To: NESCAUM Medium-and Heavy-Duty ZEV Action Plan Taskforce
From: Medium- and Heavy Duty Utility Stakeholder Group
Re: Medium- and Heavy-Duty ZEV Action Plan Comments

The undersigned utilities, representing utilities across the MOU signatory states, welcome the opportunity to engage with the Medium- and Heavy-Duty Zero Emission Vehicle (M/HD ZEV) Action Plan Taskforce on this important topic.

The M/HD ZEV MOU commits signatory states to work together to foster a sustainable market for zero emission M/HD vehicles. The targets set by the MOU create an ambitious goal that will take immense coordination, thoughtful policy, and immediate action to ensure targets can be met. Key to this process is the development and implementation of a M/HD ZEV Action Plan by signatory states. In order to ensure that the plan provides equitable and logical steps for implementation, it will be critical that stakeholders key to M/HD ZEV transportation electrification provide meaningful guidance to the ZEV Taskforce during plan development. This letter reflects collected feedback from one of those stakeholders—utilities across the M/HD ZEV MOU region.

These considerations, recommendations, and possible approaches were developed through a utility stakeholder engagement process facilitated by M.J. Bradley and Associates on behalf of NESCAUM to assist the M/HDV Taskforce in its development of the M/HD ZEV Action Plan. They reflect the thoughtful contributions of utilities across the M/HD ZEV MOU region, collected over multiple in-depth group sessions, dozens of one-on-one deep dive meetings, and detailed reflection and deliberation.

We would like to thank NESCAUM and the Taskforce for inviting this utility stakeholder group to provide our perspectives on the role that utilities can play in M/HD transportation electrification. We look forward to continuing this engagement and are excited to assist our states and communities in developing a new transportation vision that is zero-emitting.

Signed,

Avangrid
Con Edison
Duke Energy Carolinas & Duke Energy Progress
Eversource
Exelon Utilities
Hawaiian Electric
National Grid
Orange and Rockland
Pacific Gas & Electric
Portland General Electric
Southern California Edison
Sacramento Municipal Utility District
Xcel Energy

Executive Summary

M/HD vehicle electrification will be a monumental undertaking requiring a coordinated approach from stakeholders across the vehicle value chain, including electric utilities, state policymakers, and regulators. The Taskforce has taken a critical first step by calling for more action and state-driven support for the electrification of M/HD vehicles, understanding the important role that this portion of the transportation sector plays in both reducing emissions in communities disproportionately burdened by air pollution as well as reducing climate change causing emissions.

While the opportunity within this sector is tremendous, so too is the task. Electric utilities, when enabled, can play a meaningful role in the development of M/HD vehicle electrification— from providing technical advisory services for customers to assisting in the coordination of statewide and multi-state charging corridor development. While there are a wide variety of ways that utilities can provide this support, many of which are detailed in the following sections, almost all will require regulatory approval.

In order to manage this electrification cost effectively, utilities and fleet operators will need to start planning today. For example, a transit fleet with a goal of 100 percent electrification by 2035 will need to stop buying diesel buses in the next two years to accommodate their typical procurement schedule and fleet turnover. A typical charger for a transit bus is rated at 150 kilowatts (kW). A fleet with a single depot of 200 buses may be installing 15 chargers per year, at over two mega-watts (MW) of new off-peak (and likely some peak) load. Utilities will need to plan for the necessary upgrades for these installments today. Likely, it may not make sense to upgrade the same facility multiple times between now and 2035 when both the fleet operator and the utility know that the transit fleet is going to have 100% vehicle electrification. In some cases, this may necessitate making some upgrades before vehicles are procured to ensure that projected load can be met. This example highlights the need for early and frequent coordination with utilities and other key stakeholders in the M/HD electrification process.

To maximize utility contribution to M/HD electrification, executive action, including the MOU, should be paired with action at the relevant agencies and regulatory bodies. State leadership should define clear directives for each agency and, where applicable, for multiple agencies to work together. Both long-term targets and clear interim steps will be essential to enabling the electrification progress. When policies outlined by the executive branch have not been actively implemented at the regulatory level, utilities struggle, therefore we urge regulatory authorities to take action expeditiously and approve investments and programs that are needed to support this critical emerging market.

This utility stakeholder process has produced the following key recommendations for the Taskforce which are described in more detail in the following sections.

