CLVG 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. The results are then made available to everyone in the industry through the CLVG Vision Report. This report will help you better understand current challenges, solutions, and opportunities while giving you access to different opinions and perspectives, regardless of the size of your business.

CLVG is made up of invited leaders of the convenience industry, and we have volunteered our time to help our fellow retailers, vendors and solution providers. 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 are promoting problem solving and looking to the future.

The CLVG Vision Report is comprised of three parts:

CLVG Views provides an overview of the conversation with additional research for extra context — something that cannot be done in real time.

Alternative Fuel Options, a special presentation from Chris Nordh, senior vice president for fleet and transit at ABB E-mobility, takes the more technical components of alternative fuels and explains them from the retailer perspective. Unfortunately, he was unable to participate on January 26, 2023, as planned. However, he later sent a video presentation: View his video online or read it here.

In the Room with CLVG provides you with the entire conversation from January 26, 2023, so that you can be “in the room” with us, rather than simply reading polished sound bites.

We highly recommend that you read all three components. Want more? Access the growing library of Vision Reports.
Convenience store retailers have been sorting through the pros and cons of adding electric vehicle charging capabilities for years as the eventual transition to an alternative fuel source seems inevitable. As EV adoption rates increase and automakers continue to add to their EV lineup, so too does the discussion among convenience retailers of how/when/if to invest in EV charging networks. It arguably has the power to change the petroleum marketing landscape like nothing else.

A note from history seems apropos here. When the country transitioned from horses to automobiles, automobile skeptics gave rise to the phrase “get a horse” due to the many complications that arose for car owners; flat tires were a huge problem, no one really knew how to fix the engines and gasoline was hard to find at the time. It was not a smooth transition as the infrastructure was not in place yet. Time will tell if history repeats itself as the automobile itself makes this next transition, taking adjacent industries and businesses along with it.

While it may be too early to place a bet on when the last internal combustible engine will be laid to rest, convenience retailers and petroleum marketers now face a range of decisions around how to support the enthusiasm that continues to grow around electric vehicles. The pace of EV developments is seemingly speeding up and much more prominent in mainstream thinking.

The “when” and “how” part of the EV discussion takes precedence for industry veteran Doug Haugh, who follows EV trends closely. He shared his thoughts with Convenience Leaders Vision Group members on Jan. 26, 2023.

“Nobody’s predicting that [EV] doesn’t happen,” Haugh said. “Everybody’s just arguing about the schedule.” Does the schedule mean 10 years? 40? The timeframe makes a huge difference to today’s convenience and gasoline retailers, he noted.

The range of thoughts extend from “recognizing a new opportunity and a new threat, and positioning ourselves to deal with it,” Haugh said. On one side, he views EV charging as an opportunity for convenience retailers to offer a convenient and necessary solution for EV users when they require a place to charge their vehicles. On the other hand, he noted “we have to be very, very cautious about making investments in our sites that are in perhaps more residential areas.”
Infrastructure concerns loom heavy around this topic with the limitations of the energy grid a key issue. “To duplicate the amount of energy our systems do today from a conventional fuels perspective is sort of unfathomable,” said Haugh. “The grid is nowhere close to being constructed to deliver that kind of energy at that many outlets from an infrastructure substation.”

The complexity of the power grid — and how to improve it has spawned its own set of debates, as has talk about pricing structures.

Will the existing retail petroleum infrastructure convert to support EV? BP’s recent acquisition supports that assumption. The TravelCenters of America purchase announced in February gives BP prime interstate locations which many contend are the ideal locations for EV users who to date commonly recharge vehicles at home but still seek long-range recharge solutions. The move followed BP’s acquisition of a renewable natural-gas company.

Interestingly, about two weeks prior to news of BP expanding its energy-transition portfolio, Shell announced it will not accelerate its 2023 investments in energy solutions after its $3.2 billion investment in renewables and energy solutions in 2022.

While major oil continues to navigate its investment in renewables, EV charging developments happening among convenience retailers spans from no involvement to all-in investments. Indeed, the bulk of traditional convenience retailers have yet to make a significant capital investment in EV charging platforms. Any dollars funding the existing programs that the majority of CLVG members offer in the EV charging arena stem from either charging station companies, government funds or a mix of both.

One CLVG member, Barbara Stoyko, senior vice president of Shell Americas Mobility, brought the self-funded perspective on EV charging networks to the discussion. Notably, in March, 7-Eleven drew attention from the industry when it announced plans to build a proprietary EV charging network throughout the U.S. and Canada. Called 7Charge, the company said its network will be one of the most compatible electric vehicle fast-charging networks in North America.

There will undoubtedly be some shape shifting in the retail sector as EV charging stations take hold across the U.S. with the core charging footprint still uncertain. Primarily, households were deemed — and remain — the preferred place EV owners recharge their vehicles. However, as EV ownership continues its reach into different socioeconomic levels, that changes the characteristics of how and where EV owners will charge their vehicles. CLVG members seek to understand both the EV charging customer of today and tomorrow while also considering the larger issues of investing and building the infrastructure.

CLVG members also view the EV discussion through a customer service lens: Who is the EV consumer? Is it the traveler going on a trip or the commuter stopping by to and from work? How do we best serve them? What’s the value proposition for the EV customer?
Many CLVG members share the view that the typical EV customer is not the typical c-store customer. Commonly associated with driving a Tesla, EV customers generally equate to a higher-income individual than the routine c-store customer. Indeed, owners of a Tesla Model 3 (priced at $53,990 for the Dual Motor All-Wheel Drive option) have a household income of $133,879 per year according to research from Hedges & Company, an automotive digital marketing and research agency. Comparatively, the average convenience store users are largely deemed as having a much lower household income, as much as half of that.

C-store users also skew much younger than the core Tesla driver today. In fact, the median age of a Tesla Model 3 owner is 51 according to Hedges & Company. That is more than double the age of the most-often cited demographic associated with c-stores, which is 15- to 24-year-old males. [CVLG editor’s note: a current, relevant c-store demographic study was not available as of press time].

The EV customer of today may not be a heavy convenience user but the EV customer of tomorrow may be one. Stoyko believes that to be true. The Tesla customer of today represents an early adopter, she noted, generally with a high income and likely someone who charges their Tesla at home. But, she wonders, as more of the middle of the population converts and become EV users, how that shift changes the dynamic of the typical convenience consumer.

One of the struggles for operators comes by way of accommodating the consumer using an EV charging station. That person generally sits at the store for 30 minutes, Stoyko pointed out, and even assuming half of those consumers enter that store, it's likely only 100 people per day. “Not the kind of numbers you would typically see in the customer flow that we are used to,” she said, “so that's on my mind.”

It becomes a question of how to meet the needs of the EV customer and at the same time meet the needs of the convenience customer not looking for energy, which may require additional parking and a different layout in Stoyko's mind.

Joe Sheetz, chairman, Sheetz board of directors, noted that he’s already starting to see hints of a shift in the EV consumer more closely aligning with the historically traditional c-store customer as more non-Tesla electric vehicles hit the streets. “It’s starting to lean a little more toward our typical customer,” he said. While not exactly the typical customer, he noted this new influx of electric vehicle customers at Sheetz does not seem to be quite as affluent as the stereotypical Tesla user. He added that some of those consumers, particularly those from smaller towns, do not have the infrastructure in place at their homes to charge their vehicles.

That consumer stopping to charge at Sheetz then becomes a regular customer, not someone stopping to charge between a long travel experience, Sheetz said. Still, he struggles to see a huge win on the economics with EV charging sites given the current usage he’s seeing at Sheetz stores; he also noted that to date EV charging entities have funded Sheetz’s EV charging portfolio.
This year, however, Sheetz has plans to develop two stores where the chain has a larger financial investment in the EV strategy, and therefore greater control over the way the company charges for that service. Even then, government funding will support install costs, the difference then becomes Sheetz maintains control over how to charge for the service. As an early adopter of navigating the future of the EV consumer, Sheetz very clearly believes: “If there is someone on our lot for 30 minutes and we cannot sell them anything, we are terrible retailers.”

Like Stoyko, Sheetz agrees that when examining the Tesla driver as a customer specifically, the basket size of that customer isn’t quite as productive as other customers. “But they do buy something just about every time they’re there,” Sheetz said, “where a typical gasoline customer may have a few stops where they just buy gas and get back in the car and take off. So [the Tesla driver’s] frequency of buying something is a little bit better.”

This continues to be a “test and learn” scenario, Sheetz said. Whether the consumer identifies as a gas-and-go customer or an EV charging customer, his focus is squarely on the larger offer that drives people into the store, and he plans to “continue to increase those traffic drivers outside of fuel.”

Greg Parker, CEO of Parker’s Kitchen, took his assumptions about Tesla drivers as c-store consumers to the test. He worked with a group of students from Parker College of Business at Georgia Southern University to determine the value proposition and quantify sales against customers using charging stations at Parker’s Kitchens. Four of the chain’s stores have Tesla charging stations.

The students leading the study followed customers from the point of charge into the store to determine shopping patterns. In terms of comparing purchases of an EV charging customer with the internal combustion customer, Parker said the EV customer’s basket size was not nearly as good. The findings clearly showed nearly every person using a charging station came into the store to use the restroom. The chain assigned a low value to EV charging customers by determining a specific cost to things such as the water used by a customer flushing a toilet and washing their hands, the cost of the toilet paper, regular maintenance, and more. “There is a value to that,” Parker said. He used this data to negotiate a better EV charging contract.

Still, Parker wants to be an early adopter of EV charging. “I do think there’s an opportunity,” he said. “Eventually, there’s got to be a way that we can monetize this. There’s got to be. And when that happens, we want to be the first in line.”

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**Takeaway:**

The EV-charging customer of tomorrow may prove a heavier c-store user than today’s EV driver.
3 Pathways of EV Retailing

**Heavy Investors**

**Barbara Stoyko, Shell:** Looking at EV opportunities in Europe, Shell has a number of locations pushing toward 30% utilization of on-site charging, Stoyko said, adding that these are locations where consumers pay for that service. However, she does not believe that same economic return will happen in the United States. “But, hopefully on a trajectory toward that,” she said. Shell continues to explore the expansion of EV charging in the U.S. with a small footprint in place currently. She adds that the highest utilization of EV rests in China, where both the rate of adoption is high and due to population density, those consumers are not charging at home.

**Donna Sanker, Parkland:** The chain had a network of 25 locations in Canada with EV charging installed at the end of 2022 and will double that number by early 2024. “It is early days but interesting learnings,” she said. Shell continues to explore the expansion of EV charging in the U.S. with a small footprint in place currently. She adds that the highest utilization of EV rests in China, where both the rate of adoption is high and due to population density, those consumers are not charging at home.

**Exploratory Learners**

**Joe Sheetz, Sheetz:** Currently Sheetz includes EV charging stations at 95 of the chain’s 680 stores. Of those, 70% are contracted through Tesla; the other 30% are a combination of Electrify America and EVgo. He noted there is a variance in how frequently different electric vehicles need to stop to charge. “The travel locations are where the high volume is at,” he said. Twenty additional EV sites are now under development within Sheetz. The chain starts talking to EV companies as they are developing markets to consider EV infrastructure early on; Sheetz notes it can be a two- to three-year process because of how onerous it is to get permits. The approach is similar to the way the company handled E85 fuel, meaning they put the underground infrastructure in to avoid having to backtrack and dig in the future.

**Greg Parker, Parker’s Kitchen:** Parker continues to dig for data with his four stores that have Tesla charging stations (each store has eight stations) in the search of a positive economic model against EV charging. He contends that if he were a small operator, he would opt to be a slower adopter and “wait and see where things fall.” Since the discussion, the chain announced all new stores will be built with EV capabilities.

**Scott Hartman, Rutter’s:** The chain installed a handful of electric charging stations six years ago. The chain provided the charging stations free for customers, and eventually Hartman decided that free charging did not result in an economic success story. “We were providing free electricity for five years to a handful of people charging. Never got paid a penny by the charging station company,” he said. However, he has not completely closed the door on EV charging. His future-forward outlook on EVs include concerns about fire hazards, how batteries will be recycled and the economics of old cars. “We sell energy and there are lots of different ways to sell energy. EVs are just one piece of the larger puzzle,” he said.
Many CLVG members are treading lightly on investing in EV charging stations at the moment.

**Waiting for the Right Time**

**Annie Gauthier, St. Romain Oil Company:**
Gauthier notes that since Y-Not Stop stores operate in Louisiana, the company has the benefit of being “where the future does not go to first.” As a smaller chain with just more than a dozen stores, they are “standing back and watching,” she says. Our learnings need to be limited in terms of investment and risk. “There’s no current ROI and not a path to it, and we simply don’t have the scale to fail,” she said. She does engage in EV charging conversations at the state level and with their fuel supplier. That said, the chain has run some conduit at some of its new-build stores in a future-forward strategy to avoid the need to tear up the site down the road.

