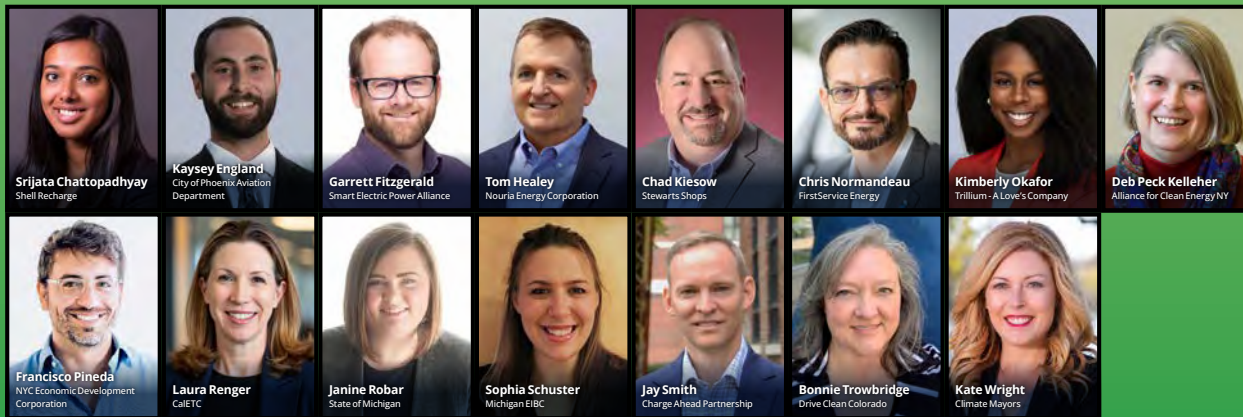




ELECTRIC VEHICLES VISION GROUP

evVG MEMBERS



VISION GROUP NETWORK CO-FOUNDERS



The Changing EV Policy Landscape: How Does It Affect You?

evVG VISION REPORT NO. 2
MARCH 2025

FACILITATORS



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Executive Editor, *Road and Track Magazine*



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FEATURED SPEAKER



Karl Doenges
Executive Director, Charging
Analytics Program (CAP),
Transportation Energy Institute



sharing today to shape tomorrow

We are Electric Vehicles Vision Group (evVG), a group of invited stakeholders from across the EV industry who have volunteered our time to help our fellow retailers, solution and product providers, and public and private sector professionals. The only reason we gather is to discuss, debate and share our experiences and ideas. Each of us is offering our personal opinions. We are not looking for “group think.” We make our conversations available to everyone in the industry through evVG Vision Reports. These reports will help you better understand current challenges, solutions, and opportunities while giving you access to different opinions and perspectives.

Electric Vehicles Vision Group is part of the Vision Group Network, whose mission is to gather the best minds in the industry, put them in a virtual room, and let the ideas and opinions develop.

This **evVG Vision Report** is comprised of three parts:

evVG Views provides a summary of the conversation with additional resources for extra context including “Valuable Resources” for more in-depth information.

In The Room With evVG provides you with the meeting transcript, tagged for easy reference, so that you can be “in the room” with us, rather than only having access to selected quotes and paraphrasing.

The full presentation, “**The Future of Energy**” is included and linked throughout the transcript for easy navigation.

We highly recommend that you read all three components.



The main topics in this evVG Vision Report:

The Future of Electric Vehicles and Charging

Trump 2.0

New Administration Policy and Funding Reallocation

Market Growth and Consumer Adoption

Economics of EV Charging and Convenience Stores

EV Charging Infrastructure and Development





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evVG VIEWS

AN ELECTRIC VEHICLES VISION GROUP DISCUSSION



The Electric Vehicles Vision Group (evVG) convened for its quarterly virtual meeting to discuss the future of energy. The meeting featured a presentation by Karl Doenges of the Transportation Energy Institute and a chance for members to share their unique perspectives.

In a rapidly evolving and extremely active time for energy policy, members of the Electric Vehicles Vision Group met to discuss the future of energy. It is important to note that this meeting was held on February 5, 2025 and this report is based exclusively on the discussion at that meeting.

▼
evVG Views

In The Room With evVG

Presentation

The Future of Electric Vehicles

The virtual quarterly meeting was facilitated by **Mike Austin**, executive editor at *Road and Track Magazine* and **Nathan Niese**, managing director and partner at Boston Consulting Group and began with a presentation by **Karl Doenges**, executive director, Charging Analytics Program at the Transportation Energy Institute (TEI), a policy and analysis group associated with NACS.

Doenges began by emphasizing that the U.S. government is intentionally designed to move slowly, with a system of checks and balances that makes rapid policy changes a difficult process. Reflecting, he noted that the Biden administration, some states, and other countries had prioritized decarbonization, focusing on the electrification of the transportation sector while addressing the power grid as a secondary, reactive measure.

“So there’s a lot of forecasts, and I guess I’m dating myself with this quote from Donald Rumsfeld: “You’ve got your knowns, you’ve got your known unknowns, and then you got your unknown unknowns.” And man, I personally have not put out a prediction that hasn’t been wrong.

Karl Doenges, Executive Director, Charging Analytics Program, Transportation Energy Institute (TEI)

Looking at current trends, he noted that the transportation sector is a key target for emissions reduction because it is a major contributor to greenhouse gas emissions, with on-road vehicles accounting for the majority (81%). He clarified that while the growth of both battery (BEV) and hybrid electric vehicles (HEV) is undeniable, the transition to a fully electric fleet will be gradual due to the

slow rate at which vehicles are replaced. Even if the U.S. were to adopt a policy of 100% EV sales by 2035, a significant portion (40%) of vehicles on the road would still have internal combustion, liquid-fueled engines by 2050. Additionally, vehicles are being kept longer by consumers because of high prices and high interest rates and ICE vehicles still account for 92% of vehicles sold in 2024. He also noted that the EV market is not growing uniformly across the country but is concentrated in about sixteen states.

The shift towards EVs presents both challenges and opportunities for fuel retailers. EV owners represent a valuable customer base, spending an average of \$11 per store visit compared to the \$6 spent by traditional gasoline customers, primarily due to the 25- to 40-minute charging times hopefully leading to higher in-store purchases. Fuel demand will continue to decline due to efficiency gains in vehicles, and although the number of trips people take is not decreasing at the same rate, the overall consumption of fuel will be impacted, too. Given the slow turnover of the existing vehicle fleet, retailers should also pay attention to alternative fuels, like biofuels, renewable diesel and renewable gasoline as a way to reduce the carbon footprint of current vehicles.

Doenges noted that the real disruption in the automotive industry is not just the shift to electric motors, but rather the vehicle’s platform architecture, particularly the ability to perform over-the-air (OTA) software updates. OTA updates enable features like autonomy, retail integration, and continuous improvements in vehicle performance and reliability and is not available for ICE vehicles. The integration of embedded AI also contributes to features like advanced search functions and voice control.

evVG Views

In The Room With evVG

Presentation

Trump 2.0

Turning attention to the current Trump administration, Doenges revealed that the President's plan to repeal ten regulations for every new one enacted faces significant hurdles due to the slow-moving nature of government and legal challenges. Meanwhile, the newly formed Department of Government Efficiency, known as DOGE and led by Elon Musk, aims to achieve \$500 billion in savings through executive action by repealing regulations that lack direct congressional authorization. Their strategy hinges on legal precedents such as *West Virginia v. EPA* and *Loper v. Raimondo*, which reinforce that regulatory changes must align with explicit congressional intent.

Read more about the two U.S. Supreme Court cases Karl Doenges cited in his presentation:

West Virginia v. Environmental Protection Agency
West Virginia v. EPA limited the authority of federal agencies to impose major regulations without clear congressional authorization.

Loper Bright Enterprises v. Raimondo
Loper Bright v. Raimondo challenges the Chevron deference, which gives federal agencies leeway in interpreting ambiguous laws.

Doenges also shared recent activity in the new administration. The U.S. has withdrawn from the Paris Climate Agreement, though major multinational corporations like ExxonMobil remain committed due to international obligations. The Corporate Average Fuel Economy (CAFE) standards are expected to be a battleground with a likely attempt to loosen them. Similarly, the administration is targeting the Inflation Reduction Act's (IRA) EV policies, but its success is uncertain given congressional authorization. He noted the National Electric Vehicle Infrastructure (NEVI) program, which distributes block grants to states, is difficult to repeal, while the discretionary Charging and Fueling Infrastructure (CFI) funds offer more flexibility for potential cuts. However, constraints like the 1974 Impoundment Control Act limit executive power to withhold congressionally allocated funds.

Tariffs are a rapidly changing issue and at the time of the meeting, tariffs on Mexico and Canada had been paused and a 10% tariff on China had been framed as a bargaining tool rather than a revenue mechanism. There is speculation that national security concerns over minerals and battery storage may protect some large-scale energy projects where shutting them down could provoke political backlash. The administration has also directed agency heads to submit plans within 90 days outlining how

“ We are going to see a change in rhetoric, obviously, from the Biden administration to the Trump administration.

We do believe it will change the pace of the EV growth, but it will not stop it.

Karl Doenges, Executive Director,
Charging Analytics Program,
Transportation Energy Institute (TEI)

their policies align with their vision, meaning more clarity will emerge in the coming months.

Another expected regulatory battle is over California's zero-emission vehicle (ZEV) policies. The administration may challenge California's authority by arguing that climate regulation falls under federal jurisdiction rather than state-level emissions control. If successful, this would impact other states that have adopted California's standards. California, anticipating this challenge, has already begun preparing its defense. Finally, there are discussions about federalizing autonomous vehicle regulations to streamline development and deployment, which could benefit companies like Tesla and Waymo by replacing the current state-by-state regulatory patchwork with a unified federal standard.

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In The Room With evVG

Presentation

New Administration Policy and Funding Reallocation



“Now everybody wants the vehicle that has all these embedded AI functions with all these capabilities with autonomy, retail integration into your dashboard where you can order something and have it ready for you when you go there and change your trip on the fly by just talking to your car.”

Karl Doenges, Executive Director, Charging Analytics Program, Transportation Energy Institute (TEI)

With an uncertain future for climate change and energy policy in the new administration, the discussion launched right into funding, incentives and tariffs. The potential reallocation of CFI funds toward other projects was raised by **Laura Renger**, executive director at CalETC, with **Kimberly Okafor**, general manager of zero emission solutions at Trillium - A Love's Company, also wondering if those funds could be reallocated to non-EV projects like CNG or LNG. While possible, Doenges suggested that these funds could be redirected from EV projects to critical mineral exploration and battery technology, as both are important for national security.

On the topic of tariffs, Niese asked if the new China tariffs are in addition to existing ones, such as the 100% tariff on EVs and the reduced battery tariffs, and

if they also include the Biden Administration's software and hardware restrictions. Doenges confirmed that all “old” tariffs are still in place [at the time of the meeting] and the EV tariffs are not expected to be removed because the current administration is focused on protecting Detroit automakers. He also mentioned the administration's desire to prevent Chinese subsidized parts from circumventing tariffs through Mexico.

The conversation pivoted to the potential impact on incentives for both charging and vehicle purchases, as prompted by Austin. **Sophia Schuster**, policy principal at Michigan Energy Innovation Business Council suggested that regulatory programs and investments from public utility commissions will continue to support electrification even if federal incentives are lost. “Utilities recognize that increased

electrification is good for business. They are definitely not going to be turning their backs on this forward momentum,” she said. Doenges noted that only a third of all EV purchasers actually used the tax credit. Schuster added that the key concern for people considering switching to EVs is access to charging even though, based on studies she has seen, that is not a valid concern.

Recentering the focus, Doenges believes that the draw of AI-based capabilities may overcome the need for incentives. He emphasized the impact of AI and connectivity, stating, “AI is coming on us much faster than we thought it would, and the advancements of AI are moving into the vehicle for companies that have the ability to do over-the-air software updates much faster than we realized.”

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In The Room With evVG

Presentation

Market Growth and Consumer Adoption

While Doenges shared a little about a TEI's Charging Analytics Program (CAP) and its resources in his presentation, **Roy Strasburger**, CEO of StrasGlobal, president of Compliance Safe, and Vision Group Network co-founder asked him to elaborate more about the quarterly CAP reports. Doenges explained that CAP examines the health of the industry, provides in-depth reports, and customized dashboards for those who want to delve into the details.

TEI also performs a global survey on the expectations of site hosts and drivers regarding EV charging, available for free on the [TEI website](#). Recently, a survey revealed that drivers are mostly concerned with safety and security when charging. He noted that charger locations should be "well lit, near the front door," and with "a security camera and...other people around it" and not "isolated in the back of a property."

Agreeing that EV customers tend to spend more per visit at convenience stores compared to gasoline customers, "\$6 versus \$11, you might be getting more market basket from that EV customer, but you have much fewer of them," said **Tom Healey**, VP of facilities for Nouria Energy Corporation.

Healey, a regular TEI user, commented that the EV technology evolves and he shared that he grapples with how the layout of EV charging stations fit with their conventional fuel customers: "There's tension between taking up parking spaces for EV, planning more towards the future, versus our current customer base and being able to accommodate them at peak times for access to the convenience store and convenient parking."

Doenges emphasized that convenience stores could see additional revenue from EV-related services, particularly car washes, explaining that car washes are

important to keep car sensors and cameras used for advanced driver-assistance systems (ADAS) clean.

Chris Normandeau, director at FirstService Energy, was curious to know more about the customer attributes of EV drivers. Doenges admitted that while they are expanding CAP to collect that data, it is difficult to connect charging events with in-store spending. He believes that the real value proposition is not selling the electrons, as that will become commoditized, but rather in offering good customer experience at the charging station. He noted that QuikTrip has been successful at charging a premium for superior locations and features, sharing "they made it super high end, super clean, and they said that their volumes are better than they expected and that people were willing to pay the higher price for the better experience."

Doenges said whether "it's a QSR, convenience store, we believe that [EV dashboard technologies are] going to be a big game changer and take less pressure off the need to charge more for the electrons and allow you to really focus on the convenience items and the car wash and things like that. But that's prognostication. We do know that that's what the consumer's saying they want. And we do know that's the beauty of some of the AI abilities. It's enabling these technologies very quickly and that's why we're trying to get ahead of it," he said.



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Presentation



Future of EV Charging

Renger asked about projections for how much charging will take place away from home in the future, referencing that she has heard as much as 75% of charging is done at home. Doenges suggested that level 2 charging will become saturated and that the charging culture will shift towards a “top-off” model, like cell phone charging. He noted that data from Tesla suggests that even those with home charging still use DC fast chargers multiple times per month.

Doenges also intimated that while highway charging will require more DC fast charging, there will be a growing need for DC fast charging as an anchor for large multi-unit dwellings. He indicated that the uptake of EVs will be slower among apartment residents because they tend to be a lower income demographic. He notes that higher income correlates with the propensity to purchase and drive EVs because higher income drivers are more likely to have a garage with home charging. In Normandeau’s experience, he said he sees that condos are interested in setting up charging, though they have to get “creative at times” on funding.

Previous Vision Groups have examined EV charging in convenience retailing that you may find of interest:

CTVG Road to EV Charging Infrastructure, July 2023

CLVG The Business Case for EV Charging: Is It for You? March 2023

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In The Room With evVG

Presentation

Economics of EV Charging and Convenience Stores

Austin steered the conversation toward the economics of EV charging and the role of convenience stores, recalling within Doenges' presentation that at 40 or more cents per kilowatt-hour, EVs can be more expensive per mile than gas. Doenges said that it is difficult to get a good ROI on selling the electrons themselves, hence the focus on retail integration.

From his retailer perspective, Healey reiterated that although EV customers spend more than gasoline customers, there are also fewer of them, so businesses must factor that into their property planning. He also shared their experience seeking grant funding in Massachusetts where they found the utility company funding to be more flexible than NEVI funding. "The programs were very attractive, 80% up to a hundred percent of the overall project costs", Healy said. He also noted that they needed to put a project in Maine on hold for 90 days to see how the NEVI funding situation plays out.

EV Charging Infrastructure

The group also discussed EV charging infrastructure, with Austin mentioning the need to future-proof charging infrastructure as the technology evolves. Doenges noted that retrofitting a site for EV charging is as much as 80% more expensive than incorporating it during the initial build. He stressed the importance of planning for traffic flow around charging stations.

Turning toward charging equipment, there was some confusion raised by Normandeau between the two NACS acronyms being discussed. Doenges clarified that the organization for which he works is NACS, standing for National Association of Convenience Stores, and the other NACS is the North American Charging Standard. The equipment NACS is now known as J3400, or the Tesla connector, and that harmonization around one connector will be a boon to the NACS-related convenience industry. He noted that switching to the J3400 standard with an adapter for everything else would exponentially increase the market share.



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EV Infrastructure Development

The discussion also covered the role of investor-owned utilities in the EV charging market. **Jay Smith**, Executive Director, Charge Ahead Partnership, suggested that “large scale investment in utilities can actually stunt the growth of the EV charging network because...that creates the disincentive for the gas stations, the retailers and a lot of the folks that are on the call now, to make those investments when they’re competing with that investor or utility.”

Schuster asked if California allows investor-owned utilities to own charging stations and Smith

confirmed that they do but are now hesitant to allow them to expand. Renger explained that the California Public Utilities Commission originally limited IOU (Investor-Owned Utility) investment in transportation electrification to situations where the private sector was not meeting the demonstrated need. She also noted that a recent shift away from IOU investment was driven more by affordability concerns than by concerns about shutting out the private sector. Normandeau queried if there is data to back up the idea that investor-owned chargers are disincentivizing others, and Smith said that many retailers are hesitant to invest if they fear competition from a utility charging station across the street

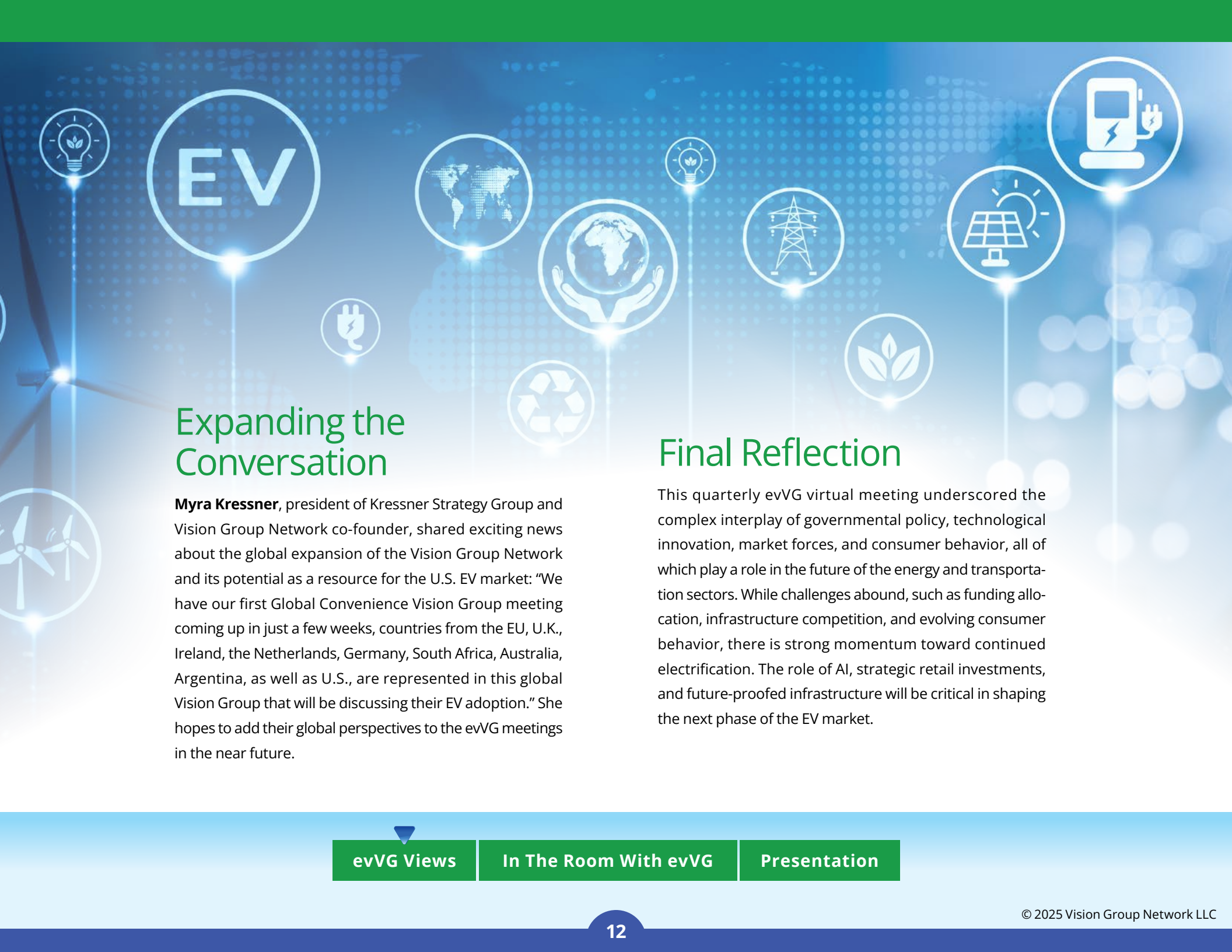
“ Maybe [California was] a little bit too aggressive and it actually stunted our gas stations, retailers, convenience stores...from getting into that business. So there’s the other side. It’s almost like states have to decide which route do you want to go? Do you want to go with investors and utilities taking care of this, or do you want to go with retail and the private side doing it?

