outlander PHEV rollout.

9-20-2019 **Lipstick.** Insult. Belittle. Offend. They do whatever it takes with online posts to undermine progress. It's really sad. Every now and then though, it backfires. I'll end up being inspired from a stir of information being accidently revealed. Those subtle clues are what I'm always on the look out for. That provides a means of fighting back on their own terms. It's quite devastating, because there's no good way to respond. They get cornered and just have to give up. Today was such a situation. I saw this: "Lipstick on a pig." It wasn't a clue to any aspect of design they fear or something they have been working to conceal; instead, this was just a witty comeback. I was pleased to post what came to me in response too: Bacon comes from pigs. Pretty much everyone likes bacon. What are you saying?

9-22-2019 **Video: Mostly Highway Commute.** This is the back route to work for me. It's 26 miles. That's 7 miles longer than my usual route, but a great example of using more battery. Being mostly highway, that's more demanding of the electricity supply. So, I've been looking forward to capturing the drive. Despite being longer, it can be quite a bit nicer in the winter during extreme driving conditions. Traffic just flows along, rather than getting jammed up from the much more dense situation when closer to the cities on the bigger highway. At one point, I drop the pedal to the floor to demonstrate the EV power available even when you are already driving 65 mph. It gets up to 84 mph using only electricity without struggle. That's nice to know the gas-engine will remain off, despite the demand for a burst of speed. In the end, I make it to the ramp at work entirely with EV. There, I can plug in to recharge my Prius Prime. Watch it here... Prius Prime - Mostly Highway Commute

9-22-2019 **Endlessly Committed.** It's nice to see a request for help to understand the rhetoric: "*Can anyone point me to an article or serious discussion on why Toyota is so endlessly committed to hybrids (ie ICE engines basically), and still hasn't got a public push into pure electric vehicles?*" That impression of no EV interest is the narrative being pushed hard now. It's an effort to distract from problems other automakers are having. Keeping the focus off of them supposedly helps. Ugh. Refusing to acknowledge what Toyota is actually doing to promote a move to plugging it is how you confirm what they are up to. With that in mind, here's what I provided as material to ponder:

Simple. HV --> PHEV --> EV is the most effective means of changing the entire fleet rapidly without sacrificing business in the process. Look at how much of a disaster the EREV --> EV approach was for GM. They rolled out a horribly expensive design which dealers weren't interested in.

The reality-check in the situation is having appeal to existing customers at an affordable price. That's exactly why RAV4 hybrid is such a strong seller. Not only does it met that criteria, it also sets the stage for a PHEV model. At the same time, that cleaner and more efficient HV is preventing more traditional vehicles from being purchased.

What other automaker has such a non-disruptive plan for dealers to embrace a large portion of their fleet with battery-pack offering so quickly? RAV4... Camry... Corolla... Avalon... Highlander... and of course, Prius. And that's just here. C-HR and a variety of other hybrids are offered elsewhere.

Corolla hybrid becoming a PHEV already (the next step beyond making Prius a PHEV) is evidence of Toyota pushing forward with electrification of their hybrids. That's quite contrary to claims of falling behind. The upcoming EV model of C-HR will help to further silence naysayers.

Again, look at the bigger picture, how dealers will embrace change. A one-hit-wonder dependent upon tax-credits doesn't actually change the status quo.

9-22-2019 **Sightings & Change.** There's a lot of patience required and a lot of rhetoric to deal with. Eventually though, you do get in a glimmer of hope... real progress you can measure: Here in Minnesota, where Prime is still special-order only, we spotted 2 yesterday. I can't wait until Toyota finally rolls out to the other regions. Delay until the mid-cycle update was a wise move. It avoided the now obvious fallout GM is having with their disastrous subsidy-dependent design. And of course, the regular model-year cycle for 2019 hasn't even come to a close yet. So, there's a few months of waiting still. But in the meantime, stir for PHEV interest emanating from strong RAV4 hybrid sales will be a nice attention boost for Prius. Patience is a virtue you must learn when it comes to Toyota. That's an automaker who doesn't give in to short-term gain. There attentiveness to true long-term advancement can both be painful and distressing. At times, it feels like lost opportunity. But the ability to actually affect the status quo requires it. Think about what it takes to get a dealer to embrace change.

9-22-2019 **Can You Explain?** Shortly after posting the video, I got asked about extreme winter conditions. This was the standout comment: "*It seems it would be very harsh on an ice cold engine to kick on at 75 mph.*" I was happy to follow up with: There are videos of that already, except my garage isn't heated. I leave from it being in the 20's inside to temperatures much colder outside, getting onto a 70 mph highway just a few blocks away. No big deal. The system is designed to use the battery to protect the engine during the warm-up cycle. Watch RPM on those winter videos. You'll see how draw of the battery-pack is heavy while that process is taking place. Despite that, there's still ample power to merge onto the highway.... and that's the older generation of plug-in Prius. The newer generation of Prius takes on even more winter challenges. It includes a battery-warmer and a heat-pump. So, the electricity can be taken advantage of even more. Down to 14ºF, you can enjoy EV driving without the engine ever starting. When the temperature is 0ºF or lower, the engine will pre-warm anyway. Watch the aftermarket gauge data. You can see how the system was designed to produce heat very quickly. So, that "*ice cold engine*" situation won't actually happen. There are a lot of videos on my channel, with more data being supplied as my ability to capture it progressed. Here are 2 examples: Prius Prime - Single-Digit Winter Commute & Prius Prime - Charge-Mode in Winter