**Natalie Morhous, RaceTrac:** While agreeing that there is a lot of learning that can happen by putting EVs in today, Morhous also believes that comes with the risk of the technology becoming obsolete before EVs hit the mainstream consumer. “While you might get in and become part of a habit of some of the early adopters today, you might also wind up with obsolete technology in the future, at the time that more people have adopted EV,” she said. When RaceTrac installs EVs, she said it is to “learn about the technology; to learn a little bit about the early adopters and the consumers.” It would be less driven by a view of thinking there is a tremendous advantage to being first to market. Indeed, she contends there is no disadvantage to being a late adopter on EV charging.

**Jigar Patel, FASTIME:** “We are actually watching EVs very closely,” Patel said, adding that a key factor in deciding to move forward with installing EV chargers is the number of registered electric vehicles in his state. According to the state of Alabama, they expect 500,000 electric vehicles by 2030. For now, in new builds the chain runs conduits in anticipation of the future demand. “In existing stores, we are just waiting and watching to see where and how it turns,” he added.

**Liz Williams, FoxTrot:** Williams said EV charging is not something the company is considering but also commented that the idea could have merit someday.

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**Bottom line:**
Lack of a clear economic model is giving CLVG members pause in aggressively pursuing EV charging models.
“We’re cautiously optimistic about what we’ve seen so far,” Donna Sanker, president of Parkland USA, said of the company’s early learnings on electric vehicle charging. The company closed out 2022 with 25 EV charging stations installed and has ambitions to expand throughout Canada to create an ultra-fast electric vehicle network within Parkland’s Chevron and On the Run retail stores.

The number of zero-emission vehicles forecasted for 2040 in British Columbia is more than 2.5 million and the Canadian government is financially supporting the infrastructure behind the EV charging network.

While a seamless charging experience may exist in the future, at the moment, Sanker describes the experience many EV drivers have in Canada as less than ideal. It’s not uncommon for a charging station to sit at the back of a hotel, she said, or by a trash dumpster — not in a prime customer-friendly location. In contrast, Parkland’s new sites embrace EV charging customers and tout the fact that they have a spot to charge with proper lighting, vacuums if they wish to clean their car, and a quick-serve restaurant inside the c-store.

The Canadian locations are launching with complimentary charging but eventually there will be a fee for the service. Some of the urban locations are performing better than the highway locations, Sanker said. “We are seeing some decent numbers,” she said. The reason for that, she believes, is because the urban sites, particularly in Vancouver, support consumers that do not have access to chargers or cannot install them at home. She adds that the customer base aligns with their typical c-store customer; in fact, EV users typically activate the charging process through the chain’s loyalty app. That allows the chain to track when those customers opt to go into the store, how much they are spending, and frequency of visits.

From the customer’s point of view, the app will eventually allow them to see if a charging station is available. That capability is still being developed, Sanker said. At the moment she does not foresee allowing consumers to reserve a spot to charge but that could be something to consider down the road.

One challenge as the EV network continues to roll out comes by way of maintenance — ensuring things are running smoothly and the charging systems are reliable. Naturally the goal is to avoid a customer coming in to charge and having the charger be inoperable. “I think the technology is good, but it’s not perfect,” she said. The weather in Canada adds another element to contend with.

The technology Parkland deployed essentially works like a battery, Sanker explained, so it holds enough for a certain number of charges and avoids pulling from the power grid during peak hours, which comes with a higher cost if that needs to happen.

Overall, Sanker believes the EV endeavor is to date faring on the side of better than expected. “I would say not all the locations, but in many of them, the utilization is better than we would’ve hoped for — at least out of the shoot,” she said.
Current EV state of mind: Cautiously optimistic

Side Views

Collectively, most CLVG members remain in a state of flux on how much energy (pun intended) to invest in EV charging platforms. Here, a curated list of things preventing CLVG members from aggressively adopting EV charging platforms at the moment.

**Insufficient revenue**
EV charging station companies, eager to expand, contract with c-stores but that arrangement does not guarantee a solid ROI. At least in one case, a CLVG member pointed out they were never paid a penny by the charging station company.

**Odds of obsolete equipment**
CLVG members wonder how fast current EV charging equipment will become obsolete given the fast pace of development on the EV side.

**Utility regulations**
The overall view of CLVG members is that there needs to be more uniformity in local utility regulations. One view was that retailers should be able to sell electricity.

**ICE still relevant**
The rollout of electric vehicles could take longer than forecasts are predicting. At least for the next 10 to 20 years, traditional gasoline and the internal combustion engine will likely dominant.

**Think beyond EV**
Electric is not the only alternative fuel in development. Technology will advance quickly and CLVG members want to avoid over-investing in EV only to discover they had their blinders on about other alternatives fuels.

**Not economically viable**
Consensus among current CLVG members is that EV charging is not economically viable at the moment, especially if the retailer is funding the cost of the chargers.

**Stick to your knitting**
Run the best stores possible. Stay focused on areas of operation where you excel.

**Last man standing**
For those that don't offer EV charging, that could be an advantage by hanging in there and accommodating those in need of traditional fuels.

**Anyone want to join forces?**
One concern: another channel could usurp the EV marketplace before traditional convenience retailers make the shift to widely supporting EV; Subway's announcement of its Subway Oasis model targeting EV drivers is but one example. Hal Adams wonders if there is potential in smaller companies aligning in some fashion, even possibly with a larger company, to create a preferred business case to secure the c-store industry's position with EV charging.

Current EV state of mind: Cautiously optimistic
Kevin Smartt
CEO, TXB Stores

Joe Sheetz
Executive Vice Chairman, Sheetz, Inc.

Eva Strasburger*
President, StrasGlobal and CEO, Compliance Safe

Annie Gauthier
CFO/Co-CEO, St. Romain Oil Company

Barbara Stoyko
SVP Shell Mobility Americas, Shell Oil Products U.S.

Liz Williams
President, Foxtrot

*Founding Member

CLVG Views  Alternative Fuels Options Presentation  In The Room with CLVG
Special Presentation:

*Alternative Fuel Options*

My name is Chris Nordh. I am going to give this presentation on behalf of ABB [an electric vehicle charging company]. I’ve been in the transportation space for about 18 years, going through a lot of interesting experiences over that time, and the majority of my background was spent at Ryder, where I was for 15 years doing all kinds of interesting things. I started out doing fuel purchasing and distribution and ended up building out our software control systems that ended up managing a billion dollars’ worth of purchases, distribution, and pricing of fuel, diesel and gasoline, at over 440 different Ryder facilities. Those were all contractual sales as opposed to the retail environment but still very much applicable in the same manner.

Evolving from the traditional fuel space, I spent the last seven years at Ryder rolling out natural gas vehicles, fuel stations across North America, ranging from class 6 to class 8 vehicles, and we ended up becoming the second-largest fleet of alternative fuels vehicles in North America at that time.

Within that seven-year period, I also transitioned into electric vehicle management, and so I have built and rolled out over a hundred different kinds of EV charging stations, both AC and DC. During that time, I was managing a number of very interesting relationships, including with Nikola, Change, Workhorse, as well as more traditional OEM [original equipment manufacturer] relationships on the EV side such as Navistar and Freightliner. I also served on the Freightliner EV customer council and WEX’s customer advisory board during that time.

After my career at Ryder, I decided to take a jump into the alternative fuels world and went to work for a company called Workhorse. They’re a manufacturer of last-mile delivery electric vehicles and drones ... and spent two years there building fleet-as-a-service products, agnostic maintenance management software, and I developed dealer and commercial engagement systems. And now I am the senior vice president for fleet and transit at ABB E-mobility, a manufacturer of AC and DC charging stations, as well as a number of interesting software products that we’ve built and acquired over the years.

Chris Nordh was scheduled to participate in the CLVG meeting on January 26, 2023. Unfortunately, he was unable to participate as planned. However, he later sent a video presentation: View his video online or read it here.
But this presentation is going to focus more on the retail environment and so [I] wanted to start by talking a little bit about industry trends (see slide below).

So, what you’re all seeing out there right now is a significant amount of both social and political pressure to move toward lower GHG [greenhouse gases] fuel sources. That’s why you’re all listening to these kinds of presentations and learning as much as you can. You’re seeing regulations of diesel and gasoline technology becoming a lot more stringent, and what that does is it makes traditional engine technologies, their vehicles, and their fuels more expensive as the regulatory environment continues to put more and more owner’s requirements on those products.

At the same time, we’re seeing electric motor, inverter, and battery technologies evolving to become cheaper, more efficient. Batteries are becoming more energy dense, cheaper to produce, cheaper to recycle, and lasting a lot longer. We’re also seeing a lot of scale being generated right now because of the amount of electric vehicles that are demanded by the industry, and so additional cost efficiencies are being brought to the world as we’re adopting more vehicles.

And then you’re seeing EVs and internal combustion cars cost about the same, and now we’re talking about that mid to luxury type of a space. And EVs are now actually projected to have a better total cost of ownership in comparison to the internal combustion counterparts, given where fuel prices are today. That is accentuated in areas around the globe where fuel prices are significantly higher than what we’re seeing here in the United States. As an example, Canada’s another good example where gasoline and diesel prices are similar in price to where they are in Europe.

And then, pretty recently, just

**INDUSTRY TRENDS**

- Social and Political pressure to move towards lower GHG fuel sources
- Regulations of diesel & gasoline technology becoming more stringent, making traditional engine technologies & their fuels more expensive
- Electric motor, inverter & battery technologies evolving to become more efficient, energy dense, and cheaper
- Scale is generating additional cost efficiencies as the world adopts greater vehicle quantities
- EVs and ICE cars cost about the same (mid – luxury) and EVs are now projected to have a better TCO
- US just passed the 5% EV share of new vehicle sales (graph)
at the end of last year, we saw the U.S. pass the 5% EV market share of new vehicle sales, and this is the breaking point of where we start seeing significant increases from other countries that have breached this same point, Norway being kind of that unique example where they've now reached close to 85% market share of new vehicle sales. There's a lot of things that go into that, including tax incentives that make it much more advantageous to own an electric vehicle in Norway. And so, we don't have all of those same forces, so I don't expect that same level of adoption to take place as quickly. But it is still a very significant milestone that we've reached.

So then jumping into some of the different fuel type options (see slide below) that retailers are exploring and looking at ... and these are the ones that I specifically have experienced and can talk about at depth. Let's start from the left-hand side where you're seeing a picture of a CNG [compressed natural gas] station. And basically, this requires significant amount of scale in order to make sense of it, so you need to have a fleet of vehicles or significant number of vehicles because really what you're doing is you're building a fairly large station with large capacity right off the bat. It's not something that you would upgrade over time in any kind of scalable way or easy way. It is quite capital intensive, so you're spending somewhere between half a million and $2 million to build a station of any significance.

It does have some pretty significant maintenance costs associated with it. Regular maintenance is required. Breakdown maintenance is certainly also required. It's not maintenance-free by any means. One of the benefits, though, is that there's no fuel loss due to lack of usage, and that's traditionally also the case with gasoline and diesel where the product can sit there for fairly extended periods of time without any major degradation or loss of fuel.

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FUEL TYPE OPTIONS

CNG
- Requires scale
- Capital intensive
- High maintenance
- No fuel loss due to lack of usage
- Minor $ incentives available
- LD, MD & HD vehicles available

LNG
- Requires scale
- Capital intensive
- High maintenance
- Will vent due to lack of usage
- Minor, if any $ incentives available

H2
- Requires scale
- Capital intensive
- High maintenance
- Losses due to size of H2 molecule
- Incentives are available
- LD vehicles available & more coming

EV
- Does not require scale
- Capital intensity in line with scope
- No energy loss due to lack of usage
- Major incentives available
- LD & MD vehicle available, HD coming
Now, there's minor incentives still available for CNG. It used to be a pretty lucrative environment from an incentive landscape perspective, but that's starting to dissipate. You do have light-duty, medium-duty, and heavy-duty vehicles available in a CNG format.

Jumping over to LNG (liquified natural gas), now, this is basically the same product, which is methane. However, it's been chilled to such a cold temperature – we're talking about negative 200 and some degrees Fahrenheit – in order for it to basically become so small that it becomes liquid. Again, this product requires significant amounts of scale.

There's additional safety aspects to it. Everybody who fuels an LNG vehicle has to wear face masks and gloves in order to handle this product. This will burn skin on contact in a similar fashion to how boiling water would or even boiling oils. It is also capital intensive, even more so than a CNG station. It has a pretty high amount of maintenance required. There's a lot of components that fail and wear out over time.