Maximize benefits for M/HD Vehicle Operators, Utility Customers, and Communities

- **Recognize benefits for all utility customers:** If M/HD electrification is undertaken strategically and intentionally, utility customers will benefit in a variety of ways, including necessary reductions of local harmful emissions and reductions in greenhouse gases (GHG) that accelerate climate change. On a per vehicle basis, M/HD electrification provides significantly more GHG and air pollution reduction compared to LDVs, due to the additional miles traveled, start/stop nature of operation, ICE engine inefficiency, and additional vehicle weight. It is important that these benefits be considered when assessing utility involvement and conducting benefit/cost analyses to ensure that a state is able to accurately account for the long-term societal benefits that can be achieved through implementing comprehensive transportation electrification programming with a specific focus on disadvantaged communities. Additionally, M/HD vehicle charging could create net revenues from increased grid utilization thereby placing downward pressure on rates broadly across customer classes.

- **Realize benefits for fleet operators and the customers those operators serve:** Electric M/HD (eM/HD) vehicles can lower costs for fleet operators, especially if utilities are able to exercise flexibility in developing rates and/or programs that benefit differing utility M/HD vehicle customer segments and operators. State electrification programs should consider the central role utilities play in educating, advising, and incentivizing M/HD vehicle operators to switch to vehicles powered by electricity. As such, states should provide adequate pathways for utilities to fund these efforts. Increased coordination between state entities, utilities, and other key stakeholders can help streamline this process and ensure that fleet operators can achieve these benefits.

Encourage Integrated and Advanced Planning through Increased Stakeholder Coordination

- **Develop a coordinated regional and inter-regional approach to transportation electrification**: Utilities perform a critical role, and need partnerships for successful infrastructure build-out. Coordination with other key stakeholders that include government, market and NGO actors will be critical. The role of the utility may vary significantly depending on the existing regulatory structure of a given state and other key stakeholder concerns. Fleet operators (especially long-haul fleet operators) will need this coordinated approach as they travel across jurisdictions along freight corridors, such as the electric highway coalition (EHC) and the West Coast Coalition.
- **Encourage advanced planning and flexibility in utility programs:** Infrastructure requirements for M/HD electrification can be significant and may entail long lead times for utility-side electric infrastructure upgrades. Engaging utilities early in the project planning process will allow utilities to make the necessary electric grid upgrades to ensure customer electrification goals are met while maintaining a resilient and reliable grid. M/HD vehicle electrification will be dynamic—utilities will need to be able to plan for and modify planning to fit the needs of their evolving customer base.
- **Develop long-term signals, incentives, and ensure policy alignment:** M/HD transportation electrification will require coordinated support from state policymakers, regulators, utilities and other key stakeholders to ensure that fleet operators feel confident in transitioning their fleet to electric options. Utilities can help deliver these incentives by using their platform to communicate state developed programs and offerings and by administering incentive programs.

Enable Proactive and Dynamic Programing

- **Prepare for a dynamic marketplace by enabling advisory services and education:** Transportation electrification will require significant planning, logistics, data collection, and infrastructure development to make informed planning, rate, and managed charging decisions. Utilities and customers alike will benefit immensely from early and thoughtful collaboration to ensure fleets transition safely, efficiently, and cost effectively to eM/HD vehicles. Utilities have a role to play in educating and helping customers assess options and design transportation electrification plans.

Design Incentives and/or Rates to Manage and Plan for Vehicle Charging

- **Ensure policy and support evolves with the market:** Fleet operators have the potential to gain significant benefits through the transition to electric vehicles. These benefits, however, are not guaranteed and require thoughtful planning and adequate financial support in order to ensure cost effective deployment. Utilities can help ease this transition through managed charging incentive programs and/or rate structures that reduce electricity "fuel costs" thereby enabling customers to better manage their bills. Additionally, certain rate structures and/or incentive programs can encourage fleet operators to charge when least impactful to the grid and can minimize system upgrades to accommodate incremental load.

Detailed Recommendations

M/HD vehicle electrification will be a monumental undertaking requiring a coordinated approach from stakeholders across the vehicle value chain, including electric utilities, state policymakers, and regulators. The recommendations below reflect this group of utilities' insight, experience, and commitment to ambitious medium- and heavy-duty electrification.

Maximize Benefits for M/HD Vehicle Operators, Utility Customers, and Communities

The MOU signatory states have called for increased action in supporting M/HD vehicle electrification because of the many benefits that the electrification of this sector will bring to communities across all signatory states. Importantly, the MOU highlights obligations to: 1) reduce statewide GHG emissions, 2) provide citizens with air quality that complies with health-based air quality standards including standards surrounding PM and NOx emissions, and 3) address environmental justice concerns that impact disadvantaged communities located near freight corridors, ports, and distribution centers.[1]

Utilities, when enabled, can help to ensure that the electric M/HD vehicle market scales in an equitable way that meets MOU goals, including benefiting disadvantaged communities and all customers. While there are a wide variety of ways that utilities can provide this support, many of which are detailed in the following sections, almost all will require regulatory approval. It will be important that this regulatory process takes into account this broad range of benefits.