9-22-2019 **Rationalizing Failure.** Those years and years and years of Volt hyped I blogged about sure make for interesting reads now. So much hope was based upon meritless claims. All fell apart as a result. Lack of substance will do that. It has left some with the chore of trying to make sense of the mess remaining. For example: "*The rationale for an EREV is that it can go anywhere in a world without fast chargers but that world is gone... Another thing that must have factored in their decision is that a Bolt is worth 3X as many CARB credits...*" The market doesn't fit into such an expectation. Reality is harsh. Here's why:

First, that perception of a world with convenient DC charging is still very much a fantasy. Thankfully, the technology is proving realistic, but the practical nature of it becoming common is a long way off still. Think about how many vehicles are actually on the road and will be in need of a quick recharge. Think of the expense. Think of who & where.

Second, delivering something with dependence on CARB sales is short-term thinking. But the decision logic related to cost was sound. Bolt delivers a 2.88 ZEV credit [(0.01 X 238) + 0.50]. Volt delivers a 0.83 ZEV credit [(0.01 X 53) + 0.30]. With so little of a price difference, there wasn't good reason for Volt to continue.

Third, wider audience plug-in hybrid choices are coming. They'll nicely compliment & promote EV adoption in households. Think about how strong of a draw RAV4 as a PHEV will be. Compared to the seating & cargo for Volt, they're entirely different categories despite the potential for similar pricing.

When tax-credits have expired and the need for change reaches far beyond just CARB credits, the view of what should get offered looks different. Enthusiast delight with a niche offering doesn't necessarily translate well to high-volume, profitable production & sales.

9-22-2019 **Harsh Reality.** There are always a few who absolutely refuse to accept what happened: "*The Volt is (was) the greatest car that virtually nobody bought, because of laziness - not willing to adapt to plugging in regularly - and a generally wrong (hateful) perception of GM. Every second car on the road should be a Volt. Such a shame.*" That type of spin is exactly why I documented as much as I could while it was actually playing out. I was quite obvious they would attempt to rewrite history later to conceal what really happened. I refuse to allow such an act. Not learning from history is how mistakes get repeated. This was my reply: It wasn't hate, it was misrepresentation. Volt was a great enthusiast car. That didn't mean the design or approach would be one for the masses though... which in the end, proved to be the case. The niche was well fulfilled. Both Model 3 (standard plus) and Prius Prime deliver 25 kWh/100 mi for EV efficiency. That puts the 31 kWh/100 mi rating for Volt into perspective. For HV efficiency, Prime Prime delivers 54 MPG and Volt 42 MPG. Then finally, comparing Prime's base price of $27,600 to Volt's base of $33,520 pretty much tells the story on fundamentals. Prime came better loaded with its base model too. Sorry, but that's the reality of the situation. Selling to the masses means recognizing different priorities. To be a high-volume profitable vehicle, range & power simply isn't as important. Think of what dealers consider for what they stock as inventory.

9-22-2019 **The Industry?** Gotta like this: "*...the industry can't wait for more EVs to be sold before increasing the number of charging stations, they need to increase the number of charging stations first.*" That's yet another example of no critical thinking. Lack of detail should stir concern. Not having any actual "*who*" or "*how*" information doesn't though. The assumption is someone else will address the problem. It will just get resolved without any help from you. Ugh. That's why I ask questions: How would the automotive industry achieve that? A simple example is seeing the benefit of having chargers where people tend to spend at least an hour patronizing that business anyway... like a coffeeshop, restaurant, or theater. It seems sensible, until you try to figure out how. What benefit is there for any specific automaker to invest in any specific location or even a chain? Usage would have no correlation to vehicle purchases. In other words, there is no actual "*industry*" to direct initiatives. Heck, even trying to enforce minimum requirements or safety standards is a major undertaking. This is why Toyota is pushing their focus-on-the-masses approach. You start with a gain not requiring infrastructure change, but offering a gain if you choose to upgrade... something to entice as well as retain future value. With Prius Prime, nothing beyond an ordinary 120-volt outlet is needed. If you decide to install a 240-volt outlet later, charging time is reduced. Waiting for some landlord to install chargers for their business lessor simply isn't realistic.

9-27-2019 **Fuel-Cell Distraction, FUD.** Almost a full week of no real plug-in news about anything was somewhat bizarre. Seeing an out-of-the-blue attack on hydrogen from EV enthusiasts emerge as a result to break the silence was a predicable outcome. I was annoyed, especially when the focus was on spreading FUD (Fear, Uncertain, Doubt) rather than something actually constructive to stir decent discussion. So, I punched back: FUD about fuel-cell tech is a distraction from the bigger picture, an effort to misrepresent. The entire shipping industry via water (container ships) is being pushed to finally clean up its act. That necessity to stop guzzling oil is about to become a regulation reality. An obvious solution is to embrace hydrogen, the economics of which are profoundly different from that of passenger vehicles. That's true for commercial road (cargo & people) transport as well, which will follow. So, whatever nonsense is stirred here about fuel-cells being a dead-end equates to a futile effort to stop the inevitable. The tech will co-exist with plug-in vehicles.