And the other aspect around this fuel is that it's going to vent over time. So you're sitting with this cryogenically frozen fuel that because of the ambient environment, even though it's sitting in a thermos bottle or the equivalent of a large thermos bottle, it does heat up over time. And as a gas heats up, it expands, and the pressure of the tank will get to a certain point. We're talking about 250 or so psi, and after that, it's actually going to start venting. And it pretty much sounds like somebody is in your yard with a really loud whistle, just continually whistling all the time throughout the day and night, if you're not using the fuel and relieving that pressure by putting fuel into vehicles. There's minor incentives left for LNG, and really, only heavy-duty vehicles are available at this point in the LNG format.

So then jumping over to hydrogen, which first started out as a light-duty fuel type but certainly moving toward the heavy duty, we're starting to hear a lot more OEMs starting to offer heavy-duty hydrogen vehicles. And it's being touted as the solution for long-range tractors instead of electric, even though Elon Musk would certainly counter that argument with plenty of color to add to that fuel type.

This does also require scale. You do need to build a fairly large station on the hydrogen side. It is capital intensive. It is high maintenance, and there are some amount of losses actually because the hydrogen molecule escapes even tank systems because of its size. There are some incentives that are available, so there's certainly government aid to bring that product to market. But it is not being widely adopted, and I certainly wouldn't recommend this for any retailer without any significant commitment from a fleet of vehicles or customers that would be using that station.

On the EV side, however, this is something that you can start small. It does not require scale. You can grow it over time. You can expand your infrastructure over time. You can start with one station. You can start slow. You can move to faster and faster and more and more stations over time. There are some synergies and some cost reductions by doing certain scale of projects, and there's ways of mitigating that by pre-digging, trenching and stubbing out certain parts of your parking lot during the first installation to make future installations a little bit cheaper.

It's fairly capital intensive but in line with the scope of the project, and we'll go a little bit further into that, as I'm going to dig deeper into the EV category here because I do think that this is the most logical place for retailers to move forward with, going forward from an alternative...
fuels perspective. There's no energy loss due to lack of usage, so a station can sit there for weeks and months without actually losing any energy to the external environment.

There are major incentives available both on the station as well as on the vehicle side. We do see significant attention and momentum behind this product and much more so than any of the others. And there are currently today light-duty and medium-duty vehicles available with a significant number of OEMs moving forward with their heavy-duty vehicle portfolio over the next several years.

Let's talk a little bit here about the electrification market size (see slide below), and what you can see going from 2025 into 2030 is that there is tremendous growth expected from this market in every segment Basically imaginable, so fleet charging, which is frankly my specialty, being the largest segment in the marketplace. But I want to focus a little bit more on-route charging providers ... DC fast charging. It's usually on the side of highways where corridors are connecting various cities, and you'll have a lot of vehicle traffic going through.

You also have, within this category as well as going into the next category, more of your inner-city gas station workplace environments, which is more of your commuter type charging environments, in very kind of close third place there to that on-route charging space. And then even though we do see the majority of charging on personal vehicles being done at home, probably as much as 80% of charging being done at home, that is still a much smaller market financially because of the low speeds and the cheaper chargers that are required for the home. You're talking about $1,000, $1,500 maybe product in the home in comparison to $10,000, $20,000, $30,000, $40,000, $100,000 for a DC fast charger to be installed at your site.

And so, to dig even further into this, I'll define here some of the different categories that you start looking at when thinking about the speed of charging and how to talk about it and what it really means both financially as well as from a speed perspective, and then also from an
electrical requirement perspective (see slide below). On the AC side, which is more of your home-based charging, you can think about this anywhere and really even cheaper than the $5,000. If you're installing an AC charger at your house, you're probably less than 10 feet away from your electrical panel, and it's equivalent to installing an outlet for your electric dryer. And so now you're probably talking about your local electrician coming in and for $300 to $500, they install an outlet for you. And you have $1,000 charger perhaps, and for $1,500, you're out the door.

In more commercial-type applications, you have a more rugged AC charger requirement, and you would also usually be trenching through the parking lot or at least pulling electrical lines more than 10 feet. You're probably talking about 50 to 100 feet, and so I created an estimate here of $5,000 to $10,000. This does kind of think about that either depot or retail-type environment with a much more rugged product and longer distance from the panel.

These are at the speeds of 7 to 19 kilowatts, and if you're not used to the electrical speak, then I'll translate that into how long that takes to charge a typical electric consumer vehicle. And so that would be somewhere in between four to eight hours of charging, and then on a truck side, that's anywhere from eight to 48 hours. So obviously, AC charging really does not do very well in the medium- and heavy-duty commercial space, but it could be appropriate for a panel van that has the battery size of a regular consumer vehicle. Now, the nice thing about this is that you have a pretty low electrical need. Most of these chargers would be around the 50-amp requirement from the panel. It's a regular off-the-shelf breaker for your panel.

And then in your next category: so now we're going from AC, or alternating current, into the faster product, which is DC, or direct current. Direct current is actually the current at which your vehicle's battery operates on itself. So usually, what happens is that the AC needs to be translated onboard the vehicle into DC. So now you're actually going direct DC into the batteries, and that just makes for an easier, faster way of being able to charge a vehicle.

So in the lower-power category there, these products are going to range somewhere in between $15,000 to
$40,000 per port already installed. So, think about that already being with some amount of engineering, some amount of permitting, some amount of electrical pull away from your panel. And that's why I have such a wide range because every installation's going to be different. If your panel doesn't have spare capacity, you're going to get a new panel. That's going to cost you more money. And so we'll go into some of that here on the next slide as well.

But in this low category, you're talking about 20 to 50 kilowatt speeds, and now you're talking two to four hours for a car and four to eight hours for a truck, not on the heavy-duty side, more on your light- and medium-duty kind of products. These are still fairly low on the electrical needs, so somewhere between 60 and 80 amps for these lower-speed DC products.

Jumping now into your high-power DC product, pricing obviously jumps. You can go anywhere from $50,000 to $200,000 obviously, again, depending on some of those details. You're most probably going to be putting in a new panel for these products. Now, they're running significantly faster, so your traditional car can now get away with a 15-minute to maximum 60-minute charge to go from basically zero to 100, and now trucks are in between that one- to four-hour range. So this is really where we start seeing most retailers going toward. The [companies supplying chargers to the] big retail station chains, the EVgos, the Electrify Americas, and so many others, they're really dedicated in this segment here, anywhere from 150 to 350 kilowatt stations per parking spot. Now, these obviously have much higher electrical needs, somewhere in between your 150 and 750 amps required from your panel. This starts getting into the category where you are calling the utility company and asking for more power a lot of times.

And then your last category is sort of this interesting spot. This is where you are inputting a low-current AC into the charger. So think of it just like your AC charger on the very left-hand side here, from an electrical requirement perspective and an input requirement. This product then over time charges up a battery that sits inside of the unit so that it can then push energy very quickly into the vehicle once it's there.

Now, what does that mean? That means that you can't charge vehicle after vehicle after vehicle. You want to have a DC product, but you don't necessarily have the ability to expand your electrical capacity. Then this product kind of fits into this very niche kind of environment. These products are expensive, so $100,000 to $300,000 per port, and this is because you are having a large amount of batteries within this cabinet in order to dispense that so quickly. These are able to do anywhere from 90 to 200 kilowatts, so 30 to 60 minute for a car, and they're not really suited for trucks because the batteries are not large enough to really dispense that amount of energy. And it's really not made for commercial usage because it can't continually charge at this high rate.

So let's jump in to some of the things to consider (see next slide). You're moving into this, and maybe you're not sure exactly where to start. And really, what you have to figure out is, what existing power do you have? I always advise my clients to have a professional site assessment done at every single site. You want to know, where are your low-hanging fruit? Where are the ones that you're just never going to be able to do, and which ones are the ones that you're going to do in the mid term? You want to figure out your spare capacity of your existing panels to see, how many chargers can you possibly put based
on not needing to upgrade your existing panels? And then do you have 240, or do you have 480 voltage? These are all things that you need to understand before you spec a charger to be installed on-site and before you can start actually pricing out what this is going to look like for you.

And then, eventually, you want to understand the available power from the utility company as well. Are they going to be able to upgrade your facility easily enough for you to get additional power and be able to expand this? And that also creates your long-term strategy. Is this a site that I want to stay in for the long haul? Am I going to be able to evolve this from my traditional fuel business into this future EV network business that I’m potentially looking to go into?

Your next step is really looking at demand. There’s different ways of looking at this and this is where you start getting into the subjective kind of opinions. Right now, EVs are frankly for those who can afford it, and so you’re looking at high-end neighborhoods, long-distance travel corridors. And then you want to look at existing infrastructure and competition in that area to see if this is where you want to move forward.

Most EVs today are, again, being charged at home, and so you have to find the right balance between where you think that there’s going to be a demand. And a lot of times the demand comes from high-end neighborhoods that are not single-family homes. So now we’re talking about apartment complexes, condo complexes where people still want to have EVs, but it’s also not very easy to get a charger installed in your apartment complex. And then they’re going to need to rely on retail-type charging. This is a little bit of a puzzle of figuring out the right real estate to move forward in.

And then you want to think about things like network partners. You want to be on somebody’s network. You want to be on many networks. You want to be on all the different apps in order for as many people as you think that there’s going to be a demand. And a lot of times the demand comes from high-end neighborhoods that are not single-family homes. So now we’re talking about apartment complexes, condo complexes where people still want to have EVs, but it’s also not very easy to get a charger installed in your apartment complex. And then they’re going to need to rely on retail-type charging. This is a little bit of a puzzle of figuring out the right real estate to move forward in.

And then you want to think about things like network partners. You want to be on somebody’s network. You want to be on many networks. You want to be on all the different apps in order for as many people as
possible to know that you have a charger now on your site. And then the question becomes, okay, how are you going to bill for it? Are you going to have a booking solution?

Because the worst thing – and I own an EV myself – the worst thing that can happen to you is that you’re on a long-distance trip. You have a site picked out, and you are at 5%. And you’re like, “Hey, no problem. I’m going to charge here.” You arrive, and there’s 10 cars ahead of you. And each one of them is going to take 20, 30 minutes in order to charge. So then the question becomes, okay, do you implement a booking solution? And there’s a lot of options for different networks and different sites to list your charger on. And I listed a few different options just to start looking at and start learning from as well.

And then really the evolution, the idea that, is the gas station and is the convenience store of today positioned best for this evolution into electric? And I think that there’s a lot of evidence to say that you want to combine business models.

And so food and charging is one of the ones that [people] seem to be kind of landing on. And what does that really mean? Well, restaurants seem to be well positioned because you’re talking about dwell times. Dwell times of this vehicle of 30 minutes or 45 minutes or maybe even an hour really fit well into a lunch slot or maybe even a breakfast slot or even a dinner slot.

And so then how do you look at evolving the business? And it becomes a real estate kind of question. Do you stay in the real estate that you’re in today, or do you need to look at alternative sites, that multi-business kind of application?

I pulled up this picture (see image above) here because I thought it was really interesting, this evolution of fast food. This is a Taco Bell facility in Michigan, if I’m not mistaken. And basically, they have a dark kitchen up top, so it doesn’t have a seating area. It doesn’t have any
walk-in restaurant area. It’s the evolution of Taco Bell, basically.

So you pull in underneath, and now it has four lanes to basically go. And the food is basically just sent down to you in an elevator of sorts for you to grab. And so is the future restaurant going to look like this, where maybe there’s charging parking spots on the bottom or outside of the restaurant where you have a reservation system? Maybe you pre-book your food, your order. You walk in, or maybe you have the food delivered to your car while you’re waiting for the vehicle to finish charging.

These are all the kinds of questions that we’re all asking ourselves right now, and maybe we don’t have answers for this just yet. But [they are] the right questions to start asking about how the models are going to evolve and how this particular industry is going to evolve serving these new vehicles and this new energy need into the future.

I want to thank everybody for the time today. And I realize that I can’t open this up for questions, but I’m going to leave my contact information. And hopefully, you’ll be able to reach out and ask any follow-up questions that you may have from the presentation. Again, thank you very much, and I look forward to chatting with you in the future.

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Chris Nordh
Senior Vice President, Fleet & Transit
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With 17 years’ experience in the transportation and logistics industry, Chris Nordh’s work focuses on advanced vehicle technologies and fleets’ efforts to convert to cleaner energy and more efficient technology. In his current role at ABB E-Mobility, Nordh leads the transit & fleet division to expand upon strong products and services, guiding fleets through electrification focusing on e-depot enablement and efficient operation. He previously worked as vice president of commercial development at Workhorse Group Inc. (WKHS - NASDAQ) developing maintenance, service, digital and fleet-as-a-service solutions for the last mile delivery industry. Before Workhorse, Nordh spent 15 years at Ryder System Inc. (R - NYSE) in a number of leadership positions focused on developing alternative fuel vehicle leasing solutions, building up one of the largest fleets of advanced technology vehicles in North America.