***Jay Smith**, Executive Director,
Charge Ahead Partnership*

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Presentation



Expanding the Conversation

Myra Kressner, president of Kressner Strategy Group and Vision Group Network co-founder, shared exciting news about the global expansion of the Vision Group Network and its potential as a resource for the U.S. EV market: “We have our first Global Convenience Vision Group meeting coming up in just a few weeks, countries from the EU, U.K., Ireland, the Netherlands, Germany, South Africa, Australia, Argentina, as well as U.S., are represented in this global Vision Group that will be discussing their EV adoption.” She hopes to add their global perspectives to the evVG meetings in the near future.

Final Reflection

This quarterly evVG virtual meeting underscored the complex interplay of governmental policy, technological innovation, market forces, and consumer behavior, all of which play a role in the future of the energy and transportation sectors. While challenges abound, such as funding allocation, infrastructure competition, and evolving consumer behavior, there is strong momentum toward continued electrification. The role of AI, strategic retail investments, and future-proofed infrastructure will be critical in shaping the next phase of the EV market.

▼
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Presentation

NOTABLE AND QUOTABLE

“ We have debates about how we lay out the EV charging stations. When you go around and see the charging stations, they're all penned-in parking spaces and the motor fuel customers have more convenient access into these drive-through islands with well-lit canopy protection from precipitation. We're trying to implement that more, but it's just an ongoing struggle in our business on how to lay out everything on the site when you've got limited property area. **Tom Healey**, VP of Facilities, Nouria Energy Corporation

“ Those on the retailer side, what I hear is they're looking for a competitive environment, they're used to competition. They're used to gas stations across from each other and they compete with amenities and who has the cleaner bathroom and who has the better price of gas by a penny. They're used to that competition, but they're hesitant to invest and staying away from investment where they can't have that level playing field. **Jay Smith**, Executive Director, Charge Ahead Partnership

“ We're finding condos are very interested in pursuing charging solutions at their multifamily buildings, so it's not something that's impossible. Sure, you have to get creative at times, but there's certainly solutions out there and opportunities to install charging equipment. **Chris Normandeau**, Director, FirstService Energy,

“ If we were to completely adopt the 2035 Sunset [only allowing EVs to be sold] and just have all EVs at that point, by the time you get to 2050, we're still only looking at 60% of the vehicles being EVs and 40% being internal combustion engines. **Karl Doenges**, Executive Director, Charging Analytics Program, Transportation Energy Institute (TEI)

“ I think that there's still a place in convenience and QSR and other people for top-off charging and it doesn't need to all be very expensive. DC fast charging - that too though will get commoditized, and the price will come down and we're already seeing that and we're seeing a lot of consolidation in the market. We're seeing a lot of the bigger players like Siemens and LG and companies like that jumping into the fray. So charging is a concern with drivers. That's a factual correct statement, but I think there's a lot more that can be done that's not as expensive that we just need that chicken and egg dynamic to go away and we just need more vehicle population out there. **Karl Doenges**, Executive Director, Charging Analytics Program, Transportation Energy Institute (TEI)

“ I think we've mentioned when EVs first came out, you had 50 kilowatt chargers or maybe you had level 2 chargers. Now we have higher powers and the plugs - we're in the midst of a plug changeover -and then even the way that people are charging is going to change or adapt. I think that when you have higher range, you might not be staying for as long just because you only need a few miles to get home or get to your destination. **Mike Austin**, Executive Editor, Road and Track Magazine

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Presentation

VALUABLE RESOURCES

The quantity of materials on this topic would make for an insurmountable pile. To help you navigate through the masses, here are resources worthy of making your must-read list.



Mike Austin, Road and Track Magazine

We're already seeing the Trump administration take aim at EVs, with California's ZEV mandate up for review and approval

by Congress as reported by [Reuters](#). I find it interesting that the article states, "California's rules require 35% of vehicles in the 2026 model year to be a zero-emission model - a figure automakers say is impossible to meet given current sales." The market share for ZEVs in California in 2025 was 25.3%, according to the [California Energy Commission](#), so 35% might be a stretch but it's not entirely out of touch with reality.

Assuming the mandate gets struck down, we'll see how much momentum BEVs have on their own in California and the other states that adopted the rule. We saw from Karl Doenges's presentation in this meeting that only one third of new BEV sales used the federal tax credit. That, paired with the fact that BEVs are outpacing the overall market, suggests that they are competitive with internal-

combustion vehicles in several segments. The resistance to the rule by automakers is no surprise – historically automakers resist any manner of increased efficiency, especially ones that increase cost – but seems short-sighted given the looming (if distant) threat of affordable Chinese models finding their way to the U.S. market.



Myra Kressner, Vision Group Network Co-Founder

Reported in February 13, 2025, [Road & Track](#), "Going forward, EV owners would be charged a one-time \$1,000 fee at purchase

under the proposed rules. Senator Deb Fischer (R-NE) explained that this fee would recoup around 10 years' worth of federal gas tax revenue per car. Federal gas taxes, which were first imposed under the Hoover administration in 1932, are almost exclusively used to maintain and repair roads. The same is true for many states around the country — which poses a future funding problem for

transportation agencies as EV adoption increases and gas tax revenue decreases. 'EVs can weigh up to three times as much as gas-powered cars, creating more wear and tear on our roads and bridges,' Fischer said."



Roy Strasburger, Vision Group Network Co-Founder

This evVG meeting addressing the fluid nature of the current EV landscape did a great job of separating some of the wheat

from the chaff. Karl provided his insight in telling us what was actually happening rather than what is just being said. One of my key takeaways from Karl's presentation is that the growth of EVs in the U.S. is not going to stop – it is just going to slow down. That is exactly what this article/podcast from [Texas Public Radio](#) explores. It points out that the Executive Orders that have been issued won't have an impact on programs and funds currently in place. It also makes a point that U.S. car manufacturers are asking the government to provide a stable marketplace so that they can grow their businesses. It's an interesting quick read and I recommend you have a look or listen.

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Mike Austin
evVG Facilitator and
Executive Editor, Road and
Track Magazine



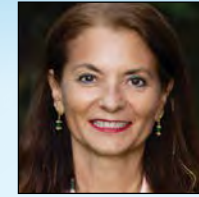
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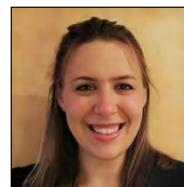
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In The Room With evVG

Presentation

IN THE ROOM WITH evVG:

*The Changing EV Policy Landscape:
How Does It Affect You?*



Electric Vehicles Vision Group (evVG) invites you to join us **In The Room** to experience our meeting on February 5, 2025. We are providing you with the entire conversation so that you can be “in the room” with us, rather than simply reading polished sound bites.



evVG Views

In The Room With evVG

Presentation

Agenda

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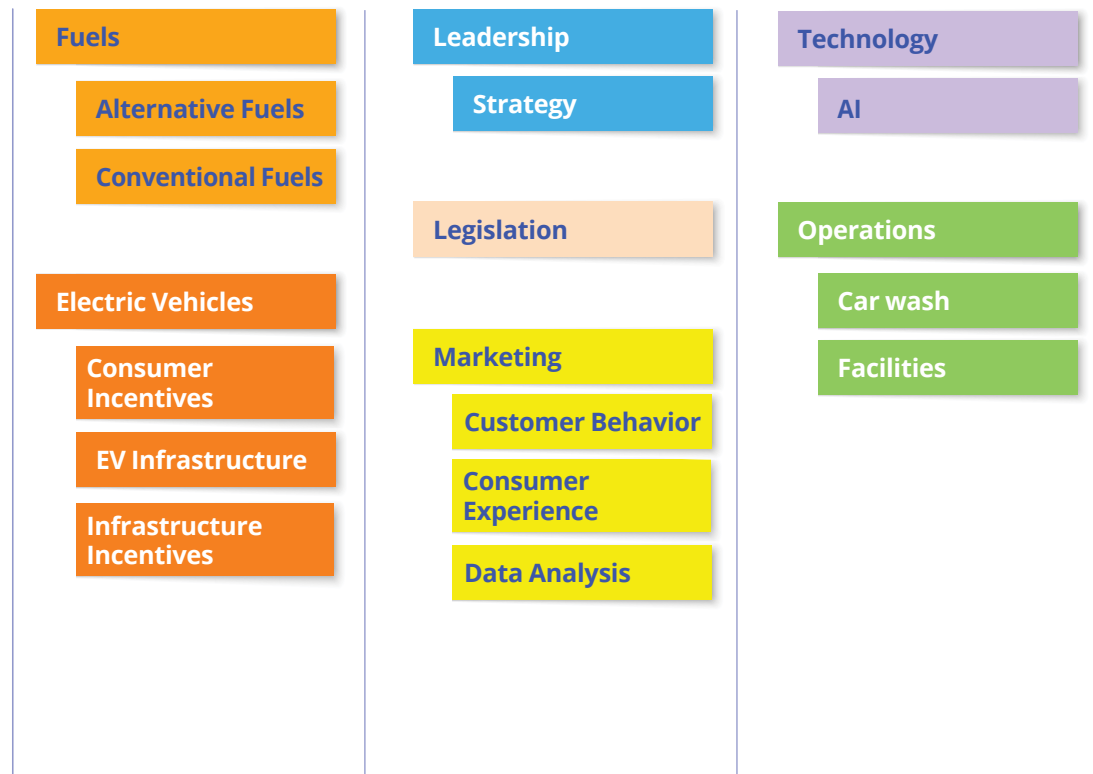
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In The Room With evVG

Presentation

Topic Reference Key

evVG's mission is to increase the institutional knowledge of the retail industry by sharing ideas and perspectives. For your convenience, we have placed topic indicators throughout the dialogue. Below is a key to the list of topics.



Welcome, Introductions, Meeting Rules



Nathan Niese

Welcome Karl [Doenges] and welcome back to everyone. Good to see some familiar faces from last time as well as some new ones, and we'll do some introductions here shortly after a bit of housekeeping as we do to open up every meeting. This is the antitrust statement and publication acknowledgement [Publications and Antitrust Statement shown on screen] that everyone has signed. This is a reminder that we have an antitrust policy in place for this group and you've agreed to release the discussion topics here in the Vision Report. And also what is being discussed here today will be recorded, will be synthesized and available for your review before it is then ultimately published.

We ask you as a part of today's discussion to keep your mics on mute, leave your cameras on, and then raise your hand or other ways to flag. Mike and I will help facilitate the discussion to ensure that we can have all voices heard and do so in a manner that keeps things organized. I know last time we used chat quite a bit and that was helpful in terms of keeping the conversation going, but I've also been encouraged to have us ensure that we're sharing that so that we capture those comments versus only being in the chat. And so I don't want to say let's not use it, but let's, if we could, find ways to say what's in the chat and ensure that the conversation is able to bring that in. Roy, so you have your hand up?



Roy Strasburger

Nathan, if I can just add - in regard to the recording and the transcript, if you have anything that you want to say that's off the record, please go ahead and let us know. You can say that it is off the record either before you say something or you can say that after you said something and you realize it should be off the record, just let us know and then we will make sure that that does not get in the publication.

Nathan Niese

Thanks for that. Okay. So, if no other opening comments, we'd love to do introductions now. Instead of doing long-form introductions that we did in our first time together, would ask those that are repeat joiners, for the benefit of those who are new, just to say your name and your organization. And then if you are new, and this is your first time attending this, which there are, I think a couple, would ask you to then do the same in terms of your name, your organization, but also your title and what your favorite background is that you like to use when you're on these fun virtual calls just as a fun way to get us to know a little bit about you. Happy to call names I guess, and that might be the easiest way just to go about it. So hi Kate, welcome back. Do you mind reintroducing yourself?

evVG Views

In The Room With evVG

Presentation



Kate Wright

Sure. I'm Kate Wright. I'm the executive director of Climate Mayors. We work with 350 mayors across the United States and have made some big commitments around electric vehicles. As you can see, my favorite background is pretty boring on this application anyway, but normally, I will have a city background.



Nathan Niese

Next on my screen is Karl, which we'll do a longer introduction for, but if you just want to show yourself on the screen and say hello to start with.



Karl Doenges

Hi there. I'm Karl Doenges with TEI, Transportation Energy Institute and the National Association of Convenience Stores. And my background scene is where we have a house in Sanibel Island.



Nathan Niese

Over to you Chris.



Chris Normandeau

Chris Normandeau with FirstService Energy. It's a division of FirstService Residential who helps the condos and HOAs that are managed by FirstService Residential make informed decisions about electricity, energy sustainability, and assets.



Nathan Niese

Tom.



Tom Healey

Okay, good to see everybody again. Tom Healey. I'm the VP of facilities and development at Nouria Energy. We're a convenience store and a fuel retailer. We operate about 170 stores up in the Northeast and 65 car washes and soon to have a major presence down in the Southeast with an upcoming acquisition. And my favorite background is Karl's [of Sanibel Island].



Nathan Niese

Over to you, Laura, please.



Laura Renger

Hi, I'm Laura Renger. I'm the executive director of the California Electric Transportation Coalition. This is my first meeting. Thanks for having me. And CalETC is a coalition of utilities, automakers and EV/SE providers (also Electric Vehicles Service Providers -EVSPs) that lobbies on behalf of accelerating the transportation electrification movement, if you will. And this is one of my favorite backgrounds. This one is Huntington Beach. I was having dinner last year. I just thought the colors were so pretty. So it's fun seeing everybody's backgrounds.



Nathan Niese

No cold ones until we get to Bonnie from what I can tell based on looking on the screen here. Over to you Jay.



Jay Smith

Hi, I am Jay Smith, executive director of Charge Ahead Partnership, and we work with everybody in the supply chain who are trying to expand EV charging. And usually that involves helping to break down some of the barriers that retailers have

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Presentation

in terms of getting into the market. I've never used an artificial background. This is a blurred image of my real office at work, so nothing exciting.



Nathan Niese

Hi, Deb. Welcome back. Your turn.

Deb Peck Kelleher

Thanks. I'm Deb Peck Kelleher. I'm the deputy director at the Alliance for Clean Energy New York, and we're the voice for clean energy in New York State. We represent mainly large-scale renewable developers, but we also have members who work in the transportation electrification space. And I'm going to have to say that my typical one that I use is a blurred background, but probably not my favorite background.



Nathan Niese

Hi Bonnie.

Bonnie Trowbridge

Good afternoon, everyone. I'm Bonnie Trowbridge. I'm the executive director for Drive Clean Colorado. That's my background. I can't guarantee that this background was taken. I don't even know if it's a real picture, but anyway, I like it. And Snowy Peaks here in Colorado are a good thing. So, Drive Clean Colorado is focused on supporting good decisions by fleets and others in their clean transportation efforts. So we do all kinds of things like coaching for grants and coaching for deployment. And we work with everyone from individuals and consumers all the way through large fleets. And it's an interesting story all along with me.



Nathan Niese

Kim, please.

Kim Okafor

Hi, my name is Kim Okafor. I am the general manager of Growth Initiatives at Love's Truck Stops and Travel Centers. For us, that includes the build-out of our EV charging stations. I get to work with a team that applies for NEVI and is building out just our EV charging business. I don't know if it's my favorite background. The background I'm using now is our trade floor. So these are actual people doing actual work.



Nathan Niese

Srijata.

Srijata Chattopadhyay

Hi, my name is Srijata Chattopadhyay. I run the charging business at Shell. Shell has 4,000 chargers located at destinations, so retail centers and so forth, as well as Shell gas stations across the U.S. Since this is my first meeting, I will give a little bit of background too because Shell is Shell and EV charging is a very small portion of Shell, but I've been in renewables for 10 years. I spent many years at Tesla and then I spent a number of years in Google's renewables portfolio. So, I've done everything from generating asset deployment, offtake grid services, EVs obviously, product design, all sort of across the

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board in this space. So, I'm excited to join you guys here today. Unfortunately, I am in a conference today and I'm expected on stage in about 15 minutes and so I will have to drop, but I was really keen to come and at least meet you all and see your faces this time around.

Nathan Niese

Great to have you. And thanks for even joining for the 15 minutes. I guess the remainder then are the folks from the Vision Group team, perhaps quick introductions.

Roy Strasburger

Sure. Hi, I'm Roy Strasburger. I've been in contact with most of you and I'm one of the founders of Vision Group Network and also a CEO of a company called StrasGlobal. We used to be in the convenience store business. We really appreciate everybody being here. The blank screens that you see at the moment are other members of the VGN team. They're part of our production team that helps put our Vision Report out, as well as Karen Thrift, who is our administrator, who you've probably also heard from as well. So those are the folks that are currently not showing, but we really appreciate you all being on. Especially the new folks - welcome. What's really gratifying is that we have the people coming back from the last meeting, which indicates that the meeting must have been pretty good. So we're really pleased about having everybody here. So thank you.



Eva Strasburger

And I'll say a quick hello. I am married to Roy, or he's married to me and I'm also one of the co-founders of the Vision Group. And basically, his bio for the last so many years is the same as mine. We're usually on the road, but we happen to be back home at the moment. So our background always changes. We're just at our house in Texas, in Austin. Myra?



Myra Kressner

Yes, this is Myra Kressner. I am not part of the Strasburger family, but I've known them for many years. I've been in the convenience mobility industry, primarily on the media side for over, oh gosh, 40 years. And so I have Kressner Strategy Group, which has been advising folks in this industry for about 10 years now after selling the media business. And I am also a co-founder of Vision Group Network and just delighted to see all the faces on the call today. And yes, thank you Nathan, Mike, and then Karl for your presentation coming up.

Nathan Niese

And it's taken 15 minutes before introducing my co-facilitator here. So Mike, if you want to do that. And then I think we'll wrap up the introductions from there.