9-27-2019 **Fuel-Cell Distraction, Dead.** It didn't take long before the discussion turned against PHEV. The desire is to throw all support in favor of EV and just letting everything else die by declaring it dead. Ugh. Needless to say, they certainly try. It's always a cobbling together of supposed facts to portray a narrative to support their claim. I found myself punching back again: Anecdotal observation would give that impression. But if you've been watching Prius Prime, the step forward should be obvious. 2020 model is a mid-cycle update, perfectly timed to take advantage of GM's fallout. In the established markets, the update is seeing both inventory & sales growth. That puts it right on schedule for rollout to the rest of the country within the ordinary model-year calendar. It's a move to help build plug-in reputation, both for reliability & affordability. Whether or not the current offering is an EV or a PHEV only matters to enthusiasts. Know your audience. Their customers will focus on the electric-only driving experience & price. Both of which set the stage well for a next offering, like a plug-in hybrid RAV4. Think about how well Prius Prime promotes EV purchases. The family starting with a PHEV will naturally consider an EV for their second plug-in vehicle in the household. It's basically a no-lose situation for dealers hoping to transition away from traditional offerings without having to take much of an inventory risk. Keep in mind, the gamble that VW is taking really doesn't really do anything to entice existing VW customers. An owner with a Tiguan now won't have an EV equivalent for many years still. Rollout will begin with smaller vehicles that have a much higher price tag.

9-27-2019 **Fuel-Cell Distraction, Reluctance.** That narrative to give the impression of defeat, helping to convince those of PHEV death, is to emphasize an impression of FUD with regard to the participant. It's a means of reinforcing the idea of technology failing to deliver. Antagonists worked really hard to fortify their false portraying of the true situation. It's really sad. Oh well. I just keep punching back: What some people label as "*reluctance*" others see as patience. Toyota packaged an extremely advanced heat-pump, an impressive carbon-fiber hatch, flawless dual-wave glass, and remarkable traction-motor efficiency together into a discreetly delivered as a next generation of Prius. Notice how all those naysayers about Prime focus only on power & range? Their avoidance of the technology employed speaks volumes. They refuse to acknowledge the advancements delivered, especially with regard to being both reliable & affordable. I do find it amusing how claims of being behind with the technology have no basis in actual market delivery. All those Prius Prime owners, and now Corolla PHEV owners, are now driving electric-only miles. They couldn't care less of Mirai contributed to that or not. EV driving experience is the same regardless of how the electricity is supplied. Each vehicle using those EV motors, power controllers, heat-pumps, etc. help to reduce production cost. Heck, even the hybrids and fuel-cell vehicles share battery-cells.

9-27-2019 **Fuel-Cell Distraction, Victory.** At some point, they simply declare victory: "*...that BEVs have won the race.*" It was bizarre the first time I witnessed that. The antagonist will just assemble some facts into a summary, something to seemingly support the narrative. It doesn't though. They just pretend their mess of disassociated claims all make sense when put together. Sometimes, it is to the point of absurdity. In this case, it wasn't. Instead, the person simply excluded what didn't fit the claim. Again, I was annoyed an punched back. Who knew the fuel-cell discussion would end up being about everything but fuel-cell tech. Ugh. Oh well, I kept at it: That's called cherry-picking. You know the commercial & shipping market will see fuel-cells as a common technology. They will co-exist. How much will vary depending upon market. But that absolute of a single solution isn't realistic.

9-27-2019 **Fuel-Cell Distraction, Only.** Another means of undermining is to state an advantage as being exclusive. The idea is to keep focus on that, as if you are being objective. In reality, what you are really doing is working to prevent any other advantage from ever getting attention. That single-mindedness is easy to maintain, since most online discussions are have difficulty achieving any depth. It's a terrible means of conveying complex scenarios. The thought process is broken with the greatest of ease. Squirrel! Anywho, it was this today: "*HFCVs offer exactly one debatable advantage, faster fill up, and exact 0% chance of success in the passenger vehicle category.*" I punched back with: No. There is another advantage many here desperately try to avoid mention of. It's the ability to store energy. Despite the fact that it is more efficient to hold electric in DC format using batteries, the idea of massive storage-banks simply isn't practical. In fact, the need for a lot of electricity quickly (think many 150 kW chargers all drawing at the same time) is a very real problem. That type of transmission is incredibly expensive. Getting supplemental electricity for those high-demand situations is an ideal application for a large fuel-cell stack located at the charger location. Get use to the idea of co-existence. To power our plug-in vehicles, we'll need power. Storage is a challenge to overcome. The ideal of solar & wind providing lots of electricity requires a means of putting it somewhere off-grid and being able to tap that supply rapidly. The oil industry won't just stop supplying energy. They'll be forced to switch to a cleaner & renewable fuel.