Nordh received his MBA in Management Science and Bachelor of Science degree in Industrial Engineering from the University of Miami.
Convenience Leaders Vision Group (CLVG) invites you to join us In The Room to experience our meeting on January 26, 2023. 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.
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CLVG's mission is to increase the institutional knowledge of the retail industry by sharing our ideas and perspectives. For your convenience, we have placed topic indicators throughout the dialogue. Below is a key to the list of topics.
Welcome and Meeting Rules

Welcome, everyone. And thank you for coming on our second CLVG meeting—our first of this year. And I just want to also thank everyone for making sure that they did sign the antitrust statement that we have asked all of our members to sign before coming on our calls. Everyone has done that, so we're very appreciative. So what we are going to do today is first we will welcome a few members that were not on our last call. We will ask them to self-introduce themselves: They are Doug Haugh, Greg Parker and Donna Sanker. After that, for the sake of everyone, and Hal, who is on the phone, let everyone know who is on the call today. But let me start by saying Doug, would you just take a couple of minutes to introduce yourself—although you probably don't need any introduction. I'm sure everyone on this call really doesn't, but please do just take a couple of minutes to introduce yourself with a little of your background.
Sure. Hello, everybody. Glad to be joining you today. I'm going to be talking way too much, I think, because I'm back-filling for our speaker here. So that's going to be interesting. Most recently was working with Donna at Parkland. Prior to that, had built a company called Mansfield Oil with some partners there. Got into the business with Exxon back in the day. I am a chemical engineer by trade, although my wife would tell you that I never really was a real, practicing engineer like she is. So immediately went into business and marketing and retail and kind of downstream in one form or another from fuels to lubes to chemicals to c-stores. Happy to be here with you guys.

Greg: Go ahead.

Okay. Well, first of all, Kevin just texted me and he's not going to be able to make it. He's got a new store opening today. He said, "In the middle of a store, groundbreaking ceremony. Will not make the call. It was supposed to have been Tuesday, got rained out and moved to today. Please send my regrets. " So regrets delivered from Kevin. I'm Greg Parker. I'm from Savannah. I'm the founder and CEO of Parker's convenience store chain. We own and operate 75 stores in Georgia and South Carolina, and we have huge growth plans over the next four years. Trying to open 90 stores in 49 months. So that is to be determined. I like sort of putting it out there so I'll have all of you guys to be accountability partners for me, to try to hold me accountable to my wild assertion back in January of 2023. So let's see if we're able to accomplish it. Glad to be a part of this group. Thank you, Myra.

Thank you. And, Donna, there you are on my screen. Welcome.

Thank you. And it's great to be here with everybody and to see some familiar faces. I—back in the day—spent a number of years with BP, 23 years to be precise. I know you're all thinking I don't look old enough to have spent that long there, but 23 years with BP and ran the ARCO and the ampm business on the West Coast and sat on a number of councils with several of you. And then I packed up my bags and I moved from sunny Southern California to Calgary, Alberta, Canada, to work for Parkland. I was running our Canadian operations, our retail and commercial for the last three years. And then just most recently in January, back to the U.S. and taking over running our U.S. business for Parkland.
Thank you. Excellent. So just also to let everyone know, we will resend the updated member directory to everyone after this call. We wanted to do that before sending an old member directory. So now I actually do have the pleasure of saying that Doug has graciously filled in at the last minute. Roy, Eva, and I unfortunately received an email just a few hours ago from Chris Nordh to say that he has hurt his back and was heading to the hospital. So, I’m sure we all hope that he will be recovering very soon. We’re sorry that he’s not able to personally deliver the terrific presentation that we all were expecting that he had prepared for today. So, we did reach out to Doug, and he very graciously has offered to get our discussion going on the business case for alternative fuels and EV.

One of the things that made us think to ask Doug is that just yesterday, Doug had been on his podcast with Paul Chapman and the HC Insider, which was a terrific podcast that talked very much about what our discussion is today. And we all know that Doug is very informed about this, and we know that everyone else will chime in. What we thought we would do is ask Doug to get us started for about maybe 10 or 15 minutes with some thoughts that he has, and then we'll get into our all-member discussion—if that works for everyone. Good. Okay, Doug.
The Presentation:

*Doug Haugh, Former President, Parkland USA*

As Myra mentioned, I've done a couple of different sessions [on this topic]. Greg, I think you were at our NACS session we did on this, polite enough not to heckle me from the front row, but I remember you there. So yeah, we've been talking about this topic for several months, in this case, several years. We started digging into EVs as a threat and an opportunity at the Fuels Institute probably six or seven years ago when we first started doing projections around EV adoption rates, demand destruction for their traditional fuel products and how that would all come together. As you guys know, there's tremendous variance in the projections.

If you believe the Bloomberg New Energy Finance folks, then we're all going to be driving EVs in five years or something like that, which I don't think any of us believes is true. So, they're kind of the most optimistic forecast out there. And then you've got both Exxon and BP, and their statistical reviews have put out their views, which are, as one would expect, more conservative. At the Fuels Institute, we were probably not in the middle, because the Bloomberg forecasters are sort of so optimistic, in my opinion. But the point I'd like to make about this is that nobody's predicting that it [EVs] doesn't happen. Everybody's just arguing about the schedule. So, the schedule matters, because whether it's 20 or 30 years or 40 versus 10 makes a hell of a lot of difference for all of us.

But I do think in terms of the fundamentals of recognizing a new opportunity and a new threat and positioning ourselves to deal with it, [to] make the most of it in some cases, or to minimize its impact on our business in others is apparent to everybody. So now it's not like might we have electric cars someday? I think everybody's pretty unified that we're going to electrify at least the light duty automotive sector. All the other sectors are still up in the air and subject to tremendous debate, but when it comes to the customers and consumers visiting our forecourts today, there is certainly broad consensus that over time, more and more of them will be driving electrified vehicles.

So we've talked about that quite a bit. I tend to separate the market into two gates, which I wanted to talk about, certainly as retailers. And that is, from a retailer's perspective, are you servicing travelers or are you servicing commuters? None of the projections you see from the automotive industry for adoption [of EVs] or number of vehicles or the brands of vehicles that are being introduced really look at it that way, but I think as our industry is looking at servicing those customers and
consumers, it’s pretty important. Because the way I view it is the value proposition you would have to provide to convince the customer to add an extra stop between work and home on a commute, or between home and school or running errands, whatever, around town, to convince them to stop for an extra 20 or 30 minutes out of their day at your store.

I mean, I don’t know how good your chicken is, Greg – I mean, I actually know, it is damn good. But I don’t know, that’s a pretty tall order for somebody to take, sort of anti-convenience, because they don’t have to in this environment. They can charge at home or at work or both. So, I think there’s that sort of customer segmentation that we have to understand at all of our locations and all of our communities and neighborhoods. Then there’s the other end of the spectrum where there is a tremendous amount of anxiety and angst about using EVs when you’re traveling. Range anxiety is the term everybody uses, but if you think about it, there is just a massive lack of infrastructure today to service any measurable number of travelers out over the highways. So, if you’re not going from home to work, but you’re out on a trip and you do want to use an EV versus an ICE vehicle, today that’s a pretty daunting proposition.

It can be done. There’s lots of people filming videos and doing cross-country trips and vlogging the whole thing and making a big deal. Well, the reason they’re making a big deal about that is because it takes a lot of thought, a lot of planning, and a lot of preparation to actually pull it off, which is sort of, again, anti-convenience in that space. So, in one case, I think we have the opportunity to be a very convenient and a necessary solution for travelers who are going to need a place to top up. And on the other hand, I think we have to be very, very cautious about making investments in our sites that are in perhaps more residential area. If you’re at the entrance of your subdivision or the exit of your subdivision and 99% of your customers are going around the neighborhood and charge at home, then I don’t think there’s too much of a value proposition there.

That’s the distinction that I think we tried to highlight in our NACS [Show] general session where we covered this. If you weren’t there and didn’t get a chance [to hear it], I thought Gil [Pratt], he’s the chief scientist for Toyota, is working on this area quite intently. Fascinating guy, tremendous intelligence, and [he] is sitting on a global perspective on all this. He delivered the first half of that session at NACS and was really, really insightful, and, I think, brought to the forefront some of the other sort of limitations that [we are] likely to encounter as we try to build out infrastructure services. He said, and this is why I like to use this with customers and neighbors and everybody when we’re talking about this, that when you’re dispensing fuel today, gasoline, into your vehicle at the pump, that one nozzle is delivering the equivalent amount of energy, if it was converted to kilowatts versus heat energy as Btus, to power 4,000 homes.
So it's just sort of striking for people to think, okay, if I'm going to have a bunch of these [EV chargers] lined up in front of some type of forecourt design, that's all evolving, around the EV front to duplicate the amount of energy delivery that our systems do today from a conventional fuels perspective is sort of unfathomable. The grid is nowhere close to being constructed to deliver that kind of energy at that many outlets from an infrastructure substation. The wires are just not there. And so the point we always like to make, if you're working with your local utilities, your local city councils, permits, all of this stuff, you're going to have to probably do some education about what this kind of load can mean to the grid in their community and their neighborhood and the type of investments that everybody is likely going to face to service customers with anything close to the convenience that they've come to expect from gasoline and traditional fuels.

Today, our sites and our stations and our pumps deliver an incredible amount of energy in an incredibly short period of time in an incredibly convenient way. And so, as the EV trend continues, that's what all of those sorts of adopters have to face. What we have to figure out is how can we replicate, at least to some degree, that same level of convenience and service that our services provide today. But infrastructure, infrastructure, infrastructure is something that I think folks have to really be aware of. This is not just another plug. It's not just putting a charger in at the back corner of your store. If you're considering that proposition back to the opener, where it's travelers versus commuters, if you have a large portion of travelers that you could service, I do think there is a value proposition to service them early.

**Once people solve that sort of anxiety problem and you can take that anxiety out of their life, I think it's a tremendous opportunity to earn customer loyalty.** I think once that sort of puzzle is completed, they don't want to spend a bunch of energy to find the next one. If yours is reliable, it always works, you got great services there, you've got great food, great Wi-Fi, it's an awesome place to stop, they might stop at your site for the next 10 years and never look at the other one. So I do think there's an early adopter value proposition that if you can execute well and you're in that service position to service travelers who do need the service, that it is worth considering and exploring at this time. That's sort of my thinking on it. And that's, again, reflective of what we talked about at [the] NACS [Show] and what we talked about in the podcast a few days ago. So I'll tee it up with that and kind of open for questions and thoughts—and Greg always has something to say on that.
The Discussion

**Myra Kressner**

Thank you very much, Doug. And I just also want to remind everyone, and for our newbies that were not on the last call, the way we try and do this in terms of respecting everyone, [and] giving everyone a chance to talk is to raise your hand, except for those in the middle of a conversation with someone, then you go back and forth, but otherwise we're going to do raised hand. So, Greg has his hand raised and Roy has his hand raised. So, I will actually say, Greg, do you want to make your question or comment? And then Roy, please.

**Greg Parker**

So we have four stores that have eight Tesla charging stations. We have one store that has two universal adapters. The Tesla charging stations get used a lot, and you're exactly right, Doug. You said a lot of things that I think are really important. But they are interstate stores that get a lot of stops. We were not sure, and I tried to determine, what the value proposition was, because with Tesla when they first started doing it, they charged you a dollar for every transaction when somebody would stop and charge on your lot. They were charging us. We were paying Tesla a dollar for everybody that used our charger. So, we're supplying them with parking spaces, we're supplying them with clean bathrooms, we're supplying them with beautiful, landscaped stores with trash cans. And I called around and tried to talk to a host of people, and [to] every person I would say, "Have you seen a lift in your sales?"

[They'd say] "Well, anecdotally, I know that sales must be up. We haven't really been able to quantify it." So, I thought, well, **I've got to do a test on this to determine the value proposition.** So, we did it. I have the Parker College of Business, which is a university very near where the store was. So, what I did is I got some of our business school students to go out onto the lot to follow the consumer in from charging into the store because there's no way to do it other than a student with a clipboard. I mean, think about it. How are you going to determine if they're shopping, what they're buying, that sort of thing? So, we did it at this store and we did it at a store on I-16, which is the main road to Atlanta, and we did it on I-95, which is the east to west corridor for the U.S.