Realize benefits for all utility customers

If M/HD electrification is undertaken strategically and intentionally, communities and utility customers will benefit. As M/HD vehicles are electrified all communities, including communities served by these vehicles and especially those who live and work in areas that are disproportionately burdened by poor air quality due to elevated levels of PM, NOx and other vehicle emissions, will experience health benefits. This can lead to lower levels of asthma, lung and heart disease, premature death and can have the additive benefit of lowering the cost of healthcare delivery associated with these diseases. It is critical that a M/HD vehicle electrification strategy is coordinated and implemented in a way that incorporates a focus on low-to-moderate income (LMI) communities and environmental justice (EJ) communities. Several states, like the state of New York (detailed below), have begun to quantify and incorporate the societal benefits associated with vehicle electrification to make sure that all benefits and costs are accounted for when implementing state driven projects or programs.

Additionally, M/HD vehicle charging could create net revenues from increased grid utilization thereby placing downward pressure on rates broadly across customer classes. As discussed in detail below, it is critical that the infrastructure development necessary to support growing electric M/HD fleets is built in coordination with other parties, through mid- and long-term planning, and drawing upon other grid modernization and development efforts. This will help minimize costs and maximize the benefits achieved by customers.

As reflected by signing on to the M/HD ZEV MOU and adoption of additional ambitious transportation, climate, and environmental goals, the MOU states recognize the benefits of and have a strong commitment to M/HD vehicle electrification. The only way to reach these targets at the pace and scale anticipated will be through active involvement and investment from utilities. Accordingly, state regulators must ensure that these benefits to customers and communities are reflected in the consideration of utility programs. This could include ensuring that these benefits are captured in benefit/cost analyses, establishing policy guidelines for programs, and pursuing the coordination and planning efforts discussed in more detail below.

Utilizing Targets for Transportation Electrification in LMI and Disadvantaged Communities: **New York and California Transportation Electrification Programs**

Public utility commissions across the country have started to require that ratepayer funded utility make-ready infrastructure programs are deployed equitably across service territories by allowing utilities to offer increased incentives for make-ready infrastructure deployed in LMI, multi-unit dwelling, and disadvantaged communities. Several state commissions, including New York and California, require that a certain percentage of make-ready infrastructure be deployed in disadvantaged communities. New York requires that 20 percent of each utility's Make-Ready incentive budget be used to support additional incentives for charging infrastructure in or near EJ or LMI communities. The State of California requires 30 percent of electric vehicle charging infrastructure be deployed in disadvantaged communities.[2,3] These requirements ensure that communities are not left behind as vehicle infrastructure networks are developed.

While these initiatives have focused primarily on light-duty vehicles, developing programming that specifically targets and prioritizes M/HD vehicle infrastructure development in LMI communities or provides increased incentives for the electrification of M/HD fleets that impact LMI and disadvantaged communities will be important. Placing a priority on areas disproportionately burdened by poor air quality can ensure that community members are able to experience improvements in air quality in the short-term. The State of California has set a number of M/HD zero-emission goals that focus on prioritizing electrification in environmental justice communities including port adjacent communities. For example, Executive Order N-79-20 requires 100 percent of drayage trucks to be zero emission by 2035.[4]

Recognize benefits for fleet operators and the customers those operators serve

Not only will M/HD vehicle electrification benefit utility customers, but it can provide meaningful benefits to fleet operators by reducing the vehicle's total cost of ownership and by improving overall performance. However, many vehicle operators may not be aware of the potential vehicle savings, know what incentives are available, or know how to start the conversion process. Fleet operators likely will not have experience with electric vehicles and will need assistance to understand what will be required to electrify their fleet in a cost-effective way that ensures the company is able to maintain performance and meet customer expectations.

Utilities, as well as other market participants, can help fleet operators see beyond the uncertainty of fleet electrification through targeted resources like fleet advisory services and detailed toolkits that provide key fleet electrification information in terms that fleet operators understand (e.g., discussing fuel cost savings in terms of $/mile instead of $/kWh). When enabled, utilities can also help reduce the administrative burdens associated with applying for incentive and grant programs by providing information on relevant programs and offerings that a fleet operator is eligible for. In some cases, utilities can provide application assistance as well. Utilities will also play a critical role in planning for electrification, helping to avoid costly mistakes that keep fleet operators from achieving cost savings, which could lead to either a delay in electrification or even an end to an electrification planning process for the fleet operator. Utilities can also coordinate infrastructure build-out across multiple fleet operators in their service territory, creating a more efficient system that manages total system costs.