Mike Austin

Yes. And happy to be as much of a background player in this as well. But I'm Mike Austin, I'm executive editor at Road & Track. I'm a long-time automotive journalist with a technical background and I came to know the Vision Group Network

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Nathan Niese

actually during a brief stint as an analyst. So I've been an automotive fan my whole life and I'm fascinated by all of the different developments of it. And I'm glad to be here.

And I guess I should round things out with myself, which for those that I haven't met before, Nathan Niese with the Boston Consulting Group, I lead our electric vehicle energy storage topic. So with that, I'd say I'll spend two minutes just recapping what we discussed last time so that way we can enter this conversation with that in mind. And then for those that haven't had a chance to see that first report can at least be on the same page here. And then we'll hand things over for an introduction to Karl and his presentation. When we met last, it was the middle of November, so we were coming off of the election, we were taking stock of what had been then 10- or 11- months' worth of data on what 2024 had held in terms of EV adoption. And so we spent a lot of our time wrestling with what uncertainty was new and created as a part of that, versus what we thought were more of the medium and long-term signals that would continue to drive EV adoption in a broader ecosystem. So, I thought we had a really nice conversation there.

And then we spent a good portion of the time outlining what we thought would make this group's conversations most helpful in terms of topics that were of interest, policy uncertainty in terms of EV adoption, but also in terms of NEVI funding and other things which we know are already being actioned against with the new administration. And then topics related to economics of EV charging stations, makeshifts, misinformation among drivers and those using charging systems. So a very robust set of topics that there's a very strong interest for us to continue to lead into different conversations. And you'll continue to hear from us as we plan out the sessions, and how we try to put specific themes in place against each one of those. But we have Karl here with us today. And I think Roy, you wanted to give Karl's introduction and why we selected him as the right person to be with us here in February.

The Presentation

Roy Strasburger

There's no way I can do Karl justice, but I will try to do so. Karl Doenges is currently with the Transportation Energy Institute (TEI), which is part of the policy and analysis group that is co-joined with NACS, the National Association of Convenience Stores. Karl's been involved in various components of the retail, fuel, and transportation sectors for many years. He's a fellow Texan living just north of where Eva and I live. One of the reasons we've asked him to join us is that part of his current beat is watching the development of EVs and the energy sector with a focus on what's happening on Capitol Hill, as well as across the industry.

Karl keeps a very broad view on the industry and knows the nuances of how the business is developing and how the programs are developing. We're really excited about having him with us today. Karl, if you want to expand a little bit more on your background, that'd be great, but I think we're going to be in for a lively discussion. After Karl finishes, our usual program is to have quite a bit of time for question and answers and just general discussion. Karl then answers any questions you might have and he'll also contribute to our conversation about anything that you guys want to talk about. So without any further ado, I will introduce Karl. Karl, the stage is yours.

Karl Doenges

All right. And this is a conversation, it's always more fun if people jump in, if they have any questions or anything. So please feel free to do that.

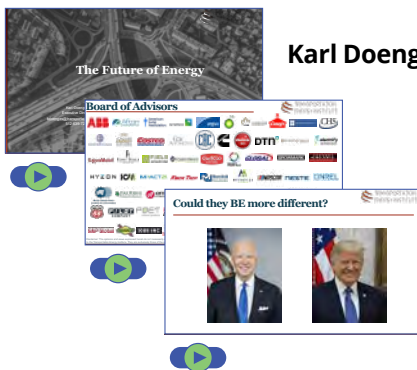
Mike Austin

Before Karl starts, I'm just going to say if you put something in the chat, I'll keep an eye on it as well and pipe up if you don't have the chance or don't want to be that bold.

Karl Doenges

Just to give you guys some quick insight. Roy did a very good job explaining, but TEI is an offshoot of the National Association of Convenience Stores really tasked with analysis, research, white papers, insights, analytic programs, and you can see here's a couple of the people that are on our board just as background.

I'm going to go through not just where we are, what's happening under the new administration, but I'm also going to kind of delve into what's been happening in the past administration, what has been put in place and what are some of the dynamics of the fuel industry that people haven't really jumped into and assessed properly. And to really look where things are going. And then after looking at that, that'll lay the foundation for moving into, okay, what's happening with the new administration and where is that possibly going?



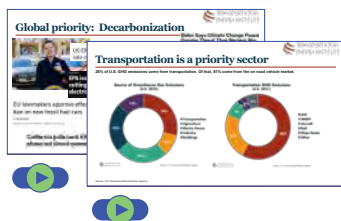
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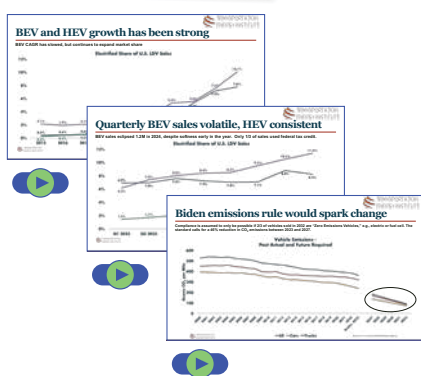


Strategy



Legislation

Data Analysis



Electric Vehicles

So, I'm going to state the obvious to everyone here. I'm sure you all know this, but the U.S. government is designed to move very slowly. It's a lot of checks and balances and a lot of nuance, and we'll get into some of that, but it's on purpose, difficult, slow, and frustrating at times.

So diving into where we've been, obviously the focus in the past administration was really on **decarbonization and I would argue decarbonization with the goal of deploying the transportation sector via electrification** and then on the backside **upgrading the grid** in a reactive way as a lagging side of it to renewables. That was the goal of the last administration. And you can see the headlines here.

Why transportation? It's because it represents a big chunk of greenhouse gas emissions, and it is the most easily controlled by the government with **policy levers**. So **28% of the US greenhouse gas emissions come from transportation**. And of that 28%, 81% of it is from on-road vehicles. That's why there's such a heavy focus on transportation.

We're looking at the trend line here. Contrary to what's in the news and everything, **EVs are still growing**, hybrids are still growing, even the plug-in platform is growing, but it's not to the same extent of the two. And this is looking at a share of light duty vehicle sales, not just raw sales numbers because that's what we usually look at.

If you look at the quarterly, you can see a little more nuance and a little more movement. And while there's a little bit more volatility, the trend line is still up with the exception of the plug-in, which is a little flatter, but with the straight-up hybrids and the battery electric vehicles, the trend line is still growing.

If we were to deploy the Biden administration's rules structure, the formal line from TEI is that we say the only way you could really mathematically look at it, and this is with a lot of our members, S&P and Accenture and a lot of people kicking in their two cents, but it'd have to be electric or **fuel cell**. For me, fuel cell is and always will be the **technology of the future**. So it really is electric if you wanted to respond and do what they laid out. So it is not an EV mandate, but it does de facto kind of push you towards electrification to get there.

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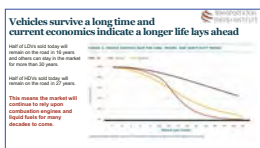
Presentation



Legislation



Data Analysis



Let's see, moving on. This is a broader view of what's been put into place, and this is an important slide because a lot of the people that manufacture vehicles are multinational corporations. And while the United States is certainly a big and important market, they're not the only market and it's very difficult to have complete bespoke options just for each market. And so if many of the other markets continue to push fuel efficiency or electrification, that has an impact on what happens in the United States regardless of what the administration does. And that's something that needs to be considered.

In the middle section, you can see what we've done in just the United States with **some of the bans** on combustion vehicles for the states that have adopted the LCFS (Low Carbon Fuel Standard), the California LCFS standard. We're going to get into a little bit of that and how the administration is going to target that, but that is against a mitigating factor towards for what is the effect of removing some of these incentives and guidelines.

So moving on here, just a quick snapshot of the states that have adopted California's low-carbon, zero-emission vehicle rules. So the first thing I want to get into when I give a reality check is EVs are a significant portion of the industry. And when you're selling fuel to customers, you have to pay attention to it, but it's not some drastic thing that's coming onto us and it's going to displace everyone. And that's for two reasons. Even if you look at this, we did this on the back of a cocktail napkin, literally, and you look at this and it's like even if we were to completely adopt the 2035 Sunset and just have all EVs at that point, by the time you get to **2050**, we're still only looking at **60% of the vehicles being EVs** and 40% being internal combustion engines. So it's important to put this into context, and there's a lot of reasons for this, but one of the most significant reasons for this is turnover.

Editor's note: The 2035 Sunset is a reference to the 2035 Climate Change reduction target on greenhouse gas emissions of 45-50% below 2005 levels.

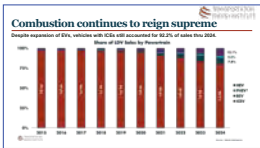
And this top left little paragraph here, half of light duty vehicles sold today will remain on the road in 16 years. And if it's a heavy-duty vehicle, those are customized for the specific function and they can be on the road for 30 years. So the market does not just simply get displaced and switch over to a new fuel source, it is a **slow process**. And so it's limited to what you can do. Doesn't mean it's still not a very appreciable part of your customer portfolio or the people you serve. And the other thing that's important to remember, it's not spread evenly across the United States.

I would say it's **concentrated in 16 states** in the United States, and so it's disproportionate in California, Texas, and Florida. It's something that people have to pay attention to much more, especially in more fluid urban areas and then less so in

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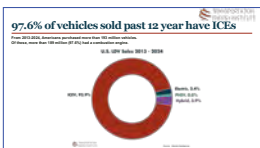
Presentation



Conventional Fuels

Alternative Fuels

Customer Behavior



other states. But if you're zooming out and looking at a snapshot, transitioning into a new drivetrain is not a quick and simple process. So there's a lot of forecasts, and I guess I'm dating myself with this slide here. Donald Rumsfeld, everyone loved him from the Iraq war. One of my favorite quotes was, "You've got your knowns, you've got your known unknowns, and then you got your unknown unknowns." And man, I personally have not put out a prediction that hasn't been wrong. The second it shoots out the door, something pops up that you don't know, COVID, Tesla's Model 3, the Volkswagen Dieselgate scandal, AI, all those things had a drastic effect on transportation and mobility and you just don't know. And so, you have to take these predictions and projections with a grain of salt.

Editor's note: Dieselgate scandal – Major emissions scandal - began in 2015 when the EPA discovered that VW had intentionally programmed diesel engines to cheat emissions tests.

That being said, you also have to make plans. So it's a hard job.

And so when we look at this, right now, it looks like we're going back to 2015, all the way through last year, more than **92%** of the vehicles are still **internal combustion engines**. Overlaying that, the fact that half of them will still be on the road in 16 years, we have to pay attention to it. So that's why at TEI, we do place a great deal of focus on looking at **biofuels and renewable diesel**, renewable gasoline and things like that because if you want to decarbonize, we have to look at that because we do have this legacy fleet that we have to deal with That all being said, EVs are encroaching into the fuel space, but not as much as fuel efficiency. The **fuel efficiency standards** have a much greater impact on our decline in fuel consumption than EVs, but EVs still take a bite at it.

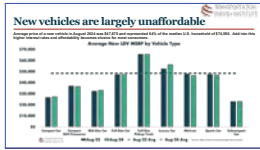
However, EVs are growing at a faster rate, and EVs do represent a demographic group that spends quite a bit, especially in convenience stores. The latest number we saw through one of the credit card companies that shared their data with us for a **gasoline customer was \$6** and something cents for the **average spend**. And the average spend when they looked at this last year for the **EV customer was \$11**. And in our analytics platform that we have over at TEI, we've deduced that it really strongly correlated with just the amount of time someone spends at a charger and they don't want to sit there and do nothing for 25 to 40 minutes. And so, this does have an impact on sales. And by not addressing it completely, you are leaving money on the table because this demographic group does spend money in a store. And that's an important part of the return on investment when you're putting in EV charging.

Internal Combustion Engines are still a large chunk. **Turnover is going to be slow**. We still have to address the current fleet.

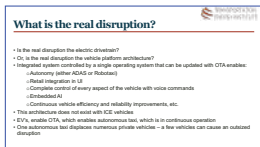
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Presentation



Data Analysis



Technology

AI

But I'm going to bring in something that's going to look at EVs and mobility, but I'm going to come at it from a different angle here. What else is driving this issue of turnover or lack of turnover? Expensive. Vehicles have gotten much more expensive. And of that, the full-size pickup truck is hands down the largest segment, and it is the most expensive segment. And there's a **direct correlation between when the price goes up, the pace at which people buy vehicles goes down**. And it has just not come down from the tightness in the market, or not much, during the COVID years.

Coupled with that, look at this. This is the average car payment. It's gone up 27% in the last three years. And you juxtapose that with, I'll say the used car one is up about 26%. And you compare that \$769, heck, the rent at an apartment was \$1,517. So, it's a big chunk of people's monthly payments. And so, it has really made it difficult and a lot of people are underwater from rolling one loan into the next loan.

Here's the chart I told you about earlier that just shows the correlation between higher prices and lower sales, which doesn't take a rocket scientist to figure out. But why else? And I'll bring all this together in a second. What else is driving this slow pace of change, besides the vehicles are expensive, people aren't buying new vehicles as often. And we're seeing the vehicle sales slowdown, which means used vehicles are staying on the road longer, which makes turnover slower.

Another thing that we're going to look at here in a second is, what are people doing with the internal combustion engine? And when you look at this, they sit idle 95% of the time. And I believe the statistics are really closer to 96%. They're not even being utilized.

So, why am I bringing all this up? Because it's going to go contrary to my previous statement of EVs are not going to displace anything very quickly because we have this legacy fleet. So, this gets into my Donald Rumsfeld. Be wary of my predictions here. What is the real disruption here? Is the real disruption the electric drivetrain? There are certainly some advancements in that that are superior to the internal combustion engine. There are also a couple disadvantages, especially if you've ever done a long road trip with an EV and had to charge for a while.

I believe the real disruption is really in the vehicle **platform architecture**, which is a confluence of several things. And if you need help sleeping, I can go into great detail on this. It's not sexy, but it's really important. And what I mean by that is if you look at an EV, it has an **integrated controlled system**, it's controlled by one single operating system.

And in order to upgrade this to make advancements on it, they've perfected over-the-air software updates. That is the key, OTA, **over-the-air software updates**.

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Not everyone has been able to do it. Tesla can do it, Rivian can do it. One of the Chinese companies is getting close to it. We saw a Volkswagen CEO get fired because of their inability to do this, and probably some other reasons as well. But OEMs (Original Equipment Manufacturers) have really seriously struggled with this. We've seen some of the companies partially be able to do it with an infotainment system, but no one's been able to really go deep from top to bottom architecture and control the vehicle with a single operating system. And be able to update that operating system just like your iPhone over-the-air.

That is a critical feature. And it's that critical feature that enables autonomy. And that could either be hands-free driving on the highway, or all the way up to a completely unmanned, on-demand taxi-type dynamic. Retail integration into the user interface, being able to control every aspect of the car. Changing the suspension, all kinds of different things, checking your tire pressure all with voice commands and setting your windshield wipers with your voice. Doing all those things which become more and more important when you drive without your hands.

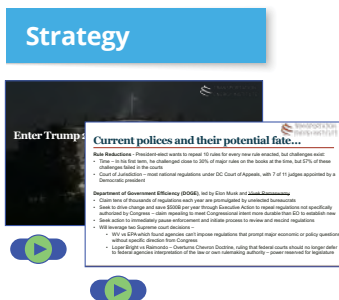
Embedded AI, that is just beginning. All the search functions and being able to have a conversation with your car. And having it look up things and tell you things about where you're going and what you're doing and all that. And then the continuous improvements in the vehicle from an efficiency and reliability standard. If there's a problem that the NTSB finds or something, or they want you to fix something, you don't have to bring it into a shop, you just fix it over the air.

All those things are made [possible] by OTA. OTA is necessary to be able to enable those functions. And this architecture simply does not exist with the internal combustion engine. EVs enable over-the-air software updates, some of them, not all the EVs. And this enables the autonomous taxi system, which is in continuous operation, versus a privately held vehicle which is sitting idle 95% of the time so one autonomous taxi or vehicle that can be utilized in that capacity displaces numerous private vehicles. So, this is the one caveat.

And mind you, we're years away from this. This is not something that's right down the road. But when you're trying to make **long-term infrastructure plans**, you have to look years down the road. A few vehicles can cause an outsized disruption under this kind of dynamic. And so, it's something that's worth watching. And that gets into some of the policy discussions that we're going to look at here in a little bit.

So, that lays the foundation for looking at this. And here we go, Trump 2.0. And I'm going to do this pretty abbreviated. If you want to get more detail, I wrote an article that was in the NACS Magazine about this. And most of it is still relevant. Some of that has been, it's been a very fast news cycle. So some of that is no longer fresh, but most of it is still there.

AI



Legislation

So, we'll start with the **rules reductions. The President wants to repeal 10 rules for every new one** that was enacted. But we already talked about this. Challenges exist, government moves slowly. And I'll give you an example. In the first administration, he challenged about 30% of the major rules on the books. And 57% of these failed in the courts. And the reason for that is that the court of jurisdiction for most of these regulations is under the DC Court of Appeals. And seven of those 11 judges were appointed by Democratic presidents. So, it is very difficult to do everything you want to do. The system is designed not to move fast, and the system is designed for checks and balances.

And then we're going to look at DOGE (Department of Government Efficiency). It used to be Musk and Ramaswamy. I believe Ramaswamy's running for governor of Ohio, so now that is just Elon Musk. Skipping to that, their goal is to get to \$500 billion in savings through executive actions, just by repealing regulations that they believe are not specifically authorized by Congress. And the goal here is they claim that – and there's a reason why they use this language, and you'll see that in the two court cases – they claim repealing it to meet the congressional intent is what they're trying to do, which is much more durable than just giving an executive order.

Why is the intent of Congress important? Well, if you look at these **two court cases**, West Virginia versus EPA found that agencies can't impose regulations that prompt major or economic policy change without **specific direction from Congress**. And then on top of that is the Loper versus Raimondo ruling, which is also really called the Chevron Doctrine, that federal courts should no longer defer to federal agency interpretation of the law or their own rulemaking authority. And that **power is reserved for legislators**. And then there's another case that says you can't frustrate the intention of Congress. And I believe I have that quoted somewhere down here later.

So as everyone knows, we've already withdrawn from the Paris Climate Agreement, as was done in the first Trump Administration. Let's see, a lot of the majors have said they'd stipulate they do not agree with this and especially multinationals like ExxonMobil because they are subject to numerous jurisdictions around the globe that do require this and are still signatories to this accord. So, they have stated that they have to continue on with it.

The **CAFE standards**. This is going to be a very **significant battleground**. They did go after this the first time. It took them three years. And then when Biden came into office, it took him three years to undo this. So while nothing concrete has been done, I'd be willing to bet money that this will obviously be targeted again, that they will loosen the CAFE standards. But it's going to take time, so we'll have lots of notice. And it's not all bad because this gives people time to really adjust and kind of make the EVs and make the cars that people want. And kind of plan, if they're going to ignore this. It allows you to



Legislation

really adjust, as opposed to having an executive order that drops on you overnight. This is going to be slow and you'll get lots of notice.

Editor's note: *Cafe Standards: Corporate Average Fuel Economy Standards are regulations that set the average fuel efficiency of vehicles sold in the United States. The difference between EPA and CAFE standards: The Environmental Protection Agency (EPA) calculates average fuel economy levels and sets greenhouse gas emissions standards that accompany CAFE standards. CAFE standards aim to increase fuel efficiency in vehicles and reduce total energy consumption*

The big question out there, what we are waiting to see, which we have not heard anything on, is what's going to be happening with EV policy. Again, we don't know, and so there's still a lot of unknowns. We do know that when it comes to **the IRA (Infrastructure Incentive Act) that they are going to target it.** How successful they're going to be, I don't know. Because this was directly authorized by Congress, so it makes it very difficult to repeal. But when you go within that, you have to break it down into two different subgroups. **NEVI** (National Electric Vehicle Infrastructure) is a block grant going to states. A lot of it's already been allocated. Nothing is impossible, but boy, I don't see that one being repealed very easily. You can hold back unspent money, but you still have to follow Congress's intent of how the money was to be spent.