And so we had these students follow the people in. **The things that we found were that pretty much everybody that comes with the Tesla charging stations uses your restroom.** And there's a value to that. You're flushing the toilet, you're using toilet paper, you're washing your hands, you're using paper towels or blowing your hands dry. You're doing things that require maintenance. Pretty much everybody uses your trash cans. So, they get out of the car after pulling up. We have
the high-speed Tesla chargers. I drive a Tesla, so I'm pretty knowledgeable. I've been driving one for about three years. You can go from zero to 360 miles, which by the way doesn't get 360 miles, that's what it says on the car, in 28 minutes. So, the charge is quicker than you think. And so people are coming in, hopefully getting something to eat, using your restrooms, that sort of thing.

But the thing that we found was [that] the basket on the consumer that was the Tesla charger was not nearly as good as the internal combustion customer. So we've got customers that are pulling up [to] the store, they're going to go in the store and buy stuff and do things. You've got people that are pulling up [to] your forecourt getting gas, going in, and consuming. And then you had the people that were going to our Tesla charging stations. So we ended up sort of playing hardball with Tesla. Because we're saying, look, you're charging us a dollar a transaction. And the way we figured it—and I think we charge, I don't remember what it was right now—but I want to say it's like we figured 17 cents to use the bathroom. I don't remember what the number was, but it was a low digit number for flushing the toilet, using toilet paper, and so all that and maintenance.

So we assigned a very low value to it. We took what the average basket was, we multiplied it times what our average basket profit was, and lo and behold, we were losing money on the transactions to the Tesla consumer. So when we were talking to [Tesla], negotiating for the next stores, I said, look, I'm a data wonk. Nobody seems to have this data. If you want us to go public with this data, we're perfectly willing to do so. But if we can show the other retailers that they are losing money by paying a dollar a transaction, who's going to want to do this? So we were able to get those costs down. We've got 50 cents in one store, and now we're at zero. I think the way you teed this up, Doug—and every time I listen to you, I'll learn something so thank you for that—but understanding that the customer that's doing this, from our experience, is the person that's going long distance.

Most people that have Teslas have a charger in their home. So it's very simple. If you're doing anything around where you live, you're not going to be going to a convenience store to be using it. But the people that are going from New York down to Florida, of course they're going to be stopping in. And so I do think there's an opportunity, and I did sort of follow what you suggested, Doug, and I wanted to be an early adopter. Because I couldn't find the data on it. We had to create the data for ourselves. Eventually, there's got to be a way that we can monetize this. There's got to be. And when that happens, we want to be the first person in line. Unlike in Canada—I remember you were talking about some numbers at the NACS convention—you were able to make money per kilowatt hour on what you were selling to the consumer there. So that
was a real profit center for you, and of course that doesn't exist here. But that's my experience, and I just wanted to put it out there for discussion.

Myra Kressner

Thank you. And I know Barbara has raised her hand, and I'll just ask Roy ... please go ahead, Roy. And then Barbara.

Roy Strasburger

Well, Doug, thank you very much for the opening comments. And Greg, you make some really good points. And I guess what I'm really interested in, and what I thought this conversation's going to be very informative on, is how do you make the business case for being in electrics at the moment? What are the decision points you need to have to decide that you want to do it, rather than just providing it as possibly an expensive accessory to the rest of your store? And so what I'd really like to hear is, everybody who's gotten into the EV business, what your experience has been, and if you were making recommendations to a small operator who's thinking about getting into EV charging, what should they look out for? What should they think about? Where should they go? Everybody's really excited about it, but nobody really talks about the business side of it. So, Barbara, what would you have to say? I know you guys are doing a lot of electrics.

Barbara Stoyko

Good question as well. Maybe first I'll make the comment, and then I can share my experience so far on the EV front. Doug, I was actually thinking about the customer of today and the customer of tomorrow, listening to Greg talk. Because there's the Tesla customer of today, right, this early adopter who has generally a higher income, probably not our typical convenience type of customer, and has charging at home, et cetera. So that is one use case. But I think as we go forward, and we haven't done any assessment on it, but I'm just wondering if you guys have seen anything or given that any thought, and you get toward that middle of the population and as they start to convert to EV users, how do we see that changing? Do those customers become the convenience customers of today, tomorrow?

[Will] those people that are good customers, that have a higher basket size, that are ICE customers today, become EV customers tomorrow and still have a high basket size? Or is there something fundamentally different about the journey that causes that to happen? So that would be a question whether or not anyone has any data or thoughts on that. In terms of our experience at Shell, I would say it's interesting looking across the entire world because we have really high utilization in China and tons of charge points and locations that are having 20, 30 charge points at a location doing very, very well. But the rate of adoption there and the rate of sales in that country is very high. It's pushing close to, I think, almost 50%.

So you have the people on the road and you have very high density and not a lot of charging at home. And so [retail charging locations are] really conducive to that. And we do see good economics both from the charging—we charge for
charging—as well as the convenience associated with that. I would say in Europe we have a number of locations that are pushing more the 15%, 20%, 30% utilization and seeing pretty good numbers there on the charge for charging side. I don’t think in line with an economic return that we might like to see here in the States, but hopefully on a trajectory toward that. One thing to consider, depending on the charge, is the types of chargers that you have. We have one location in the U.K. called the Fulham site, which is about 30% utilization, has 10 charge points and a small store.

But if for every charger, every person sits there for 30 minutes, you can only do so many customers in a given day, even if you have full utilization. And even if you assume half of them go in the store, you are looking at more like 100 people a day, not the kind of numbers that you would typically see in the customer flow that we’re used to. So that’s something that’s on my mind. You almost need a location, as you get kind of fully converted to EV, that not only can meet the needs of EV customers, but also convenience customers who are not looking for energy, who are just looking for convenience goods. And so that’s on my mind, which requires additional parking and a different layout and so on. So we’re testing and learning as we go. In the U.S. we have a very, very small footprint right now. Our utilization is under 2%, and so we’re just not seeing a measure of anything even worth measuring in terms of the correlation between who charges and what they do when they charge. So that would be my experience so far.

Thanks Barbara. Joe?

Yes. We have 95 [charging locations] across our 680 stores. So 95 [stores] have EV. About 70% of those are Tesla. The other 30% are combination of Electrify America and EVgo. And more recently we’ve probably done more Electrify America and EVgo than Tesla, only because you’ve got more vehicles that you can serve out of those locations. I agree with what Doug said. Obviously, the travel locations are where the high volume is at. And you will see the Tesla locations. We have a hodgepodge, right? They’re not all interstates. Some of them are state routes, some of them are sleepy towns, but they’re in between two big cities. Those are still travel locations, and there’s a lot of variance from high to low.

Tesla probably does double the number of EV charges as Electrify America and EVgo. Probably a little less than half of that, which is actually an improvement.

When we first started doing this, [Electrify America and EVgo] did nearly nothing. And you’re seeing as people start to buy other cars that aren’t Tesla that are EV we’re seeing growth on a percentage basis, much higher growth there, than we are in Tesla. It’s a different customer though. I think the Electrify America and EVgo is starting to lean a little more toward
our typical customer. They're not exactly our typical customer, but they're not all as affluent and whatever stereotype you want to put on the Tesla owner. So it's a little closer to our customer. And honestly, the non-travel locations, because we have some that are not necessarily travel locations, still have some legs because a lot of the places we are, I wouldn't call it rural, but compared to where some of you are, they're rural. They're certainly very suburban or small town. And frankly, a lot of those people don't have the ability to charge at their house.

They either don't have a garage, or they don't have the infrastructure, or they didn't want to invest in whatever they needed to. So we do get some of that usage that are regulars. They aren't between two places and stopping because they ran out. They're using us in that regard. But up to this point, we've done all this with other people's money other than what Greg talked about, there's always the dance with Tesla on do you pay us a dollar or 50 cents or whatever a charge. We've given them the land and we let them use our building, but we haven't put money into it because the economics are awful. You're doing at least, usually in our case, you're doing eight [charging positions] and the cost of the superchargers are very difficult to ever recover, especially because we also have some states where it's a little tricky to even charge for electricity right now.

So we have been using other people's money. For the first time this year, we're going to do two of our own, but even in that case, we're looking at using government money to pay for the actual install and we're going to deal with how we charge for it. So yeah, we were an early adopter. It was an easy decision to make when it wasn't our capital dollars, and we really were giving up a little bit. Our sites are huge, so giving up the space we gave up didn't feel that difficult. And as I told my people, if I've got somebody on our lot for 30 minutes and I can't sell them anything, we're terrible retailers. And I agree, it's hard to get data other than the old-fashioned way, following people around or using cameras. And on the Tesla side, I do agree they aren't the same customers, so their basket isn't quite as productive.

But they do buy something just about every time they're there, whereas a typical gasoline customer may have a few stops where they just buy gas and get back in the car and take off. So their frequency of buying something is a little bit better. But it's all test and learn for us as well. It's just a big test. If we have 15% of our sites, I think we have about 20% under development. So that's where we are. And like I said, we don't have a lot of money into it other than the stuff that Greg mentioned, which is important to know. There's soft costs there. There's cleanup, there's trash, there's everything else you get. But we always view it as, “Hey, it's one more reason to have somebody there.” And if I can't sell them stuff [when] they're stuck on the lot for 30 minutes, I don't know what I'm doing.

Myra Kressner

Thanks, Joe. And I'm going to Donna and ask you to speak in a moment followed by Eva, but first I do want to welcome JP who just made the call. So thank you for coming on. Welcome. So Donna, what's your opinion?
You probably know this from Doug, but British Columbia in Canada is one of the fastest adopting cities as far as new EV sales. [At] Parkland, we announced, and we actually successfully installed, our network of 25 locations. We went from Calgary to the coast to Vancouver Island. We just got them all in at the end of the year. We got it in just before we closed the books on the year, which was great. It is early days, but kind of some interesting learnings. The experience that many EV drivers have in Canada at the moment is basically the charger is in the back of a hotel or by a trash dumpster, or there's not proper lighting, and they just really didn't take the customer into account. Part of what we're touting with our network is: there's vacuums, clean your car, use the restroom, get [food]. We're at stores where we have a QSR in our convenience stores. That's what we've done. That's how we're launching. We are able to charge, as Doug noted, for electricity. But at the moment, and for the launch, we've been doing it as free. We're seeing some pretty decent numbers. And I would say, interestingly enough, it's not all the travel locations. There are many kind of urban locations, particularly in Vancouver, where people don't have access to chargers or they can't install them at home. Some of our urban locations are performing actually better than our highway locations. And so just an interesting kind of observation early on, the customer base is more our typical customer. We also have a loyalty app in our network in Canada. EV users, in order to activate the charging, use their loyalty app. We can actually track what the customers are doing, which customers, when they come in, how much they spend, and all of that.

I don't have any data to report out on, but we will have that ability at some point in time. I think that will be useful. But the other thing that has been an interesting challenge is just the maintenance, the uptime, making sure that these things are running and reliable because it's like, you never want to run out of gas. When a customer comes, it's your number one SKU and similarly, the customer rolls in and they're out of juice and then your charger's down – that's not great from a customer experience perspective. I think the technology is good, but it's not perfect. Then we've got the weather elements to contend with as well, certainly up in Canada. So I guess that would just be some early learnings or just that we're getting ready to launch and I think we'll have some more learnings in the coming months. But we're cautiously optimistic about what we've seen so far. And I would say not all the locations, but in many of them, the utilization is better than we would've hoped for at least out the chute.

Thanks, Donna. Eva?

Actually, Donna answered part of my question, but for those who have the EVs, we had heard that the owners were saying that a lot of the EV car owners download the EV app and then they don't get onto the store app to get loyalty points
and see the store promotions because it's a two-step. So that they were finding they were losing out the loyalty of some of the customers because it wasn't just a one-stop get your points by purchasing the fuel. So I wondered how some of you were dealing with that. And secondly, has anyone experimented with the apps to be able to reserve time ahead so you know you've got your spot? Has that been successful for anyone?

**Donna Sanker**

I guess I'll just take it since I was just talking about the app. So you can see, let's say you're driving down the road and you're going to pull over at our Chevron On the Run, and you can see actually if [the chargers are] available, if they're in use. You can see that on the app, but we don't have [that capability to reserve spaces yet]. We could build it, but for the time being, I don't think we're interested in the reserving. I'm not sure how that works. And then it's basically sitting there unused, I guess you make them pay if they don't show up or whatever it is. But just for the convenience factor, we're not allowing that at this time.