Additional Perspectives

For additional examples of targeted assistance to fleet operators, see Southern California Edison's Transportation Electrification Advisory Services which provide both one-on-one services for small-to-midsized customers in addition to online resources and toolkits for fleet operators looking for a less hands-on approach. Additional transportation electrification advisory service EV Readiness studies, grant assistance, and educational services will be available starting in Fall 2021.[6]

Developing Programs that Support Smaller Fleets and Underserved Communities:
Portland General Electric's Drive Change Fund Grant Program

For many smaller fleet operators, the upfront cost of M/HD vehicle electrification can be a significant deterrent to procuring electric vehicles. While creating incentives to encourage deployment will be critical, for a small fleet with few administrative staff, finding and applying for grant and rebate programs can create an additional administrative hurdle that can dissuade fleet operators from choosing to electrify their fleet.

Portland General Electric, utilizing funds from the State of Oregon's Clean Fuels Program, has developed the Drive Change Fund which provides support to community organizations, nonprofits, and businesses with the goal of advancing electric vehicle and infrastructure deployment and providing communities with electric vehicle education.[5] Importantly, in addition to providing funding to support electric vehicle procurement and charging infrastructure deployment, the program directs outreach to community members to try and find community-based organizations that are eligible for the program and then assists those organizations in the application process. This program provides smaller community-based organizations with the support they need to evaluate electrification options and apply for support without being overburdened by administrative tasks. Core to the program is its focus on addressing the needs of underserved communities. PGE looks to fund transportation electrification programs that move people throughout the community and that are supporting underserved communities in areas PGE serves. This type of assistance when paired with the technical expertise that electric utilities can offer to grant recipients can enable fleet operators that would otherwise not be able to purchase an electric vehicle to consider electrification.

Understanding and Evaluating Cost and Benefits of Electric Vehicle Deployment: **NYSERDA Benefit-Cost Analysis of Electric Vehicle Deployment in New York State**

Utility involvement—and funding— will be necessary to ensure that vehicle chargers are safely connected to the grid and that electric vehicle load is managed to maintain a cost effective and reliable grid for all customers. As was mentioned above, this funding often requires regulatory approval. Utility commissions often utilize cost -benefit tests—sometimes even a variety of tests— to make informed decisions about program design. For these cost-benefit tests to be useful, it is critical that all of the costs and, importantly, all of the benefits are considered.

The New York Research Development Authority (NYSERDA) commissioned an analysis in 2019 that developed a cost-benefit analysis framework that is specific to utility light-duty electric vehicle programs and investments within the State of New York.[7] The analysis considered multiple impact measures (e.g., rate payer impact test (RIM), societal cost test (SCT), and total resource costs test (TRC)) and adapted those cost tests to EV-focused programming throughout the state. Not only did the analysis factor in key utility program types (e.g., make-ready infrastructure, behavioral incentives, and EV specific rates) but it then evaluated those programs based on the state's zero emission vehicle targets to determine the overall potential societal cost and benefit that increased electric vehicle adoption would have within the state. In tailoring and identifying each of these cost tests to electric vehicles, the state was able to adequately value the societal benefit that an electric vehicle program would have for the state. Ultimately, when the Public Service Commission issued its order calling for the deployment of a $701 million dollar statewide make-ready program, it was able to justify that expense based on the almost $3 billion statewide societal benefits that could be achieved within the state if the state achieved its ZEV MOU target.

Without evaluating these electric vehicle specific costs and benefits, the state may have chosen not to deploy the program leading to less societal benefits over the long-term. While this cost-benefit analysis focused on light-duty electric vehicle programs, it highlights an important element that could be incorporated into M/HD vehicle utility programs as they are implemented more broadly to ensure all benefits are included in the utility regulatory approval process.

State electrification programs should include this important utility role in their planning and assess these utility programs accordingly. For example, and as described in more detail in the NYSERDA Cost-Benefit Analysis example above, accounting for a broad set of benefits for utility customers, society, and vehicle operators as a whole helped New York establish a program that maximized societal benefits. Increased coordination between state entities, utilities, and other key stakeholders can help streamline this process and ensure that fleet operators can achieve these benefits.