9-29-2019 **Back to Offense.** This was amusing: "*I'd argue that the more versatile and practical body type (a pickup truck or a "compact SUV" like the RAV4 or the Equinox) and faster charging speed at more locations are more important than the >250mi range.*" It can hardly be an argument when that's what I have been saying for countless years. So, I just repeated the same sentiment, but pushing it, not in any regard a response to attacks anymore. That stage is over: Those are fighting words. I got attacked for years from that very suggestion. Volt enthusiasts absolutely hated me for pushing the idea of diversification. Equinox using Voltec (the tech in Volt) required a sacrifice of range, since it would be far less aerodynamic and much more heavy. Keeping it somewhat affordable made that situation even worse. But adding to the impractical reality of poor approach was CHAdeMO fast-charging already available for Prius PHV in Japan. It wrecked any hope of their mantra of more range being better. GM's dependency on tax-credits and the result of never being able to appeal to their own loyal customers is what stands out most now. Even the desperate excuse of abandoning EREV in favor of EV doesn't save them from the reality of not having anything beyond just conquest offerings. The goal is to change status quo, phasing out traditional choices in favor of something with a plug. While we witnessed Toyota improving upon RAV4 hybrid to set the stage for a PHV model able to compete directly with the traditional model, we watched GM rollout a diesel model of Equinox and create a new traditional Blazer made in Mexico. All that nonsense about Toyota being so "*behind*" has been revealed as meritless rhetoric. And to those who lashed out at me for expressing the "*too little, too slowly*" concern about not spreading the tech to a more versatile & practical body type, you now understand consequences of not critical thinking.

9-30-2019 **About Face.** More partnership info about Toyota working with Subaru regarding AWD delivery of electrification choices was released today. We quickly got this: "*It's fascinating to see the quick about face of Toyota... Toyota for years was saying that the best way to lower CO2 was to use Hydrogen, and Hybrid technologies.*" I saw that as an invitation to jump into the fresh discussion with lots more info:

The "*behind*" narrative only worked on those not paying attention. There is no about face. Progress has been on-going, just not easy to see.

For those actually seeking detail, they discovered Toyota's electric-motors offered outstanding EV efficiency ratings. They also saw that Toyota's heat-pump was the industry's most efficient offering. Upon further digging, they'd undercover the use of carbon-fiber in a surprisingly complex vehicle part. All of which are technologies that carry forward to an EV. It's refinement of production to achieve lower cost while also proving reliability which have a significant payoff later.

At the same time, we see plug-in experience advancing forward with Prius Prime and Corolla PHV. Next year, the market in China will get an EV model of C-HR. For us here, it looks quite likely that the next plug-in would be RAV4 hybrid.

In other words, all that rhetoric earlier this year about GM's progress as legacy leader was just the usual meritless hype. It comes down to being able to actually get dealers on board. That means delivering choices directly competitive with traditional offerings. From the shopper perspective, that equates to an appealing price (no tax-credit) and an effortless means of recharging (existing 120-volt). Those are traits Toyota is already showing success with.

September sales for Prius Prime will confirm that appeal progress. Despite still only being available to roughly half of the United States, there is obvious growth emanating from rollout of the 2020 mid-cycle update.

Use some critical thinking. Having a large number of vehicles switched to plug-in hybrids quickly will have far more of an impact lowering overall CO2 than a small number of EV deliveries. It has the immediate benefit of preventing a new traditional vehicle purchase. That purchase of a PHEV will likely lead to the next purchase being an EV. At the same time, it encourages the upgrade to a level-2 charger at home. It's a win-win-win situation. Don't listen to the "*behind*" nonsense. It's not an about face, change of direction either.

9-30-2019 **From The Ashes.** There's nothing. To think, all that praise for GM's leadership... It was an incredible way to start a year of fallout. Enthusiasts continued to push the narrative of Toyota being hopelessly behind, on the verge of collapse. I saw that as reflection. Such heavy dependency on tax-credits and those sales only resulting in conquest was a sign of trouble to come. Adding to that the reality of profit coming only from the large guzzlers, it was a recipe for disaster. Sure enough. Strikers are voicing their upset. Volt is dead. And we don't hear anything whatsoever about Bolt. This last we was silence. Having no hype to blog about was strange. It was the reveal of hopelessness. There had been talk of pushing negotiations for Union workers to get production of EV pickups as their focus. The high-cost and low-volume expectations for that make it unrealistic though, especially with it not even starting for another year or two still. This is the result of "*too little, too slowly*" not being taken seriously. That concern to ensure the market was established prior to triggering tax-credit phaseout was genuine. They pushed me back instead of pushing GM forward. Those terrible enthusiasts were enablers of this disaster. So much opportunity missed. Ugh. Their final hope has been something rising from the ashes. That looks very, very unlikely.