**Roy Strasburger**

Well thank you, Donna. I guess from what I'm hearing is that if you're having to pay for your charger to install it, it's not a good economic decision at the moment based upon what seems to be happening out there. I thought that one of the things that Doug mentioned in his podcast is [that] people talk about range anxiety all the time and how far a car will travel, but there's also the range anxiety of the physical human body that people may go on a trip someplace and they still need to make restroom stops, or they want something to drink or something, even before they may run out of range. So it gives them an opportunity to charge up while they're doing that. But one of the [things]— I've kind of said this at our last meeting]—is that we know electric vehicles are coming out, that electric chargers, everybody getting electric chargers, is kind of a red herring. I mean, it's not going to work economically. Doug talked about that. But this idea of having chargers and putting in a spa or putting something else in to assume to take up the time that it takes for the charging, in the real world is that a real option? I mean, are people spending that much time there? Or are they just coming in and getting a drink and then sitting in their car? What's been the practical experience?

**Myra Kressner**

So, Joe. Doug, were you going to say something?

**Doug Haugh**

I was going to say, I mean, I think it's evolving rapidly Roy, because I think you know I lived in California for a time and it always struck me that you went by the Tesla supercharging stations that they built themselves, not that were necessarily co-located with the convenience store. And that's exactly what it was. Everybody was sitting in their car. Reading, watching video, you name it.
So I think it's going to depend entirely on the scope of services that are available to them. I love what Joe said. I mean, if you can't come up with a good reason to get them in the store and buy something when they're there for 30 minutes, I mean, shame on you. But I think what's interesting is the first chargers that were put in over the last 10 years were put, as Donna said, at the back of the lot. They're next to the trash bin. They're at some hotel parking lot that's not well lit. So I think that's the big opportunity as an industry is to upgrade that experience, to have the best food, the best places to sit, the best places to stretch your legs, the best offer overall, the cleanest bathrooms. Bathrooms, they've always been super important to our business, I think they're more important than ever in this environment with this type of customer, frankly.

Yeah, I agree with that. I think you're going to have a hodgepodge. I mean we have a hodgepodge today with the gasoline customer. It's all based on what all they need to accomplish during that stop. Do they need to use the restroom? Are they hungry? Are they thirsty? And there's no one right answer. So you are going to see somebody sitting in their car reading a book and you are going to see a whole bunch of people use the restroom.

Our stores have seating, so you're going to see people grab something quickly to eat and maybe sit down inside and finish what they're eating rather than in their car. But I don't think there's anything typical. Obviously you could do stats and say this percentage does this and this percentage does that, and Greg will probably do that, but you are going to get a little bit of everything. And to me that's okay. It's part of a larger offer as opposed to, it should not be the reason, the only reason you're driving people to your lot. So I think our focus has been on all the other things we use to drive people to our store that are not gasoline or not energy related and continue to increase those traffic drivers outside of fuel.

My thinking [is] around this too, on the traveler and the community, commuter side. Do you think the supermarkets and the grocers have the upper hand on us on the EV section where you have to go get your groceries every week, you're going to park your car for an hour while you're going to get your groceries. Between the Walmarts, the Target, the Price Choppers do you think the grocers have a huge upper hand on us on the EV section, than what we have now with the gas station offering?

I don't know if it's an upper hand, but I do think there's the natural stops that we all make and everyone makes throughout their week. There's opportunities for those businesses to capture some charging. I don't know that it's going to be mission
critical enough for that many of them to do it. Although I can tell you from discussions with Costco over the years, they've been under tremendous pressure to expand the amount of chargers they already have. The challenge you have, with them and UPS, is where I really started to get the reality check of the infrastructure question. I think they put in eight Tesla superchargers initially at the Costcos in California, most of them.

But for them to double up on that, the additional circuit to do that was going to be as much juice as it takes to run the entire club. And so the neighborhoods they were in were just not prepared to scale to that type of concentrated use at one location without completely revamping the substation that serves that whole neighborhood. Same thing on the commercial space. Nobody's been more creative and sort of experimental on the commercial vehicle side than UPS. I mean, they [have] trucks running on propane, natural gas, electric, compressed air—believe it or not, which sounds nutty, but they did it. And they found that at their cross docks and such, they could electrify two or three stalls and that was it. And they were on a multiyear waiting list to upgrade the circuit into the facility if they wanted to actually electrify their fleet at that location.

So infrastructure, I think everybody takes it as a given that, “Oh, it'll just get built, it'll be fine. We've been doing electricity forever, not that big a deal.” I think that's just not a safe assumption. And so I think those types of limitations will sort of prevent any one location from dominating, if you would. Because if you concentrate a huge number of these chargers at one particular location it really distorts the grid in that whole community. So I think that we might see a much more distributed network than one might otherwise believe, just because of the strain on the infrastructure side and the need to get it all built. Now, that might get fixed over a period 10 or 20 years, but you know, you guys all deal with utilities. I mean they don't do anything fast.

Myra Kressner  
Roy, you had your hand up. And then Greg.

Roy Strasburger  
Building on what Doug said, when we were talking to Chris Nordh about the presentation, one of the things he mentioned [was] that with a lot of locations going electric [it] is a land grab, that if you're the first one to put in the charging unit, you may be the only charging unit that can go in that part of the grid for any specific amount of time until the local utilities upgrade their substations or upgrade their infrastructure. And that could be a competitive advantage of getting into that market and doing that. That sounds a lot like what Doug was talking about trying to do, getting the power to the program, as it were. So I just wanted add that in. Go ahead, Greg.
Greg Parker

I wanted to ask a question of Joe. Joe, and this is tagging onto Doug's comment about infrastructure, with you doing so many chargers—you said 95 at your 500 and something stores—when you're building a new store, are you planning for this? Are you piping for it? Are you pulling the wiring for it? Are you doing the things necessary for a store just in case you decide to add it in the future?

Joe Sheetz

We've done some of that. The problem we have with using partners, which is what we've done up to this point, is it takes two to tango. So they have to think that's a good spot for their network as well as we think it's a good spot for us. So we start talking to them really early on in most of our markets. Listen, it's a two to three year process until you get a store open from the day you make the deal with the owner, just because of how onerous it is to get permits and everything else. So for the most part, I think we know going in. There have been a couple cases where we've gone ahead, but we haven't put the expensive infrastructure in. Maybe the stuff that keeps you from having to drill concrete in the future, you don't want to have to do all that, but we might not have actually acquired a circuit or put a circuit in.

But we've tried to do much like we did with ethanol, right, with E85, E15, go ahead and put the underground infrastructure in so you don't have to jackhammer in the future, but hasn't been as much on this side because we have enough time during our approval process to figure that out. And for the most part, unless we had a really tight location where we were very concerned about giving up parking, if we convinced one of the partners to do it, we're going to do it. So we're not quite that far along yet, Greg.

Myra Kressner

Scott or Natalie or Annie or Hal or JP, just go ahead and raise your hand if you want to interject, but right now Eva has her hand up. So go ahead Eva.

Eva Strasburger

I can't remember who it was who said it on a past meeting. Natalie it may have been you, about surge pricing demand charges being high, and Doug was making a good point on his podcast about trickle charging. Do you want to address that, Doug?

Doug Haugh

Two points there, right. Obviously if you're in markets with demand charges, which is about a little over half of the electrical markets based on utility distribution. Not all do, surprisingly. So there are markets where it's not a concern. But when we were, and this is from years ago when we first started putting chargers in, this was almost 10 years ago we found that where there was substantial demand charges, it wasn't terribly hard to get charging [power supplied], and this is when everyone was giving it away free because it was government money to install the charger, got credits for
that, so everybody's like, “Hey, at least I'll do something and see what the community thinks.” But then ended up getting hammered on the utility bill because it pushed them over the threshold and kind of reset the charge for their entire site for a period of time.

And that period of time varies based on the structure of demand charge, but it's really important to be aware of it. I think there's a huge amount of activity across the whole industry to renegotiate that type of thinking with the utilities. We did this in the natural gas space when we were doing a lot. We were building CNG stations for heavy trucks and in many of the utilities we were able to actually negotiate an entirely different tariff for that service that was outside of the rest of the pricing structure that they provided. So it wasn't a commercial, it wasn't like a heavy industrial tariff, it wasn't a retail tariff, it wasn't a homeowner tariff, which really mitigated a lot of those challenges in that space. And this was, again, 15-plus years ago when we were doing that. I think there's a lot of opportunity there, but the problem we have as an industry is there's hundreds and hundreds of these utilities.

I mean, it is an incredibly fragmented space, so trying to get the right amount of engagement, it does sort of push one to think, is there a role for federal lobbying to sort of layer over top all that? And in the interest of getting this done, could one get the [government to help], and I'm always loathed to ask the government for help of course because you never know what you're going to get. But there is an argument to be made to federalize that and sort of eliminate some of those.

Donna, I don't know if you wanted to talk about Canada, I know they were able to be successful in allowing electricity to be sold because initially you weren't allowed to do that. That was a change. And I don't know what they've done on the demand charge, but I know they seemed like they were ahead of a lot of the U.S. in terms of changing the structure to accommodate deploying this kind of service for customers.

**Donna Sanker**

It depends on the jurisdiction and sort of what they allow and the way in which you can sell it. There's certain rules around it, and so we're obviously working within those confines. I think the other thing is, the technology that we have decided to deploy basically has a battery so it can store for a certain number of charges, and you don't have to necessarily pull from the grid during the peak hours. But at the end of the day, if you're out of juice and you need it, then you're going to have to pull and pay for it.

[Off-the-record comment made by a CLVG member]

**Myra Kressner**

Scott, do you mind if I ask you to chime in?
Sure, sure. I always enjoy sitting here listening to everybody. Very smart group. I love the observations. Donna, I love the way you keep your palm trees from blowing [comment on Donna's Zoom background]. They're blowing in my backyard a lot.

So on the last call I said I'm always a believer you have to have somebody who asks what I call the hard questions. Who takes the anti-view because that's how you get good debates going and learning going. So, I'm going to throw a couple things out there that I think the industry can do to better understand the opportunity, to understand the pros and the cons of just [owning] an electric vehicle. Understanding there's about 155,000 convenience stores, it would be my guess that only a third of them probably have enough parking spaces to give any kind of significant charging base to the cars on the road. I'm out here in Southern California right now and I look at so many of these, they barely can get a couple cars under their canopies, let alone provide a few spaces for charging. So when you look in the urban areas, I think just the space itself is one that probably should be studied because I think the industry should know its true opportunity. Who has the parking spaces to do this?

I think in the world we live in, the information sharing about the downside of some of this is not very good. So I just want to ask a question. I don't know I have the answer. But I ask a question on some things like, if you put these chargers close to a store we have a lot of various regulatory approvals now through the fire departments, etc. If you have a fire and electric vehicle, I understand it's something like 200,000 to 400,000 gallons of water to put out an electric vehicle. That I don't think has been discussed. I don't think there's a vision forward by some of the governmental agencies. It's bound to come. You are only going to need a couple of these [events] to happen and then the requirements will come into play. So now you're getting into, okay, we need to have a fire hydrant nearby to be able to put this thing out.

We have environmental runoff that comes from [EVs] that is worse than gasoline runoff because of the various minerals in those batteries. The requirements are yet to be identified, or maybe they've been casually overlooked for various purposes of what may come here. I beg the question on these electric vehicles. I've heard that replacement of the battery itself, when you have a car reach its normal end of age, that the cost to replace the battery is more than a vehicle's worth. And [that's] a true consumer economic decision making [process] if that's true or anywhere close to true. You don't see any studies out there on these vehicles and once they start to come out, if they're allowed to publish, and again, I always take that little bit of jaded look of who can publish what these days and say what. So, I question with these vehicles, when they get to end of age, will the economics for the person buying it have changed dramatically? And I suspect it will.

I also suspect the recycling of that battery until they figure out that issue. And again, we're all in that curve thing here where
the vehicles are out there but they're not reaching end of life. And if you don't look at end of life for recycling batteries, you don't look at end of life of a vehicle. How do you take a used car today? Well, you can take a used car and keep it going a long time. But if you've got to replace the battery, the vehicle may be good, but the battery isn't any good. And I think the rare earth issues are still out there to be debated. If you see where they're getting the rare earth in Congo, and the issues with the Chinese, they're not environmentally sound at all. The excavation of rare earth is one of the dirtiest things going on. And how long does that stay agreeable to the same people that want to save the earth?

Okay. So I'm just a guy that loves to argue on another side and ask questions when I don't have all the answers, but I like to pose them to a smart group like this. And if we don't have the answers, at least these are things I think we should all be contemplating because the ROI is not there today. Everybody has said it is not there today. And as we get to these stages, how many stores would we really be putting them in and are we going to put them next to a store? And if we're not, how many stores don't even have an external parking space? So I just think there's probably more interest and hubbub around this than there probably is good sound science and business answers, and I'm just here to ask the questions. Is that fair?

**Myra Kressner**

Those are great questions.