The **CFI** (Charging and Fuel Infrastructure) is different. The CFI is discretionary. That one, there's more latitude. Still not easy, but there is more latitude for them to target the CFI funds. The 1974 Impoundment Control Act was what I was speaking about earlier, where that is the president cannot ignore the congressional spending decision in favor of their own. And that will be the check.

So when you look at this and you read the tea leaves, some of the things that we've already heard by some of the people in the Trump Administration, that minerals and batteries are a national security issue, especially for big, large scale storage, battery energy storage systems. And so, there is a chance that some of the funding that's been allocated to large battery projects may not be touched. Because they still address the grid, which is still of concern in the Trump Administration because of all the server farms and AI that's being deployed, which vastly overshadows the energy consumption from electric vehicles.

Additionally, a lot of those sites are in red states. And that would ruffle some feathers, if they start shutting down some of those projects. So, it's not going to be as clean and simple as people think.

Infrastructure Incentives

Mike Austin

Real quick, Laura had a question there.

Laura Renger

Oh, thanks. Yes, just a quick question on the **distinction between CFI and NEVI**. I'd actually heard the opposite from somebody that was pretty critical in writing the Infrastructure Reduction Act. And what I was told was that the NEVI funds are advanced appropriations, and the CFI funds are contract authority. And that it would be really, really difficult for the federal government to roll back the CFI funds. So, I was curious.

Karl Doenges

Talking reallocating.

Laura Renger

Okay.

Karl Doenges

The first thing I said was that it's very difficult to repeal the IRA, which is what I'm assuming this person's saying. I don't see that being done. They're not going to claw back the money and it just disappears, or they can reallocate it for whatever they want. You **can do some reallocation** towards other things **that are within the intent of Congress**. And within that rubric it is easier to do the CFI because it's discretionary. But you still have to keep it within the designated intent that Congress stipulated. The problem with NEVI is that they are block grants that have already been given to states. And once they've been given, it's almost impossible to get that back.

Legislation

Laura Renger

So, what would a CFI reallocation look like?

Karl Doenges

That's a great question.

Laura Renger

Because what would you do with it? You just take it from the blue states and give it to the red states?

Karl Doenges

I don't know. I doubt that. I think because they don't really choose, it's the companies that have to proffer up projects. I could see where it could be reallocated more towards critical minerals and battery technology, which is a broader need, and which they have stipulated as a national security issue over just EVs in particular.

Laura Renger

Okay. So, they could be...

Karl Doenges

Again, I get back to my Donald Rumsfeld comments. So this prediction is not very valuable. Who knows?

Kim Okafor

Wouldn't they also be able to **reallocate it to non-EV projects**, like probably CNG (Compressed Natural Gas), LNG (Liquified Natural Gas)? It seems like he's leaning more towards natural gas type energy sources as opposed to EV and hydrogen.

Karl Doenges

I do not know how the original intent of Congress is written.

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Kim Okafor

Oh, yeah. CFI allowed CNG.

Karl Doenges

So, if that were the case, that's certainly a possibility. I've heard comments from staffers about batteries. I have not heard anything else. But I don't think they've even begun to really peel back this one. And so it is possible, I just don't know one way or the other what they're going to do with it. So, did I answer that good enough? I know that was about as clear as mud, but...

Laura Renger

No, thank you. That was helpful.

Karl Doenges

All right. So **tariffs**, everyone's seen the news. Paused for Mexico and Canada, 10% on China. They have stated this is a **bargaining tactic** with the exception of items that they deem national security issues. So, the only way to read this one is to see what is the response of the governments in which they're dealing with.

A lot of the people in our EV council and of our board members that we meet with and talk to, that is their belief, that he's a deal maker, he is looking for a bargain and a deal. And that's the real purpose behind all this. Not to just use it as a revenue generation tool or something else that you see here on TV sometimes. So, we will see how that plays out.

Going back to the IRA issue, where it really sits right now is that the executive order gave direction to all the agency heads, that they had to, in 90 days, report back with a specific plan that addressed how they were going to change the **agency policy and programs** to be in line with his vision of the way it should be utilized. So what we really need to do is wait another 80-something, 70-something days. I can't remember exactly when that was. And we'll know a lot more on that front. So, that's really what we're waiting on to see what comes back and those reports that those agency heads are required to give 90 days after the executive order.

Something that we're going to see, this one's not a guess. They have been very transparent about this one. They are going to **go after California's independence** in doing their zero-emission vehicle. And they're going to try and repeal that. He tried to do it in the first term. It did divide the vehicle manufacturers. He was not successful. He's going to try again. The difference in which they're going at this time, from what I've been told, is that they are looking at the angle of federal authority. And that the zero-emission vehicle policy is targeted towards carbon and climate change, which is not emissions, which is a **local and state issue**. Climate is a global issue, thus under the purview of the federal government. And thus California does not have the authority to do this. It will be slow, it'll be tedious. It's going to have to work through the courts. Nothing's going to happen anytime soon, but they are going to try and repeal it.



Legislation

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If they repeal California, because of the way the regulation's written, the allowance is written, it will affect those other states that have opted in as well. That being said, we all saw that (California Governor Gavin) Newsom has called a special session of the legislature to prepare for how they can defend against these things. And I'm sure they will not sit there and do nothing. So a lot to be seen, but that's where the lay of the land is right now.

The last one I wanted to look at was **autonomy**. Not on a lot of people's radar, but the reason why I bring it up is that one of the things that's made it cumbersome to deploy autonomous technology with the two biggest would be Tesla and Waymo, but... I'm sorry, there's three of them. Drawing a blank all of a sudden. But they're having to go state by state by state. And it's difficult, and this really does make it hard to scale the technology. The Trump Administration, there are some rumblings that they could harmonize and federalize these standards, which might be a bipartisan thing. And even if the standards are a little more difficult, it could still speed up the deployment of the technology, just because they aren't working through 50 different regulations and 50 different groups. And they're focused in on one set of rules and it could simplify scaling. So, that is something to watch.

Myra Kressner

Nathan, did you want to jump in?

Nathan Niese

Yes. I had a clarifying question back to the tariff piece. It says we have the new **China tariff** in place, but wanted to understand, did the old tariffs still apply that were a hundred percent on EVs, the 50% to 25% on batteries? And so these are all just additive, as well as the software and hardware bans that the Biden administration put on China. Right?

So there's now many things being stacked on top of each other that are preventing a China ecosystem from serving the U.S.

Karl Doenges

Right. And I believe Trump and Xi are supposed to meet pretty soon. And if it's anything like Canada and Mexico and Panama, it is just an opening salvo in a negotiation. But my understanding is **not a single one of the tariffs that you discussed have been repealed**. They're all still in place.

Nathan Niese

Okay, thanks.

Karl Doenges

The signaling that we've received is that the EV ones will not be removed. The Trump Administration is very focused with campaign promises to Detroit and the Big Three, and they kind of see this as fighting for their turf. That's our projection. We shall see. And then on top of that, they've wanted to take it a step further and make sure that the Chinese subsidized

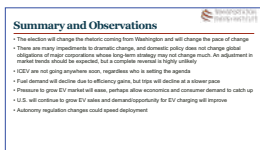
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Consumer Incentives



Electric Vehicles

parts or joint ventures that flow through Mexico don't also sneak around the system as well. So we don't know, but we believe that they will stay in place.

So, let's see. Something that we're going to do to keep track of the health of the EV industry is that at TEI we have our charging analytics program where we look at about 2.8 million charging sessions every month. That number's going to go up four X because we're going to be rolling in Canada and rolling in Tesla data pretty soon. But we're going to watch and see what the effect is.

It may not be as much as people realize. I have a slide somewhere in here. I can't remember where it is. But I think **less than a third of all the EV sales in the United States actually used the \$7,500 tax credit**, which floored me when I saw that. And I need to dig deeper and to see why in the world that is, which really makes me sit back and think, well, gee whiz, if that combined with Wright's law and scaling up battery production, which drops consistently over the last five, 10 years, drawn down prices of batteries, and other dynamics, and the regulations of Europe and other places, how much of impact is this really going to have on the EV industry?

I do think it'll slow things down, but I was very surprised that less than a third of vehicle sales actually used the tax credit. Which has got to be one of two things. They were either out of the income, allowable income range, or they were buying a vehicle that they wanted, and it just did not have the adequate buy America content, so it was not eligible. So, who knows? But it was a very interesting statistic.

But we are going to be watching this. The charging analytics program will be cranking out high level reports quarterly that are looking across the United States and across various states. And then we have more detailed reports that look into more detailed analysis of charging behaviors and causation and things like that. So, that'll be something that we can watch to see how this all unfolds.

My summary and observations, we are going to see a change in rhetoric obviously from the Biden administration to the Trump administration. But we do believe **it will change the pace of the EV growth, but it will not stop it**. What we suspect, we don't know, what we suspect is that this might be a slowdown, a pause, and then it could pick up, pick back up again. And some of that could be macroeconomic, some of that could just be waiting to see what the administration does. We shall see.

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Like we already discussed, there's many impediments to dramatic change. And just because the U.S. changes policy does not mean the rest of the world's going to change policy. And it doesn't mean that financial lenders will change policy. We did see a lot of the big banks pull out of the consortium that was going to attach ESG (Environmental, Social and Governance), which included some of the environmental attributes to their lending requirements. But just because they pulled out of the organization doesn't mean they're not going to stop with some of the pieces of that being in their loan programs.

All the legacy loans that have been put out there, the BlackRocks, the J.P. Morgans, and some of those larger institutions still have carbon reduction requirements in a lot of those loans. And those do not go away. Furthermore, you have a lot of boards and executives and corporate strategies that have clearly said, nope, they are continuing. And carbon reduction is still a priority for them, especially multinational corporations. Then we even see domestic companies like Costco say, "No, we're going to keep along our goals and targets. And we're not going to change." So, we don't know how much of a change this actually will cause just because of the Trump Administration... It's not going to be punitive, but they're going to pull back incentives. But will that really change things drastically? We don't know. Maybe not as much as people realize.

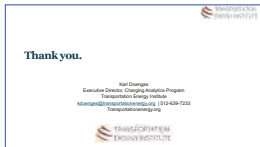
Conventional Fuels

So **internal combustion engine vehicles**, as we discussed, they're not going anywhere soon. Doesn't matter what the agenda is, who's setting it, we've got real economics and reality that are in play here. And when you have the statistic that after 16 years, half of the vehicles are still on the road in the light duty vehicle category, that does not bode for a quick change of anything. So, you can have a quick change in current sales numbers and percentage of vehicles that are EVs and sales. But when you look at the overall fuel mix, it's a much slower changing process.

The **fuel demand will decline** due to efficiency gains. We've seen it. That's going to continue. That is the biggest bite out of the apple, but the trips are not going to decline at the same pace. It's fuel efficiency that's driving down the drop in fuel consumption, not the number of trips. That will stay the same or even increase. There's a direct correlation between that and the price of fuel. Lower the price, the more people drive, the higher the price this slows down. But we will see a bite in the apple due to the fuel efficiency gains.

Electric Vehicles

The **pressure to grow the EV market** obviously is not going to be strong coming from this administration, like it was in the last one. And this will allow economics and consumer demand to catch up to where the balance is and where it should be. And to have a mix of vehicles that the consumer wants. And I didn't show this slide, but we did a breakdown of the types of vehicles that consumers really are looking for. And it's crossover utility vehicles and it's pickup trucks. And the mix of EVs that are out there are not adequately proportioned towards what the consumer really wants. And when you do get



it right, the Tesla Model Y, is the best-selling car in the world. So, they nailed it. And that is the kind of vehicle that people want and they don't necessarily want an ultra-compact light-duty sedan. They want those other types of vehicles. And maybe this will give time to shift into the vehicle categories that people really do want and for the prices to come down.

Autonomy regulation changes could speed up the deployment. That is something else that we think has a very real chance of happening.

The Discussion

Roy Strasburger

Thank you very much, Karl. That was excellent. So, to round out your presentation a little bit, where can people get hold of the CAP report that you say that comes out quarterly? And what other resources does TEI provide and how can people access those?

Data Analysis

Karl Doenges

Sure. We have the CAP program, **Charging Analytics Program**. We have several report levels. The broad-based reports that are put out there to track the health of the industry and really give guidance to a lot of the policymakers. That's something we publish for free. That comes out quarterly. I think our first one's going to come out next quarter. There are more granular reports that we put out, and then we have some people that pay for their own dashboard to get in there and they just want to go nuts and slice and dice, and they want to look at, instead of looking at the charging number of sessions and days of week and hours of when it all happens, they want to break it down by, was it a NACS (North American Charging System) connector or CCS (Combined Charging System) connector? They want to know is it a 200 kilowatt-hour charger, was it a smaller charger? And they want to know what the convenience space does compared to QSR, compared to grocer. And we have all those abilities to get in there and really break it down for the heavy power users that want to do that.

We do summarize some of that in some paid reports that we're going to put out, but they're not super cost-prohibitive. But we'll have some of that on the broad level for free that we're going to start publishing every quarter, starting next quarter. That's on the website.

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Roy Strasburger

So where do we find this? Give us an address or details.

Karl Doenges

The TEI website, Transportation Energy Institute website. And as you can see, we're a non-profit. I am not always in sales mode. But it's on the website, and on top of that, we have a phenomenal global survey we did across Europe, Canada, the United States where we tried to track expectations and analysis of site hosts, so people that own chargers, and then the driver. Of what worked, what hasn't worked, what's making money, what's not making money, what's causing problems, what are the expectations that drivers want? And then the site host perspective of what they think the driver wants. And we wanted to see if they matched up and they don't.

And it was fascinating. That survey's free, anyone can download that on the Transportation Energy Institute website. It gives a lot of insights into what drives charging, what are the amenities people want.

But one thing that was surprising is the vast majority of **attributes that drivers are looking for are around security and safety**. Well lit, near the front door, is there a security camera, are other people around it or is it isolated in the back of a property? And the reason for that, as many of you know, when EV charging first got started, they did this at the lowest cost possible and that was where the utilities came onto the property, which were never next to the building.

And so you had just horrific situations of being isolated out in a parking lot somewhere and drivers didn't like it. And you have to treat drivers like you do with refined products that they don't want to be stuck on an island. And that does impact volume throughput at a charging station. Anyway, a lot of insights. It's a very beefy report, a lot in there. I encourage you to take a look at it. But all of that, Roy, thank you, is on the Transportation Energy Institute website on the EV charging page.

Roy Strasburger

You're welcome. Just for those of you who are interested, we will publish the presentation in our Vision Report and on the last page of Karl's presentation is his contact information. And if you want to access his information, the website is transportationenergy.org to find a whole Aladdin's cave of information on transportation energy. Thank you, Karl.

Karl Doenges

If you want to geek out on some details, man, that's the place to go.

Mike Austin

Thanks Karl. I definitely enjoyed the presentation. And now with our remaining time, we're going to move on to Q&A. I guess we can start with Karl's presentation. Is there anything, anyone have any questions specific to that, or did that bring up any thought starters for them? Anyone want to chime in on? All right, while everyone else is thinking, I have one, which was just in terms of the tariffs. Oh, go ahead Myra.

Facilities

Myra Kressner

I was going to say, did I see Tom's hand up? Were you about to ask something?

Tom Healey

Yes, Myra. It was more just a comment rather than a question. I thought it was a terrific presentation, and I have looked at the TEI website often. But the technology and the information are moving so quickly that Karl's presentation had some different aspects in there that we hadn't really thought about. The OTA (over-the-air software) and how that might be driving adoption of EVs. It's very interesting. And towards the end when Karl mentioned how the charging stations are laid out, and we struggle with that. Being a conventional fuel retailer, convenience store operator, there's **tension between taking up parking spaces for EV**, planning more towards the future, versus our current customer base and being able to accommodate them at peak times for access to the convenience store and convenient parking.

I'm in a battle with some folks here. We have debates about how we lay out the EV charging stations. When you go around and see the charging stations, they're all penned-in parking spaces and the motor fuel customers have more convenient access into these drive-through islands with well-lit canopy protection from precipitation. And we're trying to implement that more, but it's just an ongoing struggle in our business on **how to lay out everything on the site** when you've got limited property area. So thank you Karl. I thought it was a great presentation. You don't give yourself enough credit there.

Karl Doenges

Thank you.

Mike Austin

Well, I can jump off that point with something that was flagged for future discussion in our first meeting, which was just looking at future proofing for charging. And I think we've mentioned when EVs first came out, you had 50 kilowatt chargers or maybe you had level 2 chargers. Now we have higher powers and the plugs – we're in the midst of a plug changeover – and then even the way that people are charging is going to change or adapt. I think that when you have higher range, you might not be staying for as long just because you only need a few miles to get home or get to your destination.

Editor's note: for an explanation of Level 1, 2 and 3/DC Fast Chargers, visit <https://www.howtogeek.com/793471/ev-charger-levels-explained>.

Karl Doenges

You bring up something that's very important. I actually wrote a white paper on this several years ago – I don't know if it still holds true, I assume it does – **the cost to retrofit a site is 80%** more than to lay out the conduit and design it all into it **when you're building a new site**, even if you don't use it immediately. But if you design the EV, the ingress/egress, making sure you don't queue up and back up over the manholes that give access to the USTs (Underground Storage Tanks) for fuel, or back up into the island, and all these little things, and yet things have to flow. So that when you have a spill of

Facilities

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gasoline and diesel, it doesn't flow into the EV side. All these things have to be thought through and to bust up concrete and do that retroactively is exponentially more expensive than to do it when you're building or modifying an existing site. That's something for the first several years over at NACS, we're really just beating our drum hard saying, "Hey guys, you're sitting on 20, 30 year assets, if you can future-proof it and put that stuff in, it's a wise move"

Mike Austin

Go ahead, Chris.

Chris Normandeau

What you're saying makes sense. I hadn't realized there was an 80% number. That seems about right. First thing, and I'm sure this is not the case, but when you say NACS, that's not related to the charging adapter I assume, or is it related to the charging adapter?

Karl Doenges

The technical term we call it J3400.

Chris Normandeau

Got it.

Karl Doenges

Yes. So yes, I'm with the National Association Convenience Store and years ago they changed it to NACS from that because it was a mouthful. Which is different than the North American Charging Standard, which is J3400 or commonly known as the Tesla charger. But that's going to be a **great boom to the industry. To harmonize with one connector type** is going to be the great leveler and give so much opportunity to the convenience stores and everything that have CCS right now. The population base of vehicles from which they can benefit is very small. And if they can get over and then have all the vehicles on the J3400 or the NACS or the Tesla connector and then have an adapter for everything else, my gosh, it's going to exponentially increase their market share overnight. It's a big deal.

Chris Normandeau

Well, my actual question, other than that, is you'd mentioned some population attributes of customers who use EV chargers, spend more money at a convenience store. Do you have other figures that differentiate between ICE (Internal Combustion Engine) drivers and EV drivers from a population perspective beyond that?

Karl Doenges

Well, we are expanding the Charging Analytics Program to actually analyze that. We're going to be uploading information of in-store sales. What makes it difficult is connecting the charging event with the in-store spend and connecting those two. Right now we're using proxies that just don't give us a lot of confidence in the data. It gives you good general numbers, but not enough for us to publish them. So we will.