9-30-2019 **Raise Awareness.** You can't make all the people happy all the time. It's just not realistic. When it comes to Prius, that means the more advanced users (owners with lots of experience) tend to desire additional information. The detail they desire simply isn't there though. This is why some seek out aftermarket devices. That's a means of getting more without having to ask anything of Toyota. Some do complain instead: "*It's a pretty stupid design.*" That was said about the question we see pop up on the screen upon shutting down when the system is hot and the temperature outside is hot too. The owner wanted the ability to specify that setting permanently. I pointed out: Know your audience. Toyota does, exceptionally well, as they have proven in the past. For this situation, it is an audience of those new to plugging in who mostly depend upon 120-volt charging. That makes asking the question quite sensible. It raises awareness, providing a subtle reminder of the importance of keeping the battery from getting hot on a regular basis. The last thing you want in an emerging market is a "*set & forget*" feature. No amount of arguing will change that. Far too many Prius owners of the past simply ignored the refuel message. Complaints about the battery not being fully charged because the $@%^# cooling system ran in the meantime simply isn't worth it. You must make the choice each time for the non-scheduled charges. Sorry, but with over 25 years of dealing with users software doing wild things to their computers, I'm in full agreement with Toyota about using the "*raise awareness*" approach.

9-30-2019 **Balance & Disruption.** Discussions have taken on a quality of starting fresh. In a way, that is exactly what's happened. GM support has completely vanished and there isn't an expectation of anything from any of the other automakers until next year. We are in this strange dead zone, where a transition is taking place but people are not sure what will become of it. Legacy automakers are still lost. Tesla is in a place of uncertainty. The political outlook is grim. Who knows what will happen with the economy. And of course, people are still afraid of change. That just leaves us with traces of rhetoric to keep discussions from evaporating. End of quarter should bring interesting speculation, as well as a wake up call. That will be interesting. In the meantime, I repeated my summary but to a changing audience: It's the Tortoise and the Hare situation. While others were racing ahead and showing off for praise, Toyota remained steady and true. Pleasing enthusiasts and early-adopters simply hasn't ever been a priority for them. Their focus is on the masses, their own showroom shoppers. This is why dealers have been so willing to carry Camry and RAV4 hybrids as regular inventory. That variety is essential. It's about getting the right balance of tech & platform to result in genuine change without disrupting the business. It's ironic that many here actually want disruption. How is that type of inventory uncertainty a way to sustain profit to pay everyone involved in the production, distribution, and sales process? Problems like the Osborne effect are very real. So even without the political & environmental turbulence, there are major obstacles to overcome. Think about how many battery cells the hybrids are requiring. That's a ramp-up no one here has been paying attention to; yet, it is priceless experience necessary for mainstream EV offerings. Put another way, Toyota has been busy with requirements such as that for profitable high-volume sales to the masses. That is not where others have been.

9-30-2019 **Catch Up.** This is where the "*know your audience*" really comes into play. That old question of "*Who is the market for Volt?*" revealed those enthusiasts didn't have a clue. They were so obsessed with the engineering, they didn't bother to learn about the business. They figured a vehicle like that would appeal to everyone. They were wrong, very wrong. So as we emerge from the early-adopter stage (clearly defined by the availability of tax-credits), we must recognize that many priorities will be different. Wiliness to trade range for interior space simply is not acceptable. That's why VW isn't even bothering with ID3 here in the United States; instead, we will be getting the larger ID4. This is the reason seeing statements like this send a chilling reminder of mistake repetition: "*The only way for Toyota to catch the pack now...*" It's that group-think of online participants that are well informed and more than happy to make sacrifices believing everyone else shares their view. Ugh. I pointed out that's not the situation with: Enthusiasts here keep pushing the idea that faster & farther is the goal for all automakers. Toyota is not compelled by conquest. Toyota is taking a different path. So, there is nothing to catch up to. Focus is delivering vehicles able to compete directly on the showroom floor. That means MSRP is a much higher priority... hence starting prices of Corolla hybrid at $23,100, Prius Prime at $27,750, RAV4 hybrid at $27,850, and Camry hybrid at $28,250. Those are vehicles fighting for sales today. Each purchase means a traditional vehicle was displaced by something cleaner and more efficient. That's why new offerings, like the AWD Prius, are being explored too. It's all about actually changing the status quo at their own dealers, not chasing some pack after a distance trophy.

9-30-2019 **Huh?** The announcement that Toyota will have a partnership with Subaru has really stirred interesting posts... from those who clearly don't have any historical background. We've seen that approach at different levels of complexity for decades. Sharing technology is nothing new. It's simply a part of the automotive business most aren't aware of. Heck, even the most simple "*rebadge*" rollouts go unnoticed. So when it comes to something related to propulsion system, that big unknown is no surprise. It makes any discussion of the path forward challenging. If you mention diversity, their minds explode. Solutions that are not one-size-fits-all are pretty much impossible to constructively post about. Rhetoric thrives on simplicity, so you get bombarded by efforts to prevent critical thinking. Ugh. Despite that, I tried anyway: Someday, there will be an EV in that size offered here. The first elsewhere will be C-HR. Its hybrid model already shares the same platform as Prius. That is targeted for the European market though. The EV model will be the Chinese market. When we get something, who knows what body it will use. The likely next step for Prius here is to make the plug model standard. Keep in mind the flexibility Toyota puts into their design. This is why the real-world data Mirai provides for that 113 kW traction-motor is so valuable. It's getting an entire generation shakeout before even being offered to the wider audience. Remember, Prius was available in Japan for 2.5 years before rollout in the United States. And when that rollout finally took place, Toyota delivered it with an upgraded system. Gathering knowledge from a Subaru partnership fits right into that.