**Doug Haugh**

So Scott, real quick, I'll comment on two if you don't mind. On the battery materials, so on the Wall Street Journal today, actually, there was a great article noting that half of the battery materials is actually graphite, not the other stuff. And that to date, most all of that graphite material has been produced from petroleum, which just the irony of it I think is pretty sweet. So that's one thing. On the recycling, and this is just a local story. Greg, I don't know if you heard this, but Redwood Materials, they were started by JB Straubel who was the actual inventor of the Tesla battery as we know it. So he worked at Tesla for a number of years. He started this company called Redwood Materials. They just announced a $2.5 billion dollar plant here in Charleston. So there's a lot of noise about it locally and it's all battery recycling.

So the whole technology footprint is how to rip apart those batteries, get the valuable materials back out of them and to do so sustainably. He's been working on that for probably 10 years since he started making the batteries, was thinking about what do we do with them, and then now has broken off from Tesla and created this new company to do this. Who knows if it'll work? The plant's not built, it's just an announcement, but they are putting the capital in the ground to try and start the recycling at scale, which is the first time I've seen it.
Myra Kressner: Thanks Doug. And before we move on, I do want to welcome Liz. I'm glad that you were able to come on. So we'll give you some time to acclimate yourself to where the discussion is going.

Liz Williams: Sounds great.

Myra Kressner: Eva?

Eva Strasburger: You said you'd give Liz some time to acclimate. Actually the question was for her. She has Foxtrots where people go and stay for hours and work at a computer and Foxtrot doesn't have fuel pumps at the moment. The question I have is are you looking at putting your new sites near chargers or considering putting a charger outside of Foxtrot now?

Liz Williams: So today we're currently an inline concept, so haven't really given it much consideration, although I do think for some more traditional convenience, or just where you do have the gas or the charging, it certainly is an opportunity because Foxtrot is a place where people actually want to come and sit and enjoy and are happy to take time. So it could be a nice marriage down the road, but right now not looking at it.

Myra Kressner: Good, thanks. Thanks.

Greg Parker: Roy, I wanted to answer your question. You were saying what sort of advice would we give to the smaller operators? And my advice would be something like wait and see where things fall out. I don't think that this is a great opportunity for the smaller operators right now. I think other people need to figure this out and see if we can make this work and then figure that out. I think I would be a slow adopter if I was a small operator.

Roy Strasburger: So I think that's really good advice because it sounds like almost everybody here is on the leading edge of the technology as it were. But it's always a concern that if you're too slow of an adopter, you're going to miss the market share. Especially in the paradigm that Doug laid out: that you've got a certain end of spectrum of where these folks might be. But that's what I'm picking up from this is that this is not an opportunity for the fainthearted and unless you know where exactly you're going to go, there's some challenges there.

And where I was going to go with my question was, for those of you who got into the electronic charging business, was there an “aha” moment, maybe even in a negative way, of something you found out after you opened your charger up that you had not expected? That if you had known about [it], you [would have] anticipated a little bit differently? I mean, Greg it's sort along the lines of your customer. You're losing money on the Tesla charging aspect if you actually
put all the cost in. If I had decided that I wanted to try this and put it in, is there something I should be looking for that may happen?

**Myra Kressner**

So thank you Roy for that question and Hal had his hand up. And then I don’t know if this is related to Roy’s question, Hal. Or if Scott is probably going to answer that. So go ahead Hal.

**Hal Adams**

Since [the] last meeting, I've been thinking a lot about Natalie’s comment about surcharging and how the industry needs to activate, get together, talk to legislators about this whole issue of managing electricity to the stores and being able to make a positive business case for this whole charging issue.

And listening to a lot of you talk about how there's really not a business case per se for this venture yet, I wonder, and I've been wondering for the last couple weeks, if this means that there's an opportunity for some sort of a joint venture or some sort of joining of forces between two or three large companies or a few smaller companies or a large company and a few small companies to put the whole value chain together in a company and create a business case before it gets usurped by another channel or another group or another way of doing business. And if there's enough people that believe that there are enough locations where this service is needed, would this be one way to bring the service to our stores or to our industry? Just a thought.

**Myra Kressner**

Thank you Hal. So let's everyone hold that thought. Scott, and then Natalie, if you want to answer Roy's question about an “aha” moment or also talk about Hal's thinking.

**Scott Hartman**

So I'll kind of chime in on both of those. So the aha moment was we had four electric charging stations installed probably five years ago. And my “aha” moment was: Have they ever sent us a check? No. We were providing free electricity for five years to a handful of people charging. Never got paid a penny by the charging station company. So that was an “aha” moment there for me. And I think my other question to Hal would be, we have canopies that could have solar panels on them. So we could collect electricity there? Could we be an electrical generating place?

And right now this is that ying and yang in the industry. The utilities don’t want competitors. So they don’t want us generating any type of electricity or energy. And I think these are places for us to say, “Stop, who sold you the monopoly on anything?” So I do believe there’s opportunity here for us as an industry to get to some ears to say, “stop.” Look at where all that money’s going. Look at better ways to deploy it. And I know it’s a battle with utilities because they have huge
lobbying firms. But I do believe if we don't, we'll be at the wrong end of this. I think there are places with what we do today, we could do better for our consumers and for the taxpayers that are ultimately going to pay for all this.

**Myra Kressner**

Thank you, Scott. Go Natalie, and then I am going to ask Annie and JP as our smaller retailers joining us if you want to chime in.

**Natalie Morhous**

Sure. My question actually goes a while back. So I am not directly answering the question about the “aha” moment, but what I wanted to chime in about is just that a few times on the call people have said they think there's a benefit to being an early adopter here. And I would challenge that. I'm not sure that I agree with that statement for a few reasons. One, electricity is a commodity. So nobody selling this is selling anything special that somebody else can't sell. And so I believe it's about the consumer experience that you offer and that the competitive market will drive consumers if electric vehicles gain adoption the way it sounds like a lot of people on this call believe they will. I certainly believe they're going to gain share. But I'm not sure I believe that they're going to take over the ICE [Internal Combustion Engine] engine the way it sounds like some people do. If they do though, if they gain more and more share, I think it's going to be about the companies that offer the best consumer experience just like our industry is today. And so I'm not sure that you have a disadvantage by being a later adopter. In fact, I also believe the technology will continue to evolve. The market share is very, very low today. And so while you might get in and become a part of a habit of some of the early adopters today, you might also wind up with obsolete technology in the future at the time that more people have adopted EVs. So I just think there's a lot of learning that can happen by putting in EVs today. From RaceTrac's perspective, that's really primarily the way we're looking at it. If we're going to put in EVs today, we're doing it to learn about the technology to learn a little bit about the early adopters and the consumers. But I don't think we're doing it because we believe it's going to give us a tremendous advantage in the long term to be one of the first to market.

**Myra Kressner**

So Joe raised his hand. But I will still reach back to Annie or JP if you wanted to chime in on the smaller operator perspective. Annie, go ahead.

**Annie Gauthier**

Very briefly. I don't disagree with Natalie, at least for our current market. We have the benefit, unusually in Louisiana, of being where the future doesn't go first. So we are standing back and watching as a smaller chain with just over a dozen stores. That being said, like Joe, we've run some conduit at some of our newer builds to try to relieve the need to bust up concrete in the future, particularly interstate-side locations. We also have been in conversations. Thank you, Natalie, for your team spearheading EV charging conversations here at the state level and then with our fuel supplier, as well, because we are a branded wholesaler, branded retailers.
So we're looking at ways to do it that minimize our liability or our exposure because as y'all seem to be agreeing, there's no current ROI and not a path to it and we simply don't have the scale to fail. We can learn, but our learnings need to be fairly limited in terms of the investment and the risks. So eager to participate in this conversation. I really appreciated hearing from all of you and taking a lot of notes. So thank you.

**Myra Kressner**

Joe, why don't you go ahead.

**Joe Sheetz**

Yeah, I completely agree with the things that Natalie said. And in fact, part of that relates to my “aha” moment and that would've been really early on in this process before Tesla was a player. We allowed the state of Pennsylvania to talk us into putting in chargers, I think it was in four different places, as they were trying to complete their network across the state very prematurely. Now, once again, they paid for it, but the equipment was terrible. Hardly anybody used it. We weren't getting any money out of it, and no one knew how to fix it when it broke.

So I think you have to be careful of putting one in for the sake of putting one in and choose your partners wisely. And as far as obsolete equipment, there's no question it's going to keep getting better. And so we have not signed any long-term deals with any of these. So whether it's Tesla or EA or whoever it is, if in fact new equipment becomes available, or the economics change and we can do it ourselves, we're not going to have a long wait time to remove them and take it over ourselves. And we didn't pay for the equipment in the first place. So it's not really my problem that it became obsolete. So you do have to kind of play that both sides because this is so early on, nobody can really tell what it's going to be like in 10, 20 years.

**Myra Kressner**

JP?

**Jigar Patel**

So as to what Annie and Joe said, there are so many similarities. But I had in my thoughts as well, in our stores and in our area, we are actually looking at EVs very closely. But one of the factors that really affects our decision whether to install EV chargers at our stores is the number of registered EV vehicles in our state. So it's like 0.033% or 0.33% is the number of EVs. And I think state of Alabama said that by the year 2030, they're expecting about 500,000 vehicles in the state. So for now, in our new builds, like Annie was mentioning, running conduits so that we don't have to bust up concrete, we are doing that. In the existing stores we are just waiting and watching to see where and how it turns. And like Annie mentioned, down here in the South, we have lots of time by the time anything happens on the East Coast and the West Coast before things start shifting. So we are just waiting and watching as to what happens.
Thanks, JP. Related to the whole infrastructure and the capacity. Doug, you had mentioned on your podcast about creating your own grid. You mentioned not everywhere, but in certain circumstances, solar farms and cogeneration and microgrids so that you can vertically integrate your own power supply chain. Is that something that you want to expand upon?

I think it was more talking specifically to the storage that Donna mentioned, those batteries, there's a couple different providers. FreeWire's been the leaders so far and I don't know how many different chains have done deals with them now, but quite a number. It's an elegant solution that deals with two things. It's the demand charge problem and also the infrastructure problem, right? Because it's designed to refill itself off your current electrical service. So you avoid all the switch gear and the rest of the infrastructure. Now the problem with that is, it's a really good solution at the early part, or front of the curve where you don't have the utilization. I forget what the number was, [Barbara] said China was 70% now. And in the U.S., I think we'd be happy with 10 or 20%.

So if you're at those early phases and you don't have cars queuing one after the other to get to the charger, I think those [chargers] hold three and a half cars worth of a charge that they can do back to back before they're empty. So that's a pretty interesting solution. I think in the other cases it's more about distributed storage than it is generation, although I can just see where one of these big travel center guys that has 40 acres behind them and nothing on it, because they're in the middle of Nevada or something, puts in a solar farm just to make the point. So it's not impossible, but I could see someone doing that to figure it out, get a lot of attention, and probably a lot of government money to do it. But I don't see any of us firing up power plants on our sites at this point. But you never know. But it was more about the storage and just the ability to at least “peak shave” [taking action to proactively manage electricity usage to eliminate short-term demand spikes and the associated costs]. One of the things I do think is interesting is from a microgrid standpoint, I've been working with a company that I looked at their payback just on the utility optimization, more around HVAC. But obviously, if you were going to have chargers and a larger electrical install with much more switch gear at your sites, the opportunity [is] to have a local controller. These guys are using machine learning and all the latest stuff. But it was truly interesting to see what they could save you just in utility optimization, charging aside. That'd only become more important.

I think distributed storage is probably something to consider. We have an example of that now that's working in the market [FreeWire]. Then the other is having the advanced controls that creates a much smarter facility, whether it's for your freezers, your HVAC. C-store's a pretty reasonable amount of load. That could be optimized given the shape of the load curve. The equipment to do that, which used to be quite expensive, is getting a lot cheaper. Now it's internet based.
They can leverage the cloud. You don't have as much on-site computing to do it, and it's a chance to just save money on utilities as much as it is charging.

Eva Strasburger  
I was also going to talk about your podcast yesterday, Doug, when you were talking about that if you have a good location and you run a store well, as we start to see c-stores leave, there's an opportunity to make lots of good money in the next 10 to 20 years if you are the last man standing.

Doug Haugh  
Last man standing. Greg's made this point in our debates in the past. What I would caution, and this gets back to the small operator question, and others, and some of Scott's comments, I think the biggest risk in the short term of this topic is that people get fatally distracted from their core business. This [EVs] is an interesting area. It's something that I think we all have to pay attention to. I also think, especially as a small operator, if it's taking your attention from running a really great convenience store with good food, clean bathrooms, great offering for your local customer with good staffing and friendly faces behind the counter, then that's a danger to you because those are the things that are going to win. If you're doing all that well and 50,000 stores exit the 150,000 that we have, I don't know that you're going to care. Just take care of your business.