Customer Behavior



Chris Normandeau

Roy Strasburger

Sophia Schuster

Mike Austin

And as technology improves and we get the site host or the retailer of any sort, QSR, or whatever, convenience operator, to be able to collaborate with the OEMs and everyone starts wanting to share data, then we can much more easily connect those two. But everybody's trying to battle over who owns the customer right now. And so we're trying to get everyone to play together in the sandbox still. So we're getting there, but that is where we are definitely going because the big value proposition of charging is not selling the electrons, it's going to get commoditized. The equipment's going to get commoditized.

I had a panel at the NACS Show with QuikTrip. They started putting canopies, trash cans, squeegees, locating their chargers, and they bought into a handful of sites and same prominence as the refined products. And they charged a premium to cover all that.

And they made it super high end, super clean, and they said that their volumes are better than they expected, and that **people were willing to pay the higher price for the better experience**. For what that's worth, we have seen that and hopefully that gives an indicator of things.

Thanks.

I'm going to jump in for just a second and I want to introduce Sophia. Sophia Schuster joined us a little bit ago. She came in from another meeting. And Sophia, I'll let you say hi. She is with the Michigan Energy Innovation Business Council. So Sophia, welcome.

Thanks Roy. Sorry, I was so late. This is never ending meetings these days. As Roy said, I'm from Michigan Energy Innovation Business Council, we're a non-profit out of, as you can probably guess, Michigan. We focus on the whole gamut of advanced energy sector policy advocacy. But my specific area is in transportation electrification and making sure that we're moving Michigan in the right direction both through the legislative lens, but we also engage with the Michigan Public Service Commission, which is our regulatory, our PUC (Public Utility Commission).

I'm really excited to be here. I like to say that I'm actually not all that intelligent when it comes to the scientific details. I just surround myself with intelligent people and then I publish reports and white papers and engage with legislators to talk about the needs of business and how we can enable these opportunities. So great to be here, looking forward to learning from everybody.

Thank you, Sophia, and welcome.

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Sophia Schuster

Thank you.

Mike Austin

Also, feel free to chime in in the discussion. Laura, you had something to mention?

Customer Behavior

Laura Renger

I was going to ask Karl, do you have any good data, or do you know if good data exists with regard to projections for how much **charging will take place in the future away from home?** Because I've heard so many different statistics in terms of not just the transformation of the industry. Maybe five years ago I heard statistics **projecting that 75%** of all fueling in the future will be at home. We're dealing with that in California, trying to figure out, do we want to put more charging like the gas station model or do we want to put more investment into level 2 charging in MUDs, multi-unit dwellings, and workplaces. Have you seen any good data on that, because I have not, and would be really curious.

Karl Doenges

I've seen similar numbers. We put a lot of thought into that and trying to slice it and dice it and apply some forecasting to it. Using common sense, we do know that highway charging, just because of the very nature of it and the longer distance, is going to need more DC fast charging. We do feel that as you see a price decline in vehicles and an increase in used vehicles, that the demographic groups that are in condos and apartments will have the uptake on EVs being greater.

EV Infrastructure

It is very **difficult to retrofit a parking garage** or a large parking lot at an apartment with adequate EV charging. Or a lot of them won't do it, even though level 2 is not as expensive. And so we feel that there will be **more of a need for DC fast charging** as an anchor for large multi-unit dwellings. And so no data behind that. That's just our analysis. But the vehicle price points have not seeped into that category in great numbers yet, but that's what we believe is going to be needed.

That being said, the cost of level 2 is so low that we do think that it's going to get saturated at some point. The other thing that people don't look at here, is that when you look at Europe, specifically Norway, and I want to be very honest to you, obviously we're a very different country than Norway, but the EV charging has turned into something more akin that you see to a cell phone.

People go to a convenience store because of the convenience offering. The high-quality QSR, some of them coffee, their drink offerings, grab-and-go foods, other ancillary services, car wash, which by the way is going to be very important for EVs, and then they're using **charging as a top-off**.

Customer Behavior

The **behavior changes as the market matures** into using it like a cell phone where they're constantly charging and topping off. We're wondering if the **charging culture**, if I can make up that term, is going to shift as we become more

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Customer Behavior

EV Infrastructure

Customer Behavior

Laura Renger

Mike Austin

Karl Doenges

Chris Normandeau

Karl Doenges

mature and migrate into something like you see in Norway and some of those other more mature markets. I think that we do see some evidence that charging behavior changes and that people use the DC fast charging more for topping off. And if it's there and they're running around a lot, then they will charge.

I did get some data out of Tesla. They told me, now, mind you, this is about three years ago, so take this for what it's worth, that even when someone has the home charging in their garage, they were still averaging, I believe, three to five, I can't remember what the number was, charging sessions at a DC fast charger per month away from the house. And I think people just **forget to charge overnight** or they just have a day where it's a little crazy and they're running the kids around and they use more than they thought they were going to use. Or maybe it's more like Norway where they go there and they might as well top off while they're there.

That's not a good answer, I realize, but there's a lot of ways this could play out, and I think **DC fast charging**, even if it's not the predominant charging in a suburban or metropolitan area, it's still very important and people still use it. At least that's what anecdotally we're seeing. But there's no question that on **a highway it is critically important. But also anchoring apartments and condos, it's going to be important.** I don't know if that answers. That's the best answer I can come up with.

Yes. Thank you.

Chris, I'll just read your chat comment here: Karl, could you expand on the point that condo and **HOA resident uptake** will be faster than the general population for EVs?

Slower. **It'll be slower.**

Slower? Why?

It's a lower income demographic, and the price point of the vehicles has not got to the point where we feel it allows for scaling and mass adoption. People that live in **single-family homes are the predominant buyers of EVs.** And by no means the whole group, but it's still the majority, I believe, and they can put in home charging.

We do believe as the price points come down and more used EVs start to get into the market, which we're seeing now, that it will move into the lower income groups that live in apartments, and so the need for that anchor DC fast charging will become greater.

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Presentation

Car wash

- Chris Normandeau** Okay. So the flip side of that coin, you're saying, that you do see a significant correlation between income and propensity to purchase an EV and to drive an EV?
- Karl Doenges** It's income, yes. Right now they're at the price point where higher income – even though the prices are coming down – it's still high enough. The correlation is do you have a garage or not. If you've got a garage, you can have home charging. If you don't, then all of a sudden you have to do some workarounds.
- Chris Normandeau** Okay. So, access to home charging is what you're getting at. So, a condo that has home charging available...Okay, got it.
- Mike Austin** Roy? You had something?
- Roy Strasburger** Well, Karl, you just flew by it a moment ago saying that **car washes** are going to be really important for EVs. Why did you say that?
- Karl Doenges** Thank you. Forgot about that. **They're critically important**, especially as autonomy, hands-free driving, or just ADAS (Advanced Driver-Assistance Systems) systems that come out of autonomy, not full robotaxi, they're all camera operated and sensor operated. And I have a Tesla Model Y, and I got condensation in my front left lens and it shut down my whole ADAS system. That means I couldn't use cruise control. I couldn't even put on my left blinker with a camera telling me if someone was in my lane or not. All these things, when they're obstructed, affect these great technologies. And I know that Tesla and some of the others are trying to put little washers and stuff on some of the cameras to try and do that, but when you have corrosion and stuff on the road, those car washes are used. I use them regularly to keep the cameras and the sensors clean, so I have all my ADAS functions and my autonomous driving when I'm on the highway and things like that. We believe, again, anecdotally, we believe that that **car wash will become a very great revenue opportunity for c-stores.**
- Roy Strasburger** It seems counterintuitive considering the condensation issue you had on your lens.
- Karl Doenges** It was a faulty camera. And they replaced it. Thank goodness. They came to me too. That was nice.
- Mike Austin** Great. Well, I have one for the panel, just looking at the new administration and whatever happens, it seems like there's a likelihood that it'll be moving away from incentives, both in terms of charging and vehicle purchase. Counterbalancing that, we have a few states that have really high EV penetration rates. And so thinking the mix of retail and government associated people on the call here, are those high penetration states at a place where they're going to keep moving towards electrification without the incentives or are incentives still needed? And are there any lessons? Or what will be the effects in the trailing states, or are there any lessons that we could carry through?

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In The Room With evVG

Presentation

Karl Doenges

AI

Well, for this, what you just said is the whole reason why I brought this up – and I'm by no means the oracle of Austin here – I do believe the disruption is not the electric drivetrain. And while the incentive is a big deal, it makes things a lot cheaper, it moves the needle. There's no question.

What is the disruption? And when you look at over-the-air software updates, why is that important? It's all the amenities and the **capabilities that AI unlocks**. When I didn't have my camera and I could not use my full self-driving and all the advanced driver assistance systems, oh my gosh, I thought I went back to the stone ages. I was so habitualized to using it. It was a big deal. And so that, and talking to my car and having it tell me where all the flower shops are around me, or routing my trip wherever I want to go, and since I'm using hands-free and I'm doing something else, telling it to turn on my windshield wipers, all those functions are a function of the ability to have over-the-air software updates.

And so the question that we're trying to understand, AI is coming on us much faster than we thought it would, and the **advancements of AI are moving into the vehicle** for companies that have the ability to do over-the-air software updates much faster than we realized. And we think it's worth considering the draw of these AI-based capabilities, are they so strong that it becomes what everybody wants. It's what the iPhone used to be. Now everybody wants the vehicle that has all these embedded AI functions with all these capabilities with autonomy, retail integration into your dashboard where you can order something and have it ready for you when you go there, and change your trip on the fly by just talking to your car.

All these functions and capabilities, which we're seeing now, but when they get fully baked into the vehicle, will that be the real drive? And if an internal combustion engine can't do that, will that move the needle to the EV along with the benefits of electrification, which are the acceleration, the torque, the lower cost of electricity and what not. That's the question that we have. Is that the paradigm shift, not just the electrification? And so the incentives, it may overcome the incentive or lack of incentives.

Myra Kressner

Yes, go ahead Sophia.

Sophia Schuster

I apologize. Is it more appropriate to hand raise or jump in? I don't want to break protocol.

Mike Austin

You hit the gap perfectly. If someone else is talking, please use the hand raise icon, but if you can find a spot, take it. Floor is yours.

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In The Room With evVG

Presentation

Sophia Schuster

Well, I also wanted to touch on the importance of regulatory programs. Programs that are coming out of a lot of **investor-owned utilities (IOUs)**. **We've seen a huge amount of investment** coming out what's been approved by public utility commissions across the country. And those states that have higher EV adoption rates historically have had much higher approval for funding from their different utilities.

So I think to Karl's point, and maybe this is also me just trying to be desperately optimistic over the last couple of weeks, but despite the fact that we are very likely going to lose these incentives, there are other incentives that I think are going to continue picking up and that's not really politically aligned or there's no correlation there. And utilities recognize that increased electrification is good for business. They are definitely not going to be turning their backs on this forward momentum. So I just also wanted to add that.

Karl Doenges

Yes. Sophia, I don't know when you jumped on the call, but we had a slide earlier that showed that only less than a third of all the vehicle sales actually used the tax credit, and so that was very surprising. So it may not be as big of an impact as people realize.

Sophia Schuster

Yes. I agree. It's definitely not been coming from the auto state. It hasn't been a huge impact. I think there are certainly price concerns, but that's going to continue going down, like Karl said. Ultimately, I think, and maybe you got to this Karl in your presentation, I jumped on a little bit too late, but the key concern that most customers [have]...people who are considering switching over to EVs is that they won't have access to charging. And when you look at studies, there's really not a lot of validity to that concern. But it's still a peace of mind question. But I think as people continue seeing charging as there are still a lot of NEVI funds to get deployed, those concerns are going to continue to decrease over time.

Karl Doenges

That, and I can't remember who said it, I think Laura, you talked about deploying level 2. When you go to Europe, the level 2 charging is everywhere, and it really does a big chunk of it. But there's something else that people are not paying attention to.

If you look at the new Cybercab that Tesla is going to unveil and the Cybertruck, no one talks about it, but it's got **inductive charging** built into the vehicle platform. You talk about easy and low cost, you **drop a pad on the charging spot that's weatherized and people drive over it and it starts charging**. I mean, my goodness. So there are some technologies that are going to simplify EV charging and drive the cost down significantly.

I think that there's still a place in convenience and QSR and other people for top-off charging and it doesn't need to all be very expensive. DC fast charging, that too will get commoditized, and the price will come down. We're already seeing that and we're seeing a lot of consolidation in the market. We're seeing a lot of the bigger players like Siemens and LG and companies like that jumping into the fray. So charging is a concern with drivers. That's a factually correct statement, but I think there's a lot more that can be done that's not as expensive that we just need that chicken and egg dynamic to go away and we just need more vehicle population out there.

Mike Austin

Jay.

Jay Smith

I was going to add, Sophia mentioned the whole regulatory thing. We talked a lot about it last time I think, and you used the phrase chicken or egg but in states that have high adoption of electric vehicles and see these investments from investors and utilities to support that network. The question is which came first? Is it that they were investing and that led to more EV adoption because they solved the range anxiety problem that Sophia brought up? Or is it that they were trying to incentivize that behavior? I think about what we talked about last time, and I think that it's important to note that sometimes that **large scale investment by utilities can actually stunt the growth** of the EV charging network because as we talked about, that creates the disincentive for the gas stations, the retailers, a lot of the folks that are on the call now to make those investments when they're competing with that investor or utility.

So even we've seen in California, which I would say is the leader in EV adoption and investor utilities, there have been comments out of their Public Service Commission that maybe they went too far too fast in letting investor and utilities get into that market, that it may have actually slowed the growth of their EV charging network across the state because of that effect that I talked about. That hey, maybe we were a little bit too aggressive and it actually stunted our gas stations, retailers, convenience stores, those folks from getting into that business. So there's the other side, it's almost like states have to decide which route do you want to go? Do you want to go with investor and utilities taking care of this, or do you want to go with retail and the private side doing it?

Sophia Schuster

Jay, this is my ignorance, but I'm curious, does California allow investor-owned utilities to own charging?

Jay Smith

I would say they do. They have a lot of it actually. But in a more recent case where the investor and utility came back and said, "Hey, we'd like to do more of it," they were then denied. So they allow it, but they're starting to be not as forthcoming about letting them do that. They're actually starting to deny some investor utilities from continuing to expand what they're doing because of that effect of what it's having on retail investment.

Laura Renger

I was just going to say, the history though is that originally the Public Utilities Commission told the investor-owned utilities specifically, you can only invest in transportation electrification if there's a demonstrated market need, if the charging station providers in the private sector didn't actually meet the need. So that **investment in transportation electrification** was halted for many years and it was only in 2014, I believe, when the Public Utilities Commission said, "Okay. The private sector has not met that need and so now the utilities can invest." So then we had this period of where we were all investing for just big projects that we were asking for money for. I was the author of the Edison's MDHD project, Charge Ready, all of those.

And then as you said, Jay, most recently, but I think quite honestly, I guess this can be on the record, this is my opinion, not the opinion of CalETC. It really was not driven by the concern about the private charging station market in California. That wasn't the concern that we were shutting out, that the IOUs (Investor-Owned Utilities) were shutting out more investment. The concern is about affordability and we're looking at a million different ways to get things off of the customer bill, and that's just a really obvious one. Yes. I mean there might've been some language in the most recent TEP (Transit Effectiveness Project) decision, but that's not really what was driving this shift.

Mike Austin

Chris, did you still want to say something? I saw you had your hand up.

Chris Normandeau

Yes. Laura covered the first half of that, but what I was going to ask is that Jay had mentioned and then skipped over coloring it in for us, but the uptake of investor-owned chargers, disincentivizing people to install chargers at their own facility. Do you have data to back that up?

Jay Smith

We have a lot of data on that. And I think there are people on this call that could even speak to it from their own company, they look at **where do they want to be investing** and they're looking for environments where it's a competitive market. They are hesitant to invest a million dollars in building these chargers into a location if they, one, have the fear that the investor and utility might open one across the street and compete using rate payer dollars to do it. And then rate structure, which is a whole other issue, is something that they're probably looking at as well.

But yes, a lot of our members who are on the **retail side**, our membership spans people who make the software, build the equipment and retailers as well. Those on the retailer side, what I hear is they're **looking for a competitive environment**, they're used to competition. They're used to gas stations across from each other and they compete with amenities and who has the cleaner bathroom and who has the better price of gas by a penny. They're used to that competition, but they're hesitant to invest and staying away from investment where they can't have that level playing field.

Mike Austin

That cost in the competition is I think a good jumping off to your point, Karl. You mentioned in your presentation that in general, people aren't going to make money off of selling kilowatts. And then when we loop back to looking at people in multi-use dwellings at 40 or higher cents a kilowatt-hour, EVs are often more expensive per mile than gas. So specifically to you Karl, but anyone else as well, do you see that becoming a thing where the convenience stores are going to be more affordable than the EAs (Electrify America's) of the world, or the standalone just charging stations or where is that going to go?

Karl Doenges

Who knows? I do know when you charge at home and you're using a level 2 charger, which gets to the importance of more public level 2 chargers. It's not just cheaper. It's drastically cheaper. You can still make money on electrons. It's just very hard to recover your investment and get that ROI that you're looking for. Hence, the focus on retail integration because that's where the real opportunity is. When you look at the survey that we did on our website, the amenities, particularly retail items, convenience items were a critical thing that they were looking for. They just didn't want to sit there for 30, 45 minutes and do nothing and not go to the bathroom. So we feel that's going to be a critical driver.

And then once you overlay the ability to what we say "bank the sale" before they leave their driveway and **reach into the user interface of the vehicle** and the phones and get those sales and have everything ready for you packaged up when you get to the charging location. If it's a QSR, convenience store, we believe that's going to be a **big game changer** and take less pressure off the need to charge more for the electrons and allow you to really focus on the convenience items and the car wash and things like that. But that's prognostication. We do know that that's what the consumer's saying they want. And we do know that's the beauty of some of the AI abilities. It's enabling these technologies very quickly and that's why we're trying to get ahead of it.

Mike Austin

Tom, you had something on that?

Tom Healey

Yes. I'll add some more from the convenience retailer's perspective. Interesting data that you presented earlier, Karl, about the typical market basket spend for an EV customer versus a typical motor fuel customer. \$11 versus \$6 was the statistic you put out there. So you've also got to think about that. Well, okay, what's the throughput of your customers too? You've got an EV customer, and you may have three or four internal combustion vehicle customers come in your store during the same period that you have one EV customer or even more. So when you're taking that \$6 versus \$11, you might be getting more market basket from that EV customer, but you have much fewer of them. So you've got to think about that as you're allocating how you use your property.

Technology

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Presentation

Shifting gears a little bit, I wanted to give some **real-world experience with some grant funding** that we talked about during our last call. We were delaying a call until now to try to understand how things may shake out with the new federal administration and NEVI funding. And we've been chasing grant programs for the past two, three years, both government funding and utility funding. In Massachusetts, we ended up going to the electric utility companies. And again, some ignorance on my part, I don't think they are allowed to set up and sell EV charging [to] the Eversource and National Grid here, but they have grant funding programs so that we go to them and pursue the grant money and install the DC fast chargers.

Editor's note: *Eversource is an energy provider servicing customers in Connecticut, Massachusetts and New Hampshire; National Grid provides New York and Massachusetts with natural gas and electricity for home and businesses.*

The Boston Globe reached out to me yesterday asking how we were being impacted with some of the claw back at the federal level for potential NEVI funding, and I explained to them that we stuck with the utility company funding in Massachusetts because it was more nimble, more flexible. The number of charging ports is fewer required than the minimum four at the NEVI level. So that works better for us with the smaller properties and having to dedicate less space, but it allows us to do many more installations and fill in the gaps in geography rather than have a location of ours have eight EV charging stations. We may have two charging ports, but we're really trying to fill in the gaps in geography to get rid of that range anxiety. So we haven't been impacted by the potential claw back on the NEVI funds in Massachusetts.