10-01-2019 **No Background.** The new month started with an analogy that just plain did not work... unless you weren't paying attention at all over the past two decades. Unfortunately, that no background problem is quite common. People make observations, then draw conclusions. Lack of any study leads them down a confusing path. I attempted to raise awareness of that missing information. Sadly, it probably won't help him. Luckily, we have lurkers who learn from posts. So, it's never a total loss: Out of context, that could be a convincing argument. But when you consider how the market has actually played out, that analogy doesn't work at all. BMW was the automaker without a plan, just an innovation which management could not agree upon how to proceed with. GM was the automaker with a plan, but it was an "*over promise, under deliver*" situation to the extreme. Toyota has a clear progress map they've been following. Each vehicle will get a hybrid option, one that will be upgraded successively to bring about a plug option. It shows solid commitment to their dealers, ongoing value of their product (used sales), and an easy to understand move forward across the entire fleet. As for partnerships and supplier choices, that type of activity is normal business. We've seen it for decades. That's how the major automakers became major. As for the claim about who the future belongs to, I suggest study of innovator's dilemma. Toyota is demonstrating a succinct means of avoiding that situation.

10-01-2019 **Sleuthing.** The thread started back in February of this year was my choice of revival for news related to Android Auto. It mentioned the need for us to do some digging ourselves, pointing out that information is usually available if you are willing to hunt for it. I seek that type of content all the time. It's what ends up in the logs for future reference. That builds background for setting realistic expectations. It also helps with the effort to be patient. Tiny bits of news are better than nothing at all. In this case, it was the next clue to upgrades related to the infotainment system: Today was the announcement that C-HR will be getting Android Auto. If you have been watching rollout of Prius Prime (2020 mid-cycle update), no news makes sense still. Sales in established markets are showing growth. Adding a highly anticipated feature would derail that effort to finally expand to the rest of the market. Imagine the demand spike! It's not Toyota's way. They prefer spreading upgrades throughout the years to keep interest fresh. In fact, that on-going improvement approach has been around since even before Prius and has proven very effective.

10-01-2019 **Understanding Sales.** Today, quarterly results will be shared. That means a lot of commentary will be posted from those who have little background or simply don't pay close attention. So, I jumped into the thread on that big EV blog to provide some information related to Toyota: Keep in mind that Prius Prime had an inventory burndown prior to the 2020 mid-cycle update and those models were only available in roughly half of the country. Near year-end, hope is the middle & southeast of the United States will finally get the opportunity to sell Prius Prime beyond just special-order. It made sense waiting until the update, especially with tax-credit phaseout having such a significant influence on original offerings. With a starting MSRP of $27,750 and being immediately available at all Toyota dealers, it's easy to see the potential... that juggernaut we have all been waiting for from a legacy automaker.

10-01-2019 **EV Market.** September results were shared today. I obviously had something to say about the comments being posted, especially to one that was over the top optimistic: Careful. How many of those sales are to ordinary consumers? Reaching the mainstream audience is far more difficult than appealing to early-adopters. Tesla did a marvelous job of picking all the low-hanging fruit. Hope from doing that was to build up high-volume production while establishing a reputation to draw in the next stage of shoppers. It looks promising in that regard, but for how many? The higher price tag, lack of convenient trade-in, and lack of body choices means there are challenges to overcome still. Success of Model 3 is absolutely fantastic, but keep in mind how difficult that next step in market penetration will actually be. This market alone (United States) will see somewhere around 16M sales this year. That limits a perspective of "*utter domination*" to just the plug-in audience, not a measure with regard to the rest of what's offered nationwide. There's a lot of potential, but it won't be easy. Look no further than GM for a dose of reality. Enthusiasts celebrated sales of Volt while refusing to acknowledge they were really just conquests with no affect on the status quo. GM dealers just kept selling traditional GM choices to loyal customers looking to replace their aged GM vehicle. We need true change. Put another way, ask who the competition is.

10-01-2019 **Who?** I get annoyed when limited-scope observations become meritless generalizations. You can't take short-term results based upon a single configuration and expect them to translate well to mainstream demand. That's how many fall into the innovator's dilemma trap. Yet, no matter how much you try to point out the mistaken perspective, it becomes a problem anyway. Hope overrides logic. I keep trying to interject some critical thinking into discussions. It's difficult to tell how effective content like this is though: A plateau of sales at 15,000 would represent a great selling niche, something not unheard of in the automotive market. To get to the next stage, significant growth is required. The current stage is filled with those who cross-brand shop and take advantage of tax-credit opportunities. Legacy automakers appealing to those who shop the showroom floor is the next buyer to target. Call them whatever you want. I label that as the "*will my mom consider it*" stage. A major component to that is to diversify. It must be made available in different configurations. That's how the technology breaks away from niche and becomes mainstream. If mom doesn't even take time to explore the choice, we don't stand a chance of achieving the goal of ended traditional vehicle production. That audience beyond those who purchased a Model 3 are far more fickle than most here are willing to accept. We need to recognize how much more difficult growth really will be. That means careful observation of what actually compels shoppers to take a closer look... and to hell with specifications. Far too many here are well informed, with engineering backgrounds and no fear of embracing new technology. That isn't at all representative of an typical consumer.