I just think we have to be thoughtful, particularly those [retailers] that don't have the scale and staff to have a project, have it contained, and make sure it's not distracting [from] their core mission, where people chase the shiny penny and do themselves some real harm. I think it's worth mentioning: Stick to your knitting; make sure you're running the best stores you can. It's still going to be a great business 10, 20, 30, 40 years from now. We may have some sites without gas, we may have some sites that have chargers instead of gas. But I think we can all agree we're going to have some great convenience stores. If you run great convenience stores, don't worry about it too much.

Myra Kressner  
Roy agrees with that. Eva, you wanted to ask what are some of the other things that are on our minds? Roy, you wanted to talk about hydrogen, do you want to bring that up now?

Roy Strasburger  
I think we're fine. I think we've had a very good conversation about whether the business case for electrics exist and how it's being approached. I appreciate everybody's contributions and views on that. Unless anybody else has any other comments or questions about the charging business, why don't we just go ahead and move on to Eva?

Eva Strasburger  
I was going to just say one last comment about something else that Doug had mentioned that we hadn't thought about before on our end. It was about branded chargers. If you actually had your own branded chargers, so someone would
stop at your store on the way to, let's say Houston, find your chargers that were branded at the hotel they stayed at, became loyal to that because they liked you, and then you gave them an offer [like] “When you're on your way back, here's a Coke and a free sandwich.” That was a potential development that we may see happening separate from the convenience store. That was an interesting idea. Sorry, Doug, go ahead.

Doug Haugh
We haven't seen that in the U.S., but I think Shell's done that in the U.K. I don't know if we wanted to get comments on that. The way I understood it, that's the whole network. It's not just the chargers at traditional stores per se. It has been done. I haven't seen it in the U.S., but it has been done in other markets, I think.

Barbara Stoyko
We are doing Shell Recharge for all of our charging across the world. You just haven't seen it in the U.S. because we don't have that many sites. But the ones that we do have are Shell Recharge. That is the plan going forward. I think you do want the connection to something that's meaningful to the consumer. I think that creates some opportunity. Of course, we have through the Greenlots acquisition, which is now Shell Recharge Solutions, the CPMS [Charging Platform Management System] system. It's a software system that basically does all of the charging. Electrify America uses it, I think, as well today still. That's another fundamental piece. I think it's really just about if you can establish something that is meaningful to the consumer, quality experience that they can count on, reliable, good uptime, 90-plus percent charging the first time they try, those kind of things, then having a brand that's connected to that is useful.

The other thing I would say maybe in relation to the brand is that perhaps the more localized convenience offers could be very attractive in connection with that, and if you have an MSP [Managed Service Provider] or a mechanism to communicate with them as they're making that purchase. Right now, our customer data says that the interest level and loyalty is not super high for the current customer base. I think, again, that's similar to the conversation we had at the very beginning around basket size and what kinds of customers are currently using specifically Tesla. Today, they're not as interested in doing that extra step that it takes to be a loyalty member that you see with more of a base customer that's thinking about value in a different way. Those would be my comments on branding and loyalty in relation to that.

Eva Strasburger
One more question. Those sites, are they outside hotels? Are they destinations for the traveler, or are they just spread out?

Barbara Stoyko
A combination, so the combination of forecourt locations, destination locations at other retail facilities, as well as some, but not as much, charging at places like hotels. It tends to be more DC fast charging, somewhere between 50 kilowatts and 350, not so much on the lower level charging that you would see at a hotel.
Myra Kressner: Thanks, Barbara. Scott?

Scott Hartman: One thing I forgot to say the last time, and I'll say again, Natalie, your dad was one of my best teachers in terms of learning how to ask questions and hard questions and look at it from different angles. I just wanted to let you know that. That's why I'm not the antagonist, but I am a well-trained something. I guess I ask a lot of questions and don't have the answers. But [my thought] is, I think as you look at this, we should really be careful that we're not looking [with] blinders, with electricity being the only answer here, and looking at the long-term view for our industry. You listen to the head of Toyota, he said hybrids, right? They're committed to hybrids. What do hybrids do? They reduce the demand for fossil fuels in a totally different way. They get greater gas mileage. The construction of vehicles overall, [create] better fuel mileage. I think the alternative fuels still have plenty of runway, particularly [with] Midwest lobbyists. We can't overlook the political system either.

I do believe there's electric vehicles, and they're going to come, but I think for our industry and the impact on us, to the point of, “Don't get too caught up in electricity, but let's look at the reduced demand for the fossil fuel gallon we sell and the type of ingredients in that fossil fuel.” We sell energy. How we're going to sell energy at our stores, there's a lot of different ways to do it. Electricity is one of those, ethanol, gasoline, you name it. I think that's going to continue to change, whether it's hydrogen or other things. As long as we're focused on where that mix is going, I think you'll get a better answer on the impact on our stores and our industry than trying to just dive into what I call the hottest subject of electric cars. They're just one piece of that larger puzzle. Natalie, please tell your dad, “Thanks.” I always think of him. Maybe he taught me something, I'm hoping. I hang around smart people, and I hope to have it rub off. That's why I'm here on this. Please pass along my thoughts.

Natalie Morhous: I will. He's a huge fan of yours, so thank you. That means a lot to me.

Myra Kressner: That's great. I saw your note in chat, Natalie, thanking Scott. Scott, that was very nice of you to say.
Closing Thoughts

**Eva Strasburger**
Last time, the subjects that people said they were most interested in were sustainability, logistics, [Hal was really promoting that one, and had some great ideas about how we should see ourselves as a logistic industry], labor market solutions – everything from flexible hours, gig workers, gamifications, manager training, AI and technology. I'm asking this group, is there anything other than what's on this list you would like to hear about next? There was also gambling.

**Greg Parker**
I think I'm very interested in the applications of ChatGPT in the convenience store industry. The ability to market directly to consumers based on their customer buying habits. I think it'svery intriguing and might be a great opportunity to increase loyalty.

**Myra Kressner**
Good. Thanks, Greg. Anyone else?

**Eva Strasburger**
Maybe I'll announce them. You can just raise your hand. Sustainability, who votes for that for the next one? Logistics, labor market, that seems to be a popular one [members voted on topics my raising their hands]. AI and technology. I think it's labor market and AI and technology. Liz and Joe did a really good Shop Talk Live edition, talking about the labor market. I hope everyone gets to see that. Myra, back to you.

**Myra Kressner**
That maybe brings us full circle to the last meeting and the Vision Report that we distributed to the industry about the meeting and about Convenience Leaders Vision Group, our mission, and our reason that everyone has agreed to participate so that a rising tide raises all boats. We've encouraged everyone to read the entire Vision Report and share it. We wonder if there's any feedback on the execution of it and the manner that we distributed it. The first part was a recap of the meeting. Then the second part, In the Room, was the transcript. We have gotten terrific feedback of that process, of that communication. We haven't heard any negatives yet. But we'd like you all, our members, to share either your personal feedback or other feedback that you've heard about the Vision Report.

**Barbara Stoyko**
I'll give a little feedback. I thought it was great. I honestly didn't anticipate how it would sound to read the way you talk. It makes me think twice about my grammar. But I really did enjoy seeing it all in detail and going back over and comparing to my notes. I found it quite useful. I was curious to know what kind of readership we're getting and whether or not that's something we can track by how many people click and follow through. I was curious about that.
We're in the process of integrating tracking technology into our website. We do know everyone that has downloaded it, so we are able to track that. But we do intend to have more detail because we'd like to know, and I know you'd like to know as well. Does that answer your question, Barbara? Anyone else?

I will say, Barbara, that some of the comments made were like, “This was absolutely fascinating. Wow, what a powerhouse to actually hear it from the mouths of people.” We've enjoyed the fact that several publications have downloaded the report and quoted some of our members using it as an original source from this group. We will, I think, see that increase. C-Store Dive, for instance quoted, I think it was Fouad and two other members, about what they had to say, using the original quotes because they say they have access to the transcript. We had people say, “We thought it was really fascinating to actually read it word by word, not just get a general overview.” That confirmed to us that people would slogger through 40 pages to read it. It seems like it does make good bedside reading for quite a few people.

[Off-the-record comment made by a CLVG member]

Thank you for reminding me that I did not say that at the start of this meeting, both for the new folks today, as well as to remind what I did say at our November meeting. Anything that you want to say off the record, please say, “This is off the record.” If you do think of it, even afterwards, say, “I really want what I've said to be off the record,” please let us know that. I apologize for not reminding everyone on the call today that that is the case. By the same token then, if there is a comment that you want to definitely be attributed, but not to yourself, just make sure to let us know that.

[Off-the-record comment made by a CLVG member]

What we're trying to do is provide information and knowledge to people out in the industry. We certainly don't want to do anything to embarrass you or for confidential information to go out. Frankly, if we thought something was in the transcript that reflected poorly on somebody, we would probably edit it out anyway because we're not here to play “gotcha” with anybody. On the other hand, I think that there's a lot of value to people seeing who is speaking about things so they have a reference point as to what they're saying. For example, something that Barbara might say in Shell is totally different from what JP may say with one or two stores. I think there's an aspect of that that's very powerful, which makes what we're trying to do a little bit different.

The way that we were trying to approach this, and as we mentioned in the report, is as if this is a large panel [discussion] done at a NACS Show live, where everybody is having a chance to speak. Once again, we don't want you to divulge anything
that you don't want to be divulged. But I think that overall, we're trying to go for the greater good here. I understand what you're saying about less candid conversation. That may be an opportunity for us to talk about other things offline or somewhere else. But I think what we're trying to do here has a larger picture to it. But thank you for your comments.

Myra Kressner

Also, I'll say to Roy's comment about maybe there's an offline way to share some of these comments, we mentioned that we intended to have a private communication channel, like a Slack. Hal, you had also strongly suggested that we do something like this. Each of our members will get an invitation to sign on to the channel that you can do at any time. We see that as a good way, as a repository for content that someone may see, whether it's a Wall Street Journal article or other things that you want to share with the group that the group can then comment on. Again, that is a completely private channel. We'll probably be sending you the invitation and information to log onto that within next week or 10 days. How does the group feel about that? I see some heads shaking. Then anything else on either the discussion that we just had about the Vision Report, or any other thoughts on the EV discussion? I certainly don't want to forget to thank Doug for stepping in at the last minute. How's that for your first time on the call, Doug? It was extraordinary. Thank you. We'll have to find out how Chris is doing. We certainly hope that his back is okay, and we'll hear from him another time. Anyone else? Roy, Eva, any closing comments?

Eva Strasburger

Thank you.

Roy Strasburger

Thank you very much, everyone. We appreciate you participating.
Electric vehicles are increasingly gaining attention in the news as federal funding initiatives unfold, EV manufacturers increase production and environmental concerns overall become more widely adopted on state and city levels. Here, a few EV charging-related stories that caught the attention of the CLVG founders.

**Myra Kressner:**
**EV charging stations: a growth report**
The topline from this report is a good starting point for anyone entering the conversation around EV charging stations. It will be interesting to follow the pending money coming via government funding and the private infrastructure investments happening to see how quickly strategies change around investing in EV charging platforms. Is there more hype than substance, or is the EV market truly developing faster than the industry expected? How does/can the c-store market profitably serve EV and ICE since there is no single strategy that will work for every marketer?

**Eva Strasburger:**
**Electric car lessons from a city in China**
This is a fascinating article that offers a glimpse of how electric vehicles could positively impact the U.S. environment. The author goes so far as to suggest that this city’s approach offers a blueprint for other countries. EVs in Liuzhou, China—the effective capital of the biggest EV market in the world—cost as little as $5,000 and can be charged from a household socket: affordable and convenient enough to steer consumers toward EVs without a mandate. This alternative approach seems to be gaining EV acceptance faster than what’s happening elsewhere around the world.

**Roy Strasburger:**
**$2 billion loan**
Doug Haugh mentioned Redwood Materials during the CLVG discussion after Scott Hartman brought up a few points about the lifespan of batteries in electric vehicles, namely that the cost to replace a battery in an electric vehicle exceeds the cost of the vehicle itself. What happens when the end-of-life stage hits? This article speaks to that, and the scale of it all looking even further down the road.
Convenience Leaders Vision Group brings together convenience retail icons and trailblazers through quarterly virtual meetings. During these sessions, members identify trends, challenges and disruptions in retail as well as possible solutions and opportunities. The group is committed to sharing its views and perspectives in order to advance the convenience retailing and mobility industry. CLVG 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: tvgsolutions.com/CLVG

A part of Vision Group Network

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