Go up to Maine. Yes, we just had a site that was put on hold. We've already been granted some funds, and ready to start construction. And they put the "time out" to us and told us they're going to have to wait possibly up to 90 days to see how things play out. And the same thing in Rhode Island. So it's just some real world experience from our perspective on the grant funding out there.

Mike Austin

Thanks for that, Tom. I wanted just to make sure we get this on the record from the comments, Sophia just added that Michigan does not allow IOUs to own EVSE (Electric Vehicle Supply Equipment). So our programs, I guess are, I live in Michigan as well, have relied on residential commercial rebates. So we haven't really seen the tension between private charging and the utility. Laura has a question for Tom, but I'm going to go with Chris first.

Chris Normandeau

Yes. Mike, just speaking to what your point was a bit ago, you said a multifamily charging, you mentioned 40 to 50 cents per kWh (kilowatt-hour).

Infrastructure Incentives

- Mike Austin** Well, I was speaking to, if you live in multifamily housing and don't have access to charging and have to go to fast charge stations to charge up, you might end up paying more for fueling. Versus you primarily charge at home and you're paying more when you're on a road trip or just the top off, you don't mind.
- Chris Normandeau** Okay. Yes. We're finding condos are very interested in pursuing charging solutions at their multifamily buildings, so it's not something that's impossible. Sure, you have to get creative at times, but there's certainly solutions out there and opportunities to install charging equipment. To Tom's point, a lot of the time the incentives that we're working with when they're available are either at the utility level or at the municipal level or occasionally the state level. Granted there's some trickle down from the federal government for some of those programs, but generally it's a lot more localized.
- Mike Austin** Great. Laura, you wanted to know if the **Make-Ready funding programs** Tom mentioned were utility installs up to the meter.
- Laura Renger** Yes, I just wondered [about] the Make-Ready programs, where the utility installed the Make-Ready and then provided you with a rebate for a partial portion of the cost of the charging station.
- Note:** Make-Ready costs include the electrical infrastructure and grid upgrades necessary to make a given site ready for EV charging.*
- Tom Healey** Yes. Actually, **the programs were very attractive**, 80% up to a hundred percent of the overall project costs. So they're bringing the infrastructure in but also reimbursing you for the installation. And some of those are tiered levels, some of it has to do with economically disadvantaged zones. They've identified that you may get a higher percentage of reimbursement back, but the programs were helpful for us because we just really don't have a good business model to pay for the full capital investment and try to make a return on these charging stations.
- Mike Austin** Jay.
- Jay Smith** I was going to add, in some of the states and in some of the programs with the Make-Ready, it may not be as generous as what Tom got, where at least they're doing the Make-Ready piece to bring it to the site without actually providing them rebates for the additional infrastructure of the charger. But even those are still really helpful to folks who are trying to do it. So even if it doesn't have an additional rebate for the hardware, Make-Ready programs that get it there, it can be a lot of help too.

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Presentation

Mike Austin

Great. I feel like we've just got rolling. This happened in our first meeting as well, but I want to be a little bit mindful of the clock here. I think we've had a pretty hearty discussion here, especially with Karl's presentation and some other pieces on how the retail and policy landscape is developing. Thank you, Karl, for coming, the presentation first, but also being a vibrant part of the discussion.

Before we move on to any closing, we've had a couple of things I think that came up at the end here. But are there any good topics either in terms of speakers people would like or other things that we should flag for our commentary section?

And on that note, the next meeting is April 30th, same time 3:00 to 5:00 PM Eastern. If no one has any topics right now, again, feel free to email Myra, Roy, and Eva. We'll be happy to take them as we plan the next meeting.

And with that, I will hand it back over to the Vision Group Network team and thanks everyone attending, especially thank you to the new people. Hope to see you again.

Roy Strasburger

Well, Mike and Nathan, thank you very much for facilitating today's meeting. Special thanks to Karl, for an excellent presentation and Q&A. We do appreciate it. And once again, if you want to get some more information or take advantage of the TEI's programs, transportationenergy.org is where you can find them. So thank you to everybody for participating today and being on the call.

We will be putting out a Vision Report that recaps and records this meeting. It should be out within the next five weeks or so. Everybody who came to the meeting last time should have received a copy of the last Vision Report. Does anybody have any comments or thoughts about the Vision Report, if you had a chance to go through it? We welcome your feedback and your thoughts on that.

Anybody have anything to mention?

Okay. Myra, anything that you want to say?

Myra Kressner

Thank you. So of course, I agree. Thank you everyone for your participation and call. Great presentation. There are a bunch of things that I learned or hadn't thought of, so it's terrific. And of course, Mike and Nathan, thank you.

Two things, regarding the Vision Report, we do encourage you to share this information just as Roy encourages everyone to go on the TEI website and all of the information there. But if you think there's valuable information within the Vision Report, please do share it with your colleagues, share it with others in the industry that you think would benefit from it.

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Presentation

So just to want to remind you to do that, to go to our website or from the LinkedIn postings that we do, we notify you whenever we do that, we tag you. So we encourage you to do that.

And also, looking at one of the slides that Karl gave about what's happening around the world and the timing for EV adoption or ban on combustion, we have our first Global Convenience Vision Group meeting coming up in just a few weeks. Countries from the EU, U.K., Ireland, the Netherlands, Germany, South Africa, Australia, Argentina, as well as U.S. are represented in this global Vision Group that will be discussing their EV adoption. So we may have some other interesting perspective to share on our April 30th meeting that comes from not only Norway, but other countries around the world. Eva.

Eva Strasburger

Well, thank you everybody. I haven't got much more to add. Karl, great presentation. It's always wonderful to listen to you. You always learn something new. So thank you very much. And as everyone said earlier, we would all love to be where you are, that environment. I look forward to seeing everybody in April for our next one.

Roy Strasburger

So thanks everyone, and thank you for helping us with our mission of "sharing today to shape tomorrow," because everything that we do at the Vision Group Network is about getting information out to other people to help them do what they're doing better, to be a better retailer, to be a better person in regards to how they're trying to do their jobs. We're really into the information sharing side of things.

So as Myra said, whatever you can do to help us get the word out to people, the Vision Reports are free. And the more we can educate people as to what's going on, I think it helps everybody at the end of the day like the old saying of a "rising tide lifts all boats".

So thank you very much. Thank you again to everyone, and we look forward to speaking to you again in April. But if you have any feedback before then, please let us know, email Myra, Eva or me. And we look forward to talking to you soon. So thank you for joining us today, especially you first timers. Thanks a lot. Bye-bye everyone.

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In The Room With evVG

Presentation

The Future of Energy

Karl Doenges
Executive Director
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Could they BE more different?



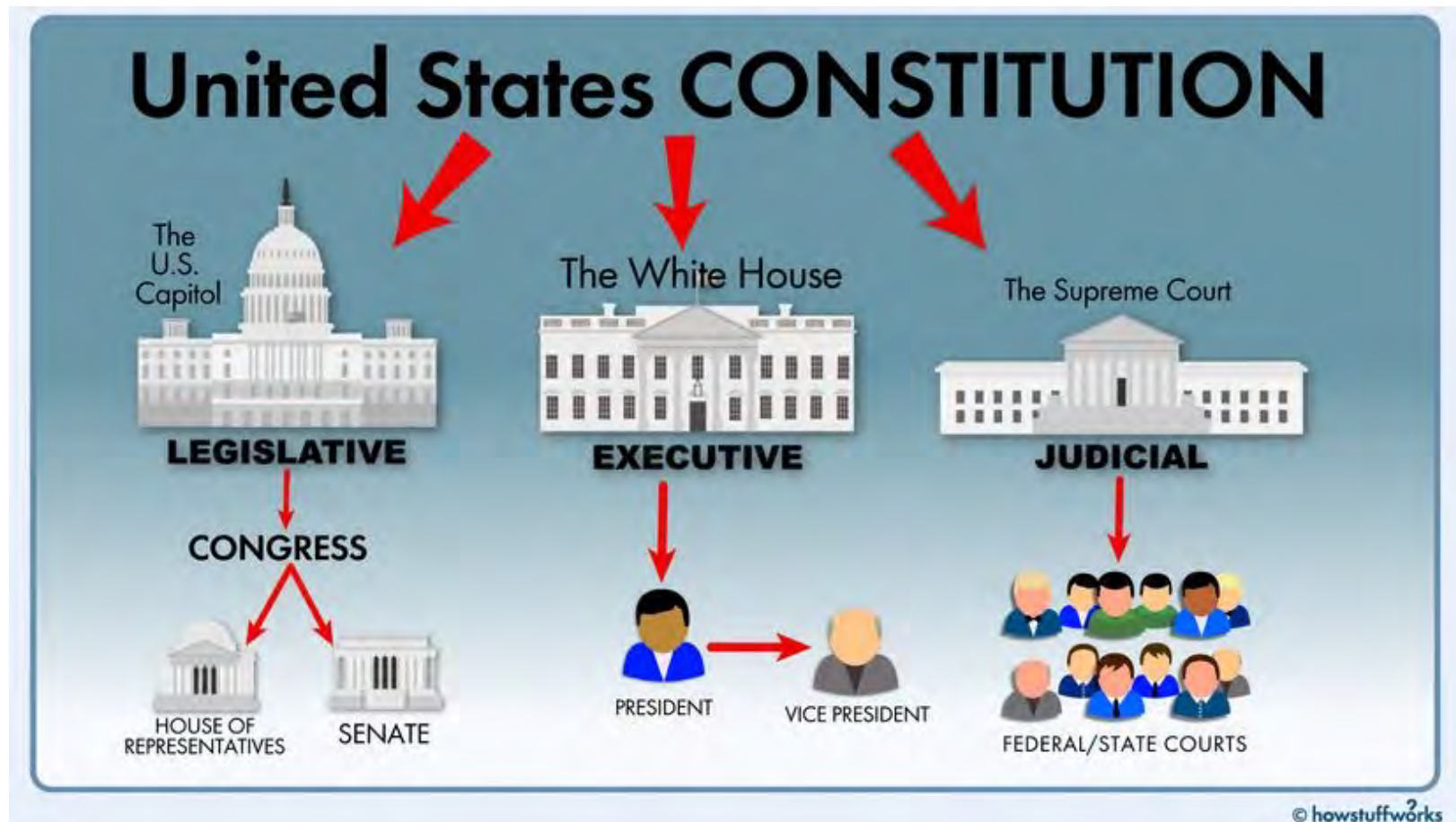
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Presentation

U.S. was designed to move slowly...



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Presentation

Where we have been.

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 Presentation

Global priority: Decarbonization



US EPA approves California plan to ban sale of gas-only cars starting in 2035

WASHINGTON NEWS
EPA issues new auto rules aimed at cutting carbon emissions, boosting electric vehicles and hybrids

EU lawmakers approve effective 2035 ban on new fossil fuel cars

By Kate Abnett

February 14, 2023 10:57 AM EST - Updated 7 months ago



California pulls back EPA requests for approval to phase out diesel-powered trains and big rigs

Biden Says Climate Change Poses Greater Threat Than Nuclear War



President Joe Biden speaks during a press conference in Hanoi on Sept. 10. Photographer: Saul Loeb/AFP/Getty Images



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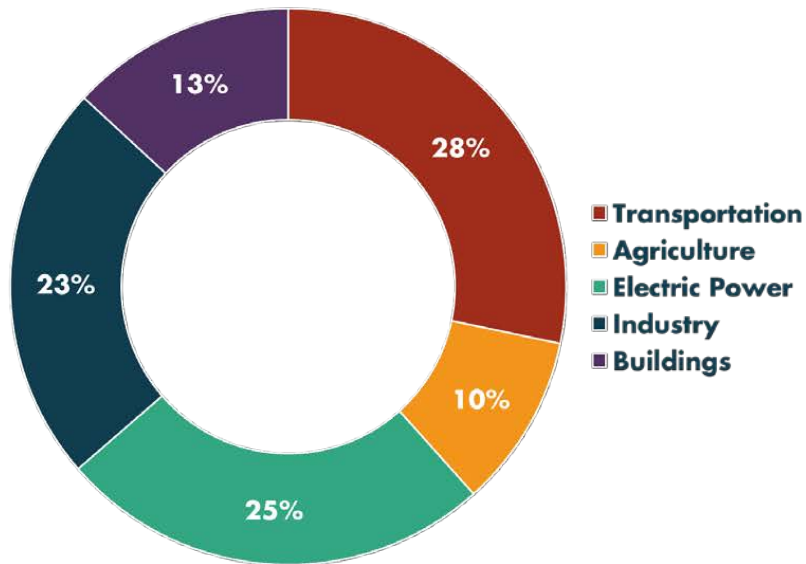
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Presentation

Transportation is a priority sector

28% of U.S. GHG emissions come from transportation. Of that, 81% come from the on-road vehicle market.

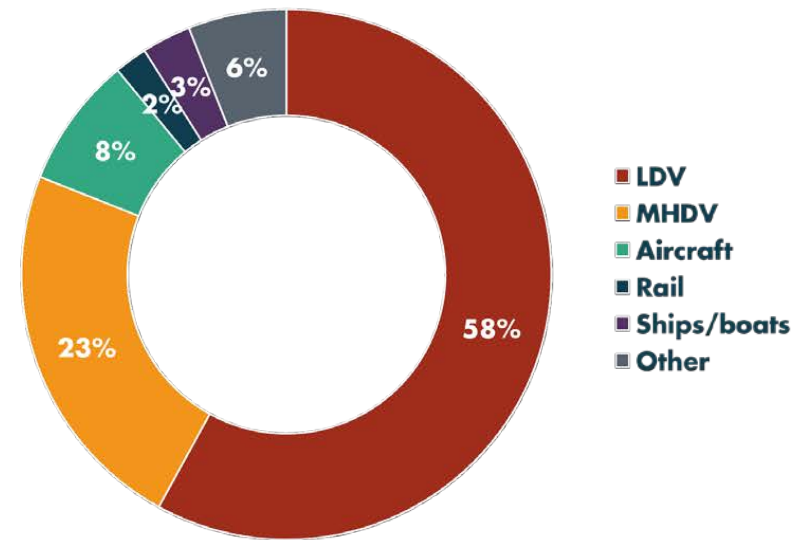
**Source of Greenhouse Gas Emissions
(U.S. 2022)**



 TRANSPORTATION
ENERGY INSTITUTE

Source: U.S. Environmental Protection Agency

**Transportation GHG Emissions
(U.S. 2021)**



 TRANSPORTATION
ENERGY INSTITUTE

Source: U.S. Environmental Protection Agency

Source: U.S. Environmental Protection Agency



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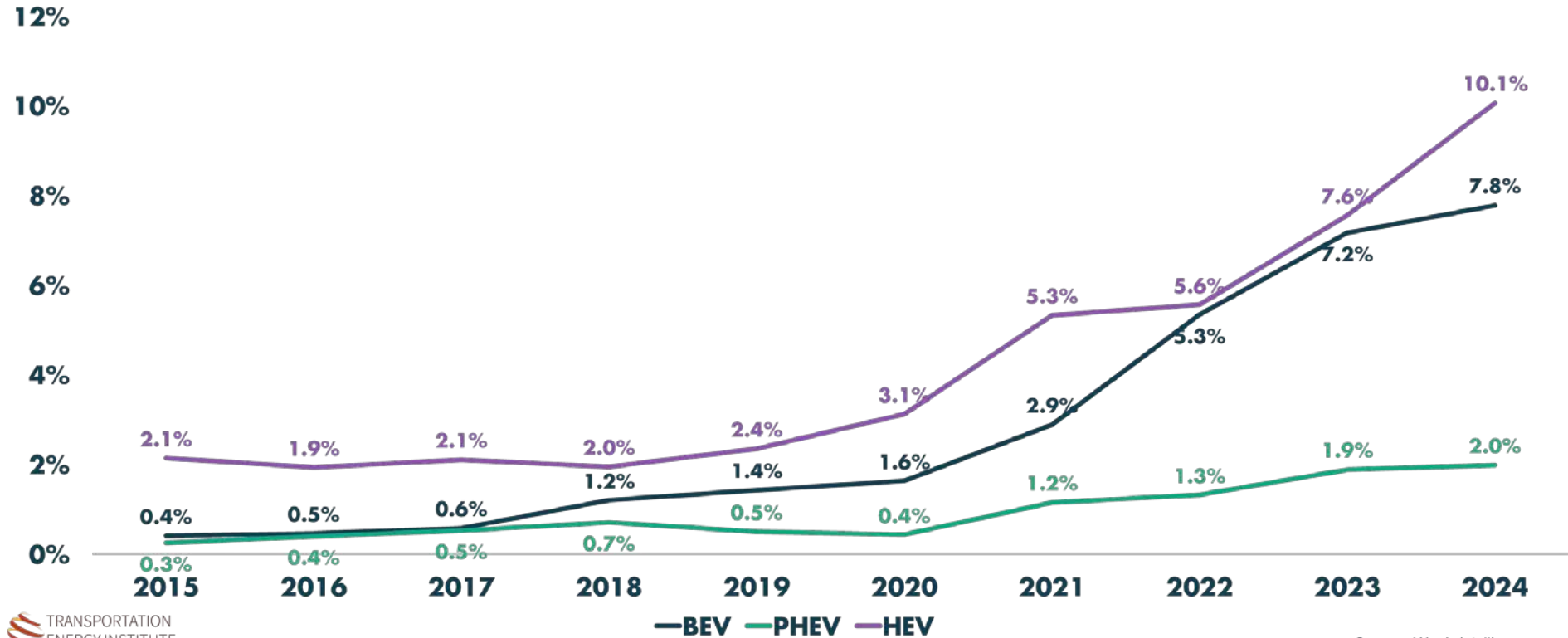
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Presentation