Summary of Recommendations

Realize benefits for M/HD vehicle operators, utility customers, and communities by:

- **Ensuring benefits are equitably distributed:** Including health benefits associated with reduced emissions in state cost-benefit analyses, in addition to other societal and economic benefits, is an important first step.
- **Providing support to ensure early deployment of vehicles and evaluating benefits overtime:** The economic benefits of M/HD vehicle electrification can generate additional revenue and lead to decreased customer costs if charging is managed effectively. Even if these programs are implemented and are

successful, the cost impacts may shift over time, with benefits not seen until later in the program. Ensuring that fleet operators have the necessary incentives to support electrification in the near term will be critical to enabling the deployment of a healthy market.

Encourage Integrated and Advanced Planning through Increased Stakeholder Coordination and Long-Term Policy

Utilities are necessary but not sufficient for successful infrastructure build-out—coordination with and contributions from other key stakeholders will be critical. While the role of the utility may vary significantly depending on the existing regulatory structure of a given state and other key stakeholder concerns, state leadership—from executive offices to state agencies and regulatory bodies—should work to provide consistent and predictable signals to key stakeholders surrounding the deployment of eM/HD vehicles. To the extent possible, state leadership should define clear directives for each agency and, where applicable, for multiple agencies to work together. Both long-term targets and clear interim steps that can enable program progress and ongoing assessment and modification will be key to successful program development.

Develop a Coordinated Approach to Transportation Electrification

M/HD transportation electrification will require coordinated investment and action from state policymakers, regulators, original equipment manufacturers (OEMs), large fleet operators, coalitions of small fleet operators (e.g., trucking associations), ports and logistics hubs, utilities, private infrastructure providers, turnkey electrification providers, community advocates, and other stakeholders. For many states, developing a transportation electrification plan will involve engagement from multiple stakeholders who may not consistently interact but who, together, provide meaningful connections to all parts of the transportation electrification process. For example, state energy offices, public utility commissions, and electric utilities likely have experience working together but may not have historically worked intimately with the department of transportation. The department of transportation, conversely, likely has experience working with regional planning organizations and with commercial fleets—many of whom may not typically work with electric utilities other than through their billing departments. These connection points will be key to ensuring that input from key stakeholders, including those listed above, is incorporated early in the planning process.

State leadership should manage the development of a long-term coordination process amongst key stakeholders across the vehicle value chain to ensure that both long-term and intermediate electrification targets are met and, if not, that there is a process in place to dynamically adjust and improve program elements. By setting both long-term and interim targets and by directing government offices to work together and with non-governmental organizations to outline a clear transportation electrification pathway, state governments can add future market stability for a wide variety of stakeholders including utilities. By developing an organized and long-term planning process that includes clear directives for key stakeholders within and regulated by government entities, states can help build assurance in the electrification process that can help utilities and other critical stakeholders (e.g., fleet operators, OEMs, etc.) feel confident that there is a business case to invest in transportation electrification. By supporting coordinated, long-term planning and policy, state leadership provides certainty around an electrification pathway that includes the differing needs of multiple stakeholders. This coordinated approach will both send a strong market signal to scale the procurement of M/HD vehicles appropriately and will be essential to limiting the number of delays associated with M/HD vehicle electrification. As described in more detail in the following sections, M/HD electric vehicle procurement and infrastructure deployment will take years to develop if not implemented in a streamlined and coordinated manner. Without coordination, this process will take much longer and could potentially lead to expensive mistakes that could have been avoided if connection points were

made across key stakeholders and if coordination and action were ingrained in the M/HD electrification planning process at the start.

Developing a proactive plan for transportation electrification that highlights key partnerships:
Hawaii Electric Companies Electrification of Transportation Strategic Roadmap

The State of Hawaii's Electrification of Transportation Strategic Roadmap offers one example of ways to clearly define transportation electrification goals and to highlight key partners in the planning process.[8] Not only did the development of the Strategic Plan include a robust stakeholder engagement process that included a broad base of stakeholders from automakers and dealerships to public agencies, advocacy groups, and NGOs but the plan itself highlights potential partners for each of Hawaiian Electric's initiatives for transportation electrification. While Hawaii's plan is primarily focused on light-duty electrification, it offers a meaningful example of how to develop a coordinated and thoughtful approach to transportation electrification planning.

Finally, increased coordination can help produce numerous important tools and processes, such as:

- Facilitating learning and coordination across stakeholders who may otherwise not have a simple way to communicate;
- Collecting, processing, and publishing data that can be used to inform program development by both regulators and third-parties;
- Commissioning and funding studies to evaluate state or regional electrification needs and to develop plans to address those needs (e.g., evaluating demographics, existing vehicle chargers, electric grid constraints, etc. to