10-01-2019 **Sales Down.** As expected, I was personally attacked. There are a handful of let down GM enthusiasts still looking for someone to blame. They see me as a good target to let out their frustration. Being disappointed about the utter abandonment of that technology they had endorsed for over a decade is one thing. But for nothing to replace it, that's too much to accept. Bolt should have simply taken over, as far as they were concerned. That was never realistic though... and they didn't want to accept my insight pointing out why. So, this is what they get now: It's just a stage. The natural progression of replacement technologies is for the candidates unable to sell well beyond early-adopters to cease production. Volt was too expensive, too small, and too inefficient. Being able to compete directly with traditional vehicles simply wasn't realistic. That doesn't mean other PHEV designs won't succeed where GM could not. In fact, GM itself may attempt to deliver another configuration capable of high-volume profitable sales. T he next stage will begin, one that actually focuses on the masses rather than enthusiasts and without the benefit of tax-credits. Those choices will be quite different than Volt, despite also being PHEV.

10-02-2019 **Really Sad.** The start of this next quarter triggered the next tax-credit phaseout stage for GM. Most of the comments posted were pointless. It's far too late. The article highlighting the situation stated it this way: "*The task for GM, in a more mainstream segment of Chevrolet brand, is much more challenging.*" I had much to say. So, I waited a day, then posted the following:

Purpose of the tax-credit was to address that challenge prior to phaseout, so the automaker could take advantage of the switch to unlimited quantity upon reaching the 200,000 trigger.

Tesla did a phenomenal job of achieving exactly that. It was a genuine effort to strive for a high-volume production able to capitalize on that opportunity.

GM didn't bother. Right from the very beginning, the question of "*Who is the market for Volt?*" was asked. It was quite clear GM was using those tax-credits for conquest rather than make an effort to actually change their own offerings. Instead of evolving that tech into a form-factor their own loyal customers would actually purchase, it became just facade to garnish praise.

Meanwhile, GM released ambiguous information to feed enablers, those who supported the squandering of tax-credits by labeling automakers taking time to do it right as "*laggards*". It's a debacle on a monumental scale only now becoming apparent, despite all the warnings along the way pointing out the concern for that very situation. The deadline approached, yet GM did nothing to address it.

In other words, the technology in Volt should have been diversified years ago. Spreading it to a far more popular platform would have carried GM forward. Rather than introducing both Trax and Blazer as traditional guzzling SUVs, they could have featured a Voltec model. The extremely popular Equinox could have been an excellent choice as well. Instead, all GM customers have no plug-in hybrid whatsoever... despite most of the tax-credits having been used to advance that very technology.

So much opportunity was wasted. It's really sad.

10-02-2019 **Sales Perspective.** Among the final counts to be posted were those from GM. With the market down double-digits here for most automakers, the added pressure of striking workers made for a grim outlook. That's why I needed to post some realistic perspective on the celebratory remarks related to Bolt sales: That last-minute scramble to purchase just before tax-credit phaseout reduces from 50% to just 25% made the spike quite predictable. The real measure of progress will be sustainable sales at a profit once those subsidies are gone. This current stage is filled with early-adopters, people who take advantage of discount opportunities for new tech just like that. Each automaker must advance beyond sales of just 200,000 over multiple years anyway. Sales in the United States last year alone for GM were 2,036,023. For Ford, they were 2,381,635. For Toyota, they were 2,128,201. Both growth and diversification is vital; otherwise, what's the point? Plug-In sales will continue to be overwhelmed by traditional guzzlers. It turns into a situation where dealers don't even bother if a next step isn't taken. That's why the current tax-credits should be allowed to expire. If a new round of subsidies are introduced, they should be focused on infrastructure. Encouragement to get homeowners & landlords to install/upgrade charging capacity is what will help promote sales growth... on the scale that really makes a difference.

10-03-2019 **PHEV Down, BEV Up.** That was the summary of sales. It was a recounting of the worldwide market as of August... which really doesn't tell us much. We're in a state of change. The same is true for China and Europe. So, what can you truly learn from just that particular slice of time? Turns out, not much... except if it was to find out how EV enthusiasts are taking the actual detail. That "*up*" is really only a tiny amount. That "*down*" is a temporary shift due to GM and BMW struggles. This is the nonsense that emerged: "*PHEVs were a great idea - 20 years ago. Now, they are a joke and automakers cling to them in hopes that this "EV thing" will pass. How's that going for you Toyota? BEVs are the future.*" I jumped on the opportunity to repond: That narrative is a joke. The well informed are keenly aware of how an affordable PHEV will contribute to the widespread acceptance of BEV later, but with a benefit immediately. Toyota's design is able to compete directly against traditional vehicles without tax-credit dependency. The starting price of $27,750 for Prius Prime delivers 84 MPH top EV speed, electric A/C, and heat-pump to enjoy that EV future today without any range-anxiety concerns. It doesn't even require any upgrade at home either; an ordinary 120-volt outlet supplies all the electricity you need for recharging. It also encourages the upgrade to 240-volt charging without any pressure upon purchase. In other words, your attempt to downplay is being called out. I fill up my Prius Prime every 2 to 3 months. My commutes are entirely electric. I take advantage of the 55 MPG it delivers from time to time. To answer your question, it is going well for Toyota. The same design will work well as a RAV4, as it has already been proven with Corolla PHEV. The difference between hybrid and PHEV is basically just a matter of adding more battery, a one-way clutch, and a plug.

10-03-2019 **At least 50%.** I had to ask the question. What does "*...at least 50% people which can charge EVs at home...*" actually mean? It was on a new discussion thread about charging infrastructure. Most of the posts were beyond vague, lacking detail to such an extreme there wasn't really anything to take away. Those comments were nothing but echoes of the past. We are not seeing any progress. Lack of advancement is how you lose interest. Enthusiasts become disenchantment if you take to long. In fact, that's exactly why the GM followers of Volt were fewer and fewer. That "*too little, too slowly*" wasn't taken seriously. Point being, there must be a push. Mine is now in the form of directing focus away from public chargers. It's all about charging at home now. There's lots of opportunity. Let's do something about it. Here's my latest comment on that subject:

The basic rule of "*40-amp line will deliver 200 miles in 8 hours*" in itself is far from common knowledge still. So, the effort required to run conduit & wire from service-panel to new outlet location is a complete mystery for most people. How does one even get a ballpark cost estimate when every home has a completely different wiring situation? And that's just addressing the challenge to provide electricity for a single vehicle to recharge. Support for multiple vehicles adds complexity.

This is a topic many advocates dance around, avoiding it by focusing on just the low-hanging fruit... those already interested and willing to spend setup money in addition to just the vehicle purchase. Trying to get an ordinary suburb owner with a cluttered garage and electricity coming into the house on the opposite side isn't easy to setup. Those who have a detached garage in an alley and their service-panel on the house don't have it easy either. Yet, these are included in the 50% that technically could.

This is why starting with PHEV that encourage a post-purchase upgrade will help significantly with infrastructure investment. The homeowner will become comfortable with the need and be willing to spend the money to upgrade. That naturally leads to the next vehicle purchase consideration to be an EV. It's an effective means of getting a household to embrace plugging in.

Notice how none of that has anything to do with public rapid charging.

10-04-2019 **Infrastructure.** Forcing conversation beyond the immediate EV market is getting easier. In the past (when Volt dominated headlines), there was no vision beyond just enthusiasts. In fact, they absolutely refused to even acknowledge there was anything beyond plug-in offerings. It was a blatant effort to force a narrative. They simply didn't care about what the rest of the automotive industry sold. Those blinders were on so tight, any mention of "*Who?*" resulted in an onslaught of personal attacks. I sure am glad I took the time to document all that. It's almost hard to believe so much fight came from the "*vastly superior*" group. They exerted so much effort to undermine the very technology that was helping to promote plugging in, it's difficult to grasp. They truly didn't know their audience; however, some of us do. Here's my take on the situation as it stands right now:

Charging "*infrastructure*" is not well understood. Most people have no clue how a site with charging-stations is establish or maintained. Cost of tier-3 service (high capacity power during peak demand) alone is a major deterrent. So even without addressing how to pay for the equipment install, there's that very ownership real issue to address. Then of course, there is the sad fact that a charger could break or get vandalized, as well as dealing with the problem of ICE'd spots. All that sours appeal. Why would any legacy automaker to ever pursue, especially when you consider how many locations would actually be needed? Heck, even just installing some chargers at a dealership isn't likely to happen.

Starting with PHEV purchases is the ideal for rapid penetration into the mainstream. They stir interest for at-home upgrades, the most vital part of charging infrastructure. Getting households to install L2 chargers is the game-charger. Once we start seeing those 240-volt 40-amp lines appear as the norm for overnight charging (capacity for 200 miles in 8 hours), the purchase of an EV becomes a no-brainer. That reduces the need for public charging rather significantly.

Toyota is way ahead of the curve in this regard for legacy automaker push. Plans are underway to convert production in Kentucky to build more of the extremely popular RAV4 hybrid. Already delivering 40 MPG, it's an ideal platform to attract the masses. Adding a plug is only a matter of inserting more battery and a one-way clutch, as Prius Prime has already demonstrated. That's a cost-effective means of reaching the massive potential in our SUV-crazed market.

Preparation on that scale is absolutely vital for electrification to finally break out beyond subsidized sales to enthusiasts. Offerings of long-distance EV alone won't be enough. That's too slow and too few. Affordable choices starting with just enough EV capacity to cover a daily commute puts plug adoption in the fast lane. That will provide a major boost to ending traditional production for setting the stage to plug in... which is exactly what the RAV4 hybrid has addressing right now.

It's the change to "*infrastructure*" that we really need to focus on. Far too many here don't look beyond the immediate EV market.