BEV and HEV growth has been strong

BEV CAGR has slowed, but continues to expand market share

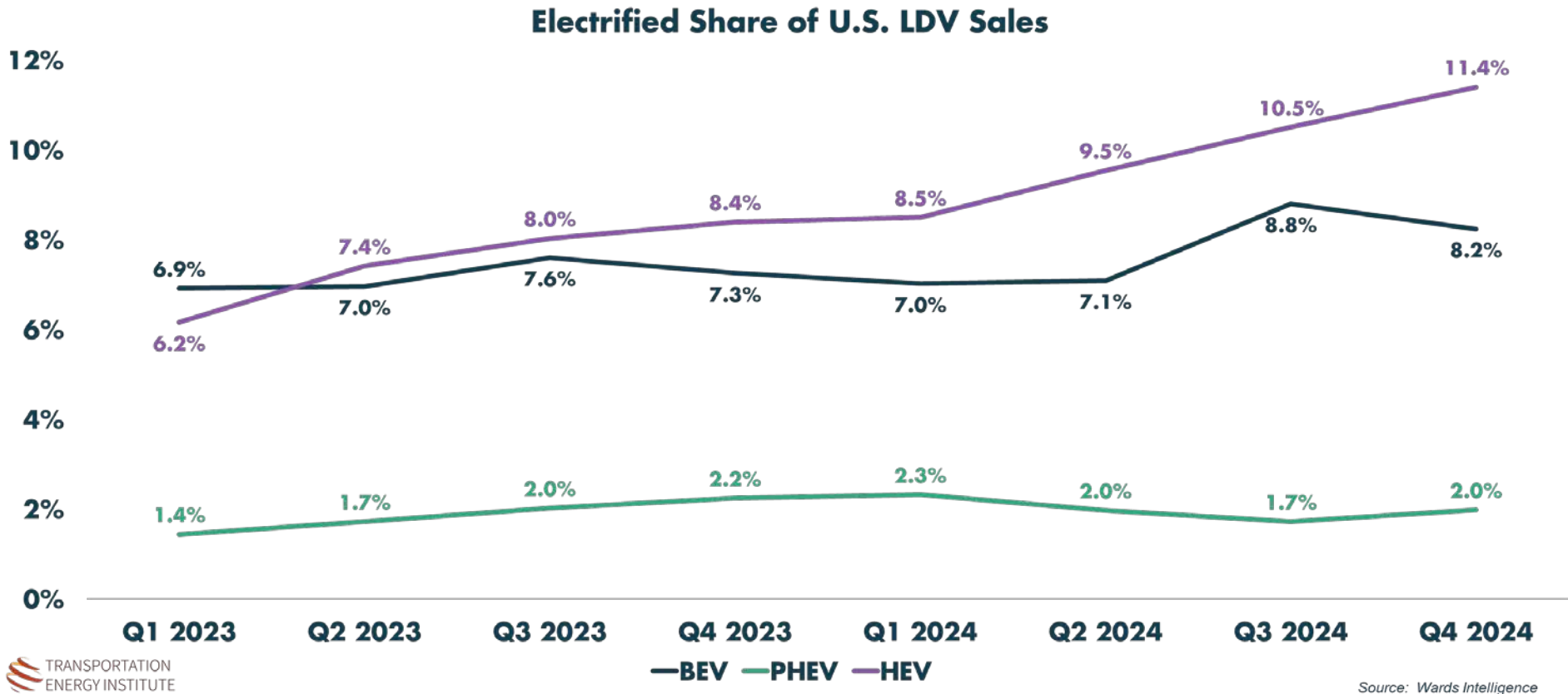
Electrified Share of U.S. LDV Sales





Quarterly BEV sales volatile, HEV consistent

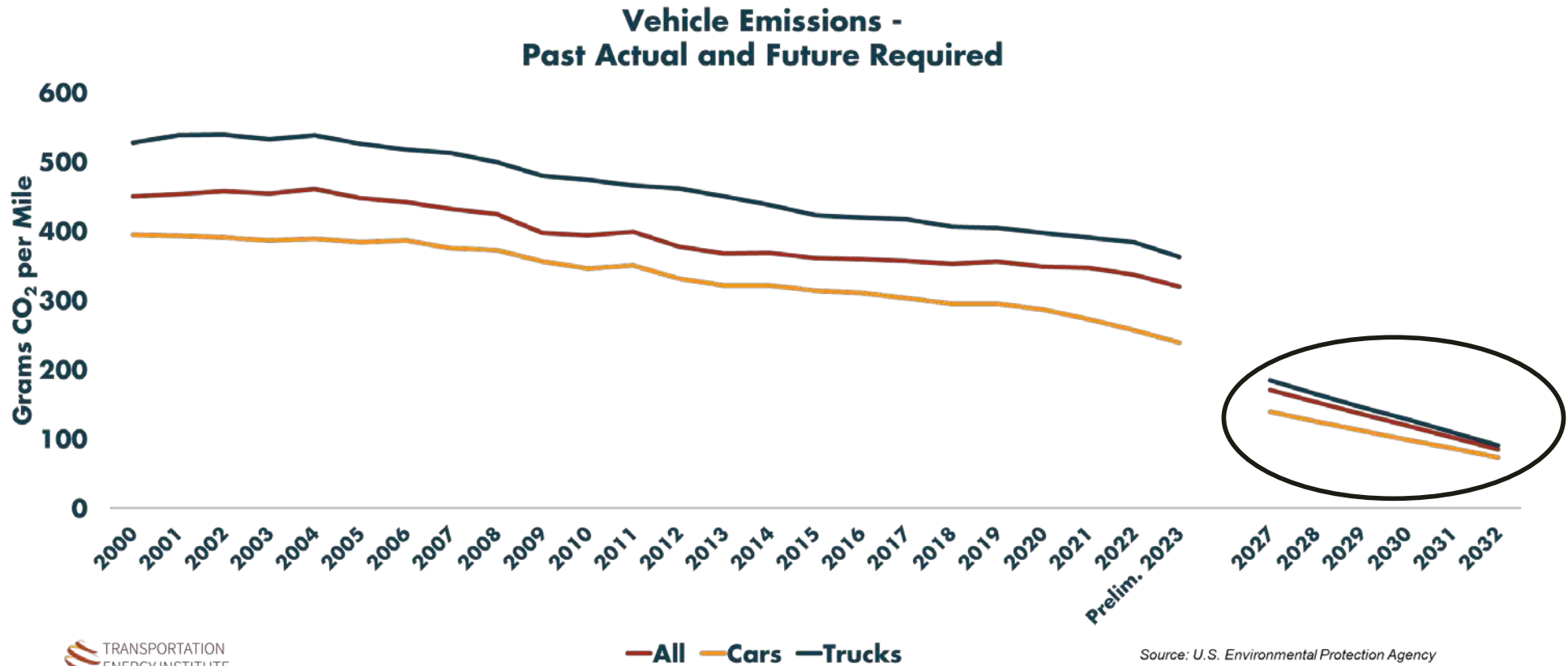
BEV sales eclipsed 1.2M in 2024, despite softness early in the year. Only 1/3 of sales used federal tax credit.



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Biden emissions rule would spark change

Compliance is assumed to only be possible if 2/3 of vehicles sold in 2032 are “Zero Emissions Vehicles,” e.g., electric or fuel cell. The standard calls for a 46% reduction in CO₂ emissions between 2023 and 2027.



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Presentation

Governments enacting bans on combustion

How sustainable these policies might be remains to be seen.

	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042	2043	2044	2045	2046	2047	2048	2049	2050
Canada											▲ New vehicles															
Norway	▲ New vehicles										European Union															
Belgium		▲ New company vehicles																								
Austria			▲ New taxis or car shares																							
Slovenia						▲ New vehicles																				
Iceland						▲ New vehicles																				
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Source: Ricardo Strategic Consulting for Canadian Transportation Alliance

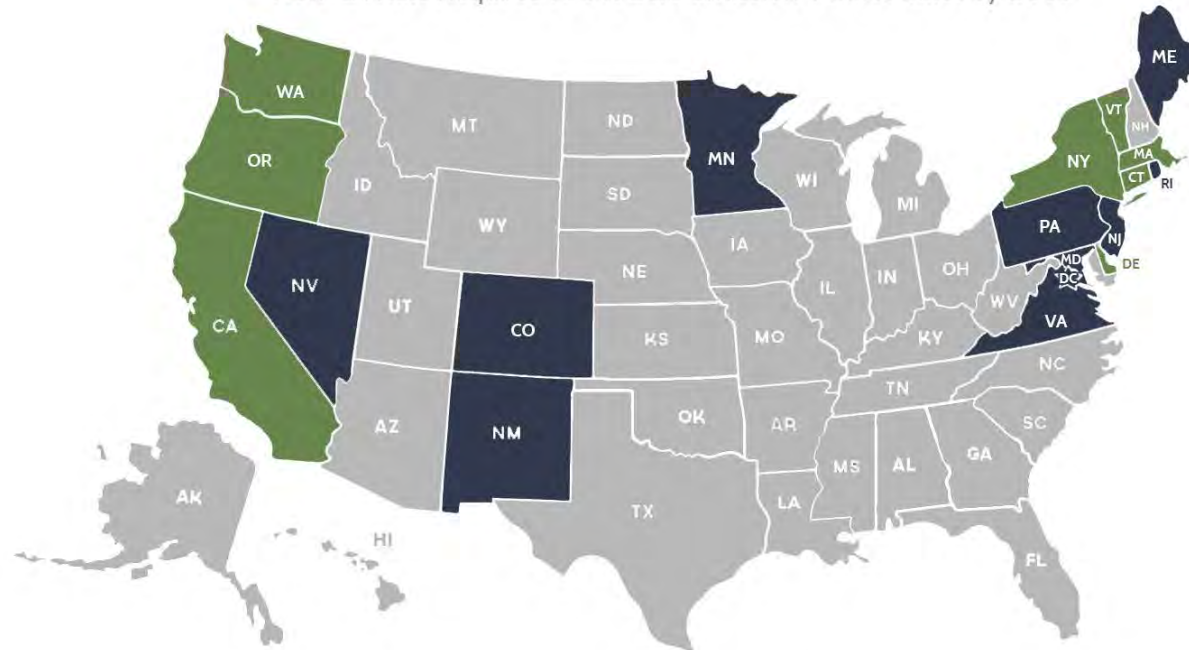

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CA's ZEV mandate replicated in many states

Again, how sustainable are these policies?

California's ZEV Rule's Effects Beyond Its Borders

New CA Rule Requires 100% Zero Emission Vehicle Sales by 2035



■ States that Follow CA Standards and Committed to New Rule

■ States that Follow CA Standards but Not Committed to New Rule



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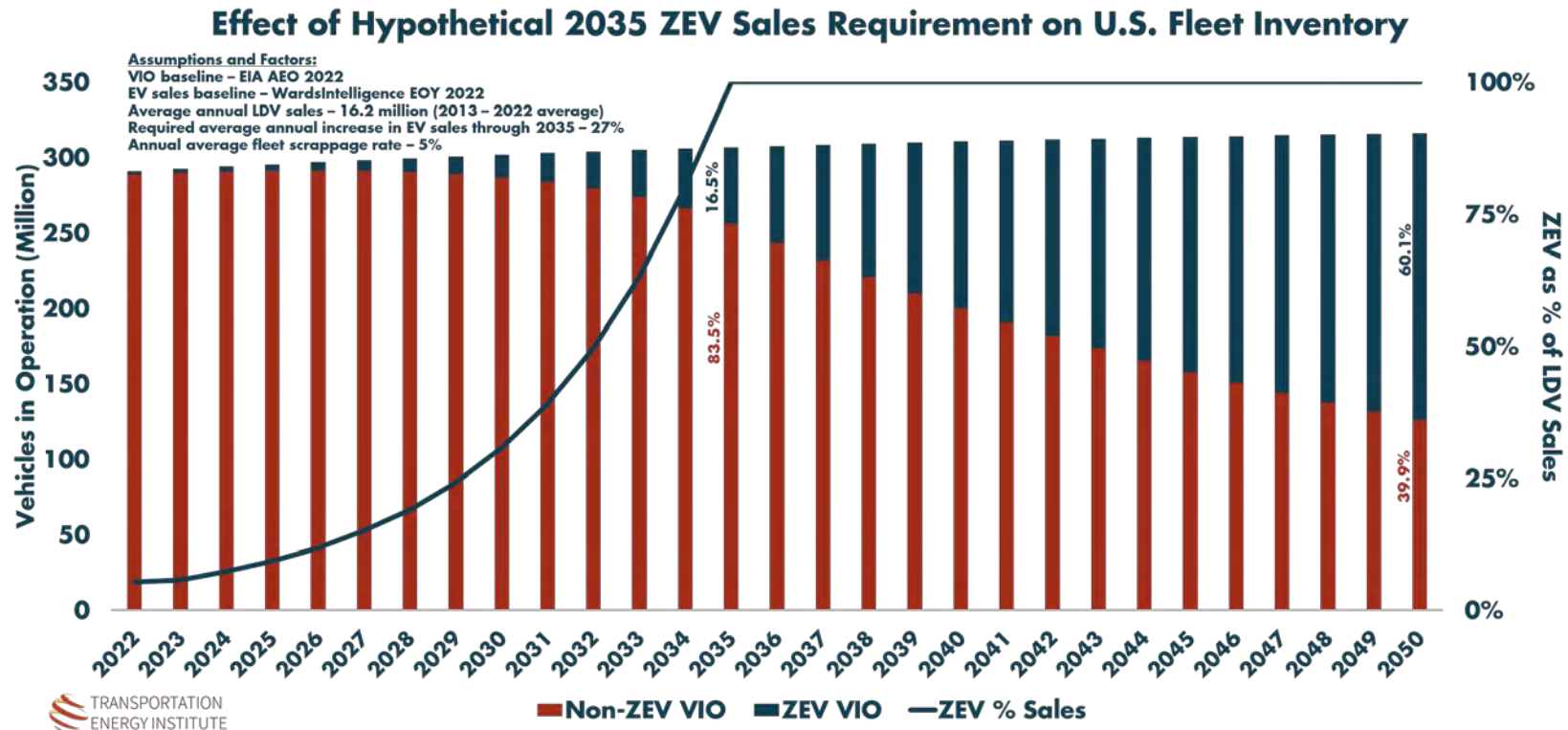
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Turnover is slow, even w/rapid sales growth

If PEVs reach 100% sales in 2035, they may only represent 16.5% of LDVs on the road, leaving 266 million ICEVs. By 2050, 40% of vehicles in operation would still be liquid fueled ICEVs.


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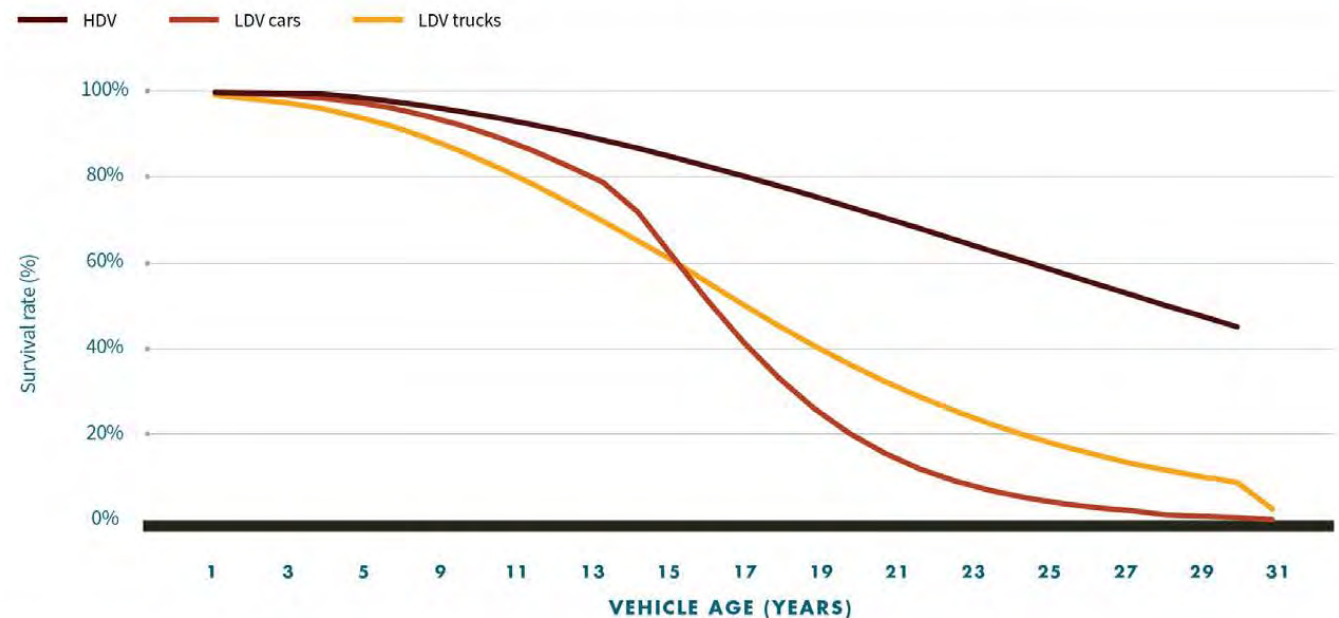
Vehicles survive a long time and current economics indicate a longer life lays ahead

Half of LDVs sold today will remain on the road in 16 years and others can stay in the market for more than 30 years.

Half of HDVs sold today will remain on the road in 27 years.

This means the market will continue to rely upon combustion engines and liquid fuels for many decades to come.

FIGURE 5. VEHICLE SURVIVAL RATE FOR CARS, TRUCKS, AND HEAVY-DUTY TRUCKS



Source: Oak Ridge National Laboratory Transportation Energy Data Book Edition 40, Tables 3.14, 3.15, 3.16.



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Beware of Forecasts

As we know:

- 1) There are known knowns.
There are things we know we know.
- 2) We also know there are some things we do not know.
- 3) But there are also unknown unknowns -
The ones we don't know we don't know.

Things change



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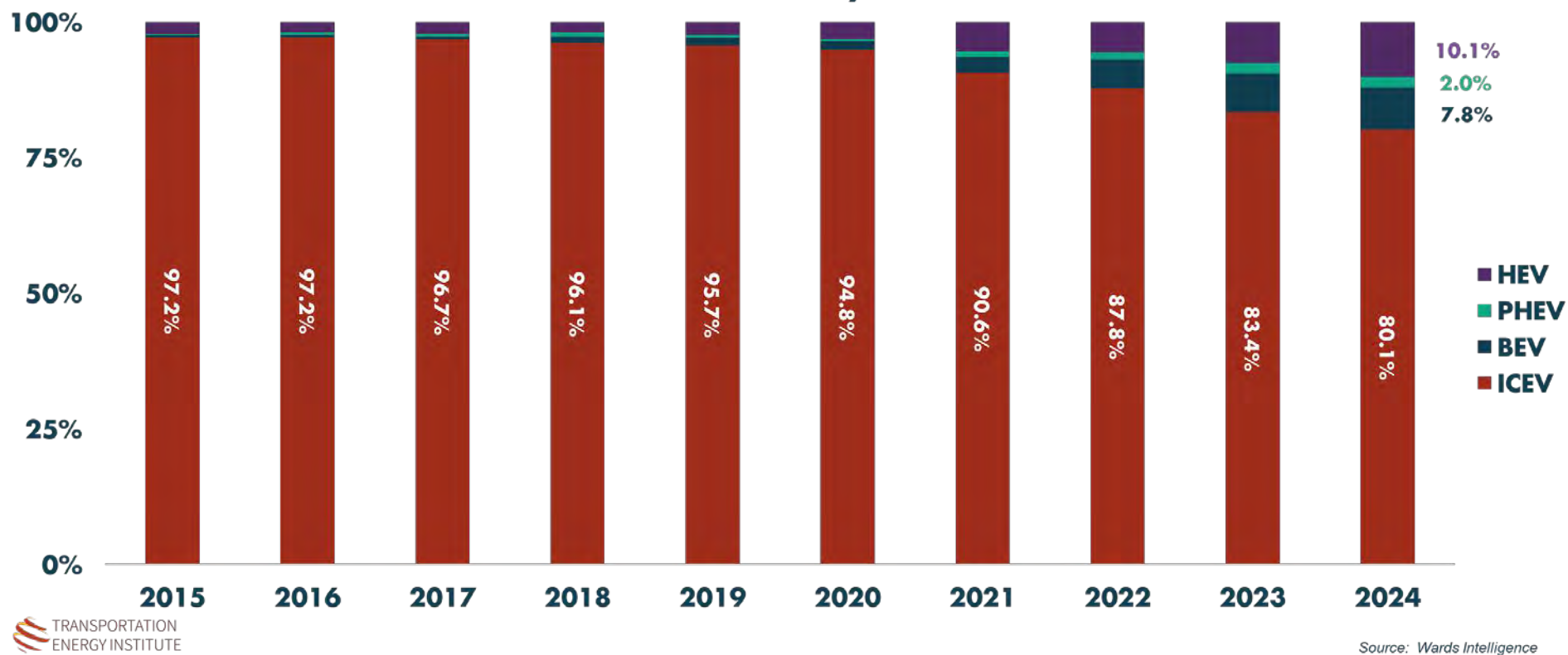
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Combustion continues to reign supreme

Despite expansion of EVs, vehicles with ICEs still accounted for 92.2% of sales thru 2024.

Share of LDV Sales by Powertrain



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97.6% of vehicles sold past 12 year have ICEs

From 2013-2024, Americans purchased more than 193 million vehicles.
Of those, more than 189 million (97.6%) had a combustion engine.

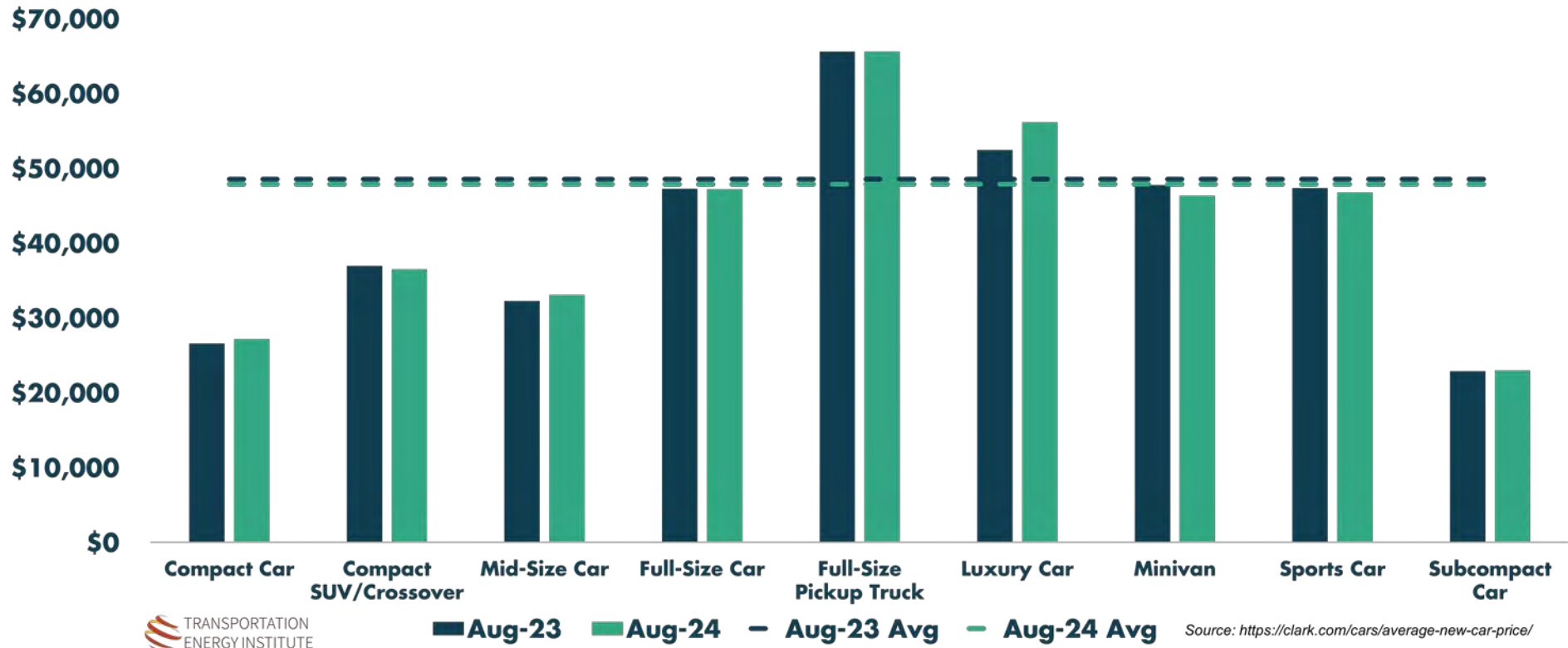
U.S. LDV Sales 2013 - 2024



New vehicles are largely unaffordable

Average price of a new vehicle in August 2024 was \$47,870 and represented 64% of the median U.S. household of \$74,580. Add into this higher interest rates and affordability becomes elusive for most consumers.

Average New LDV MSRP by Vehicle Type



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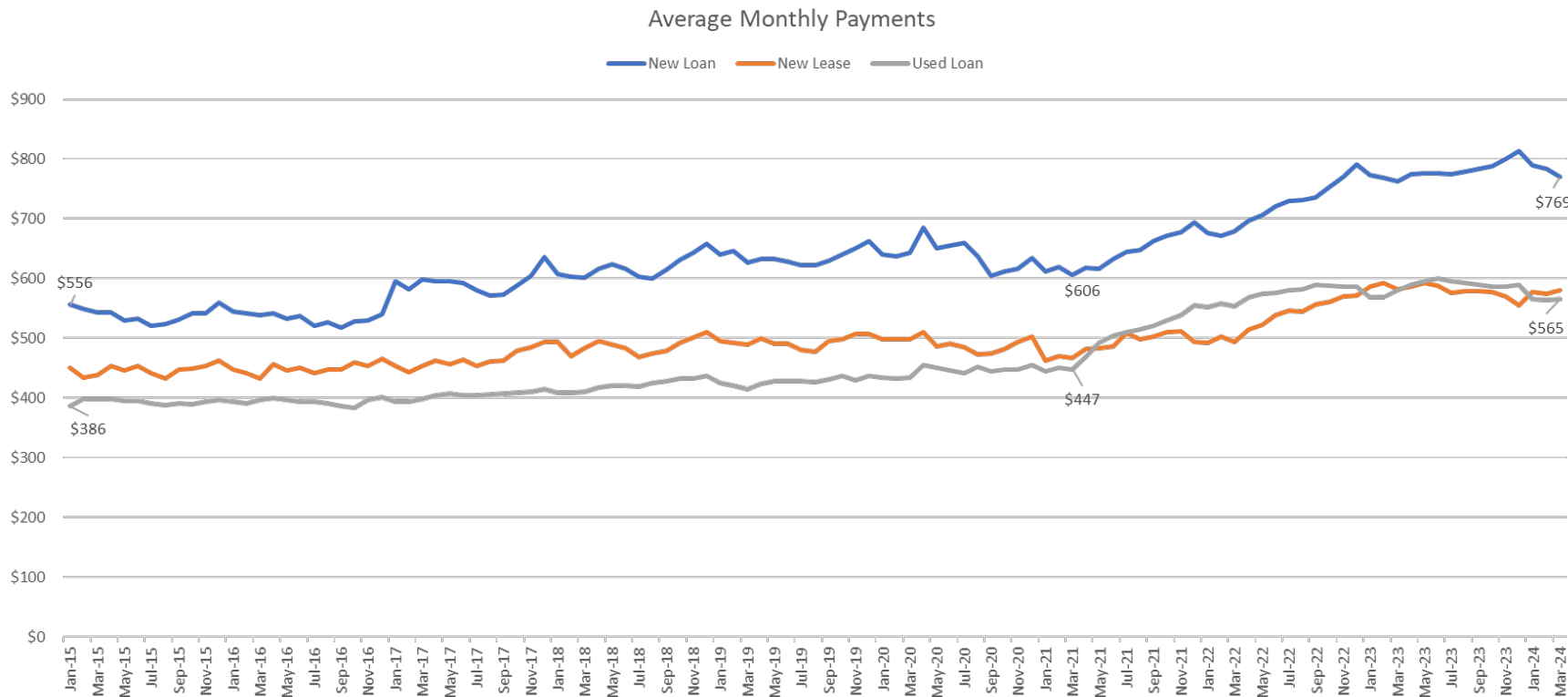
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Monthly payments have jumped

Average monthly payment for a new car is up 27% in past 3 years (\$769) and used car payments are up 26% (\$565). For comparison, according to Apartments.com, the average rent for an apartment in the United States in 2024 was \$1,517.



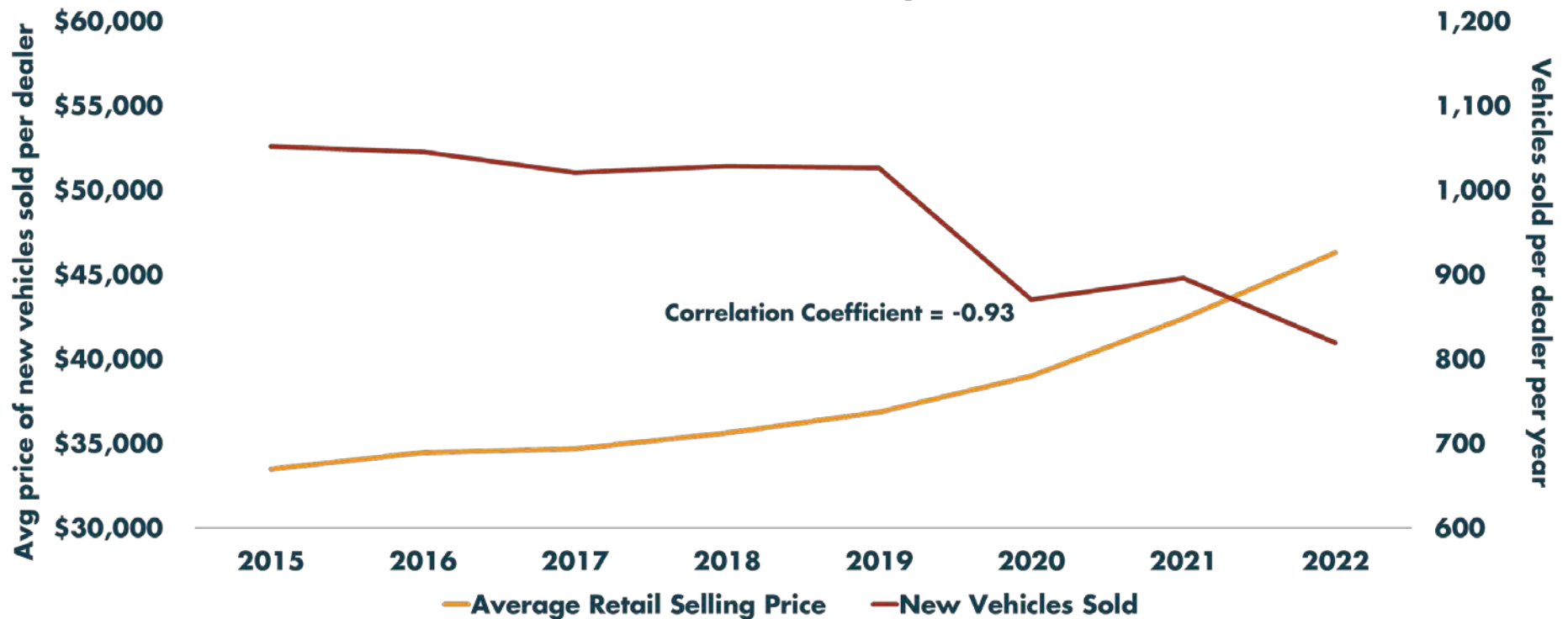
Source: Cox Automotive, presentation at TEI'24

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Higher prices limit sales and slow turnover

Vehicle price affects total units sold and, therefore, fleet turnover rate.

Vehicles Sold vs Price by Dealer



Fuels Institute

Source: NADA



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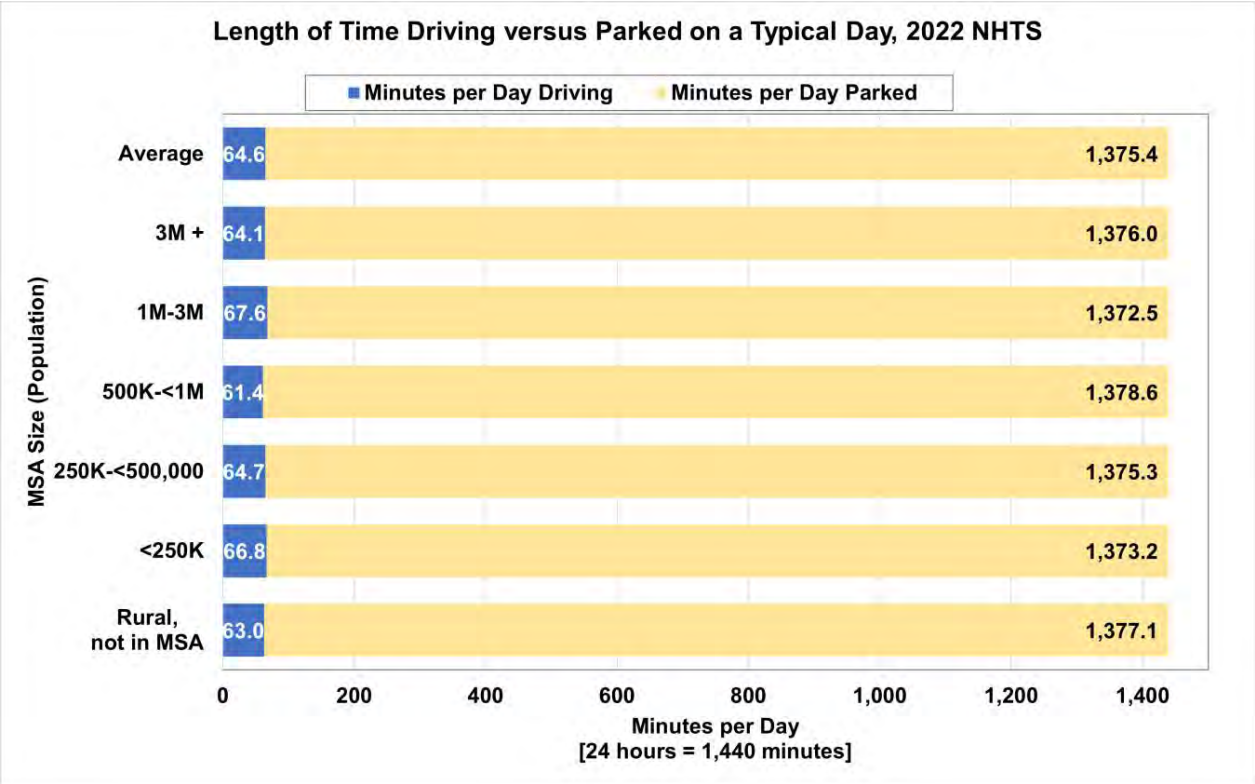
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Why the slow pace of change?

Private Vehicles Site Idle 95% -



Source: U.S. Department of Transportation, Federal Highway Administration, [Summary of Travel Trends: 2022 National Household Travel Survey](#), January 2024.

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What is the real disruption?

- Is the real disruption the electric drivetrain?
- Or, is the real disruption the vehicle platform architecture?
- Integrated system controlled by a single operating system that can be updated with OTA enables:
 - Autonomy (either ADAS or Robotaxi)
 - Retail integration in UI
 - Complete control of every aspect of the vehicle with voice commands
 - Embedded AI
 - Continuous vehicle efficiency and reliability improvements, etc.
- This architecture does not exist with ICE vehicles
- EV's, enable OTA, which enables autonomous taxi, which is in continuous operation
- One autonomous taxi displaces numerous private vehicles – a few vehicles can cause an outsized disruption



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Enter Trump 2.0



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Current polices and their potential fate...

Rule Reductions - President-elect wants to repeal 10 rules for every new rule enacted, but challenges exist:

- Time – In his first term, he challenged close to 30% of major rules on the books at the time, but 57% of these challenges failed in the courts
- Court of Jurisdiction – most national regulations under DC Court of Appeals, with 7 of 11 judges appointed by a Democratic president

Department of Government Efficiency (DOGE), led by Elon Musk and Vivek Ramaswamy

- Claim tens of thousands of regulations each year are promulgated by unelected bureaucrats
- Seek to drive change and save \$500B per year through Executive Action to repeal regulations not specifically authorized by Congress – claim repealing to meet Congressional intent more durable than EO to establish new
- Seek action to immediately pause enforcement and initiate process to review and rescind regulations
- Will leverage two Supreme court decisions –
 - WV vs EPA which found agencies can't impose regulations that prompt major economic or policy questions without specific direction from Congress
 - Loper Bright vs Raimondo – Overturns Chevron Doctrine, ruling that federal courts should no longer defer to federal agencies interpretation of the law or own rulemaking authority – power reserved for legislature



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Current policies and their potential fate...

Withdrew from Paris Climate Agreement –

- First action in first term, nominees for DOE and EPA not supportive of carbon reduction efforts
- Not universally support by energy - companies like ExxonMobil with global outlook prefer to not withdraw
- Changing climate-related laws faces judicial and rulemaking/regulatory review process impediments

CAFE –

- First term enacted SAFER vehicles rule, but took from 2017 to 2020 to enact and replace Obama-era CAFE
- Took Biden from 2021 – 2024 to enact his new more aggressive tailpipe/CAFE plan
- OEMs serve global market and have a multi-year lead time for vehicle production plans – dramatic shift unlikely
- EV urgency might ease, however, until consumer demand and economics strengthen
 - What does DOGE Chair Elon Musk want to see happen with EV policy????

IRA incentives –

- Directly authorized by Congress, difficult to repeal – see first term EO's relative to E15 as examples
- Significant funds have been distributed to Republican-led states – repeal and rescission?
- 1974 Impoundment Control Act – President can't ignore Congressional spending decisions in favor of his own



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Current policies and their potential fate...

Tariffs –

- Increased against Chinese imports – paused for Mexico and Canada
- Could increase cost of vehicles and likely result in lower volumes sold each year, slowing the rate of efficiency improvement in the fleet
- Outcome really depends on responses from other countries – it's a bargaining tactic (except security issues)

Attack on CA –

- A priority in first term, but was unsuccessful and divided OEMs
- Governor Newsome has called special session of legislature to prepare for battle with White House on this and other topics

Autonomy –

- Currently governed by state regulations – difficult, slow deployment and scaling
- Trump administration might federalize and harmonize



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What does the data really say about EV's?



- CAP captures charger session data from **14,907 chargers**, or 68% of the non-Tesla chargers
 - Department of Energy reports there are 50,421 DCFC charger ports in the United States
 - Of those, 21,981 are non-Tesla chargers – CAP pulls data from 14,907 of them
 - *J3400 (NACS adapter) will be added in February 2025*
- Each month, CAP receives data from more than **2.8 million charging sessions** across the nation
- This data is then geo-coded to infrastructure to enable location-specific analysis and benchmarking insights
- Data is filterable by location, business vertical, charger power capacity, and more
- Each data set is presented in a pre-structured graphic for quick visibility, but the data is also downloadable for custom presentation design and analysis
- Charging data are grouped into comparable data sets, enabling effective benchmarking analysis
- Reports will be published quarterly



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Summary and Observations

- The election will change the rhetoric coming from Washington and will change the pace of change
- There are many impediments to dramatic change, and domestic policy does not change global obligations of major corporations whose long-term strategy may not change much. An adjustment in market trends should be expected, but a complete reversal is highly unlikely
- ICEV are not going anywhere soon, regardless who is setting the agenda
- Fuel demand will decline due to efficiency gains, but trips will decline at a slower pace
- Pressure to grow EV market will ease, perhaps allow economics and consumer demand to catch up
- U.S. will continue to grow EV sales and demand/opportunity for EV charging will improve
- Autonomy regulation changes could speed deployment



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Thank you.

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The Electric Vehicle Vision Group (evVG) brings together stakeholders from across the EV industry. evVG participants represent all aspects of the EV eco system in order to bring the big picture into focus. evVG is designed for networking and thought-leadership discussion on strategic issues, practical implementation, and future trends that impact the development of the EV infrastructure. evVG operates under the Vision Group Network, which gathers the collective knowledge and ideas of its members to create a legacy of sharing within the retail community. For more information and to sign up for future Vision Reports, visit our website: vgnsharing.com/vision-report-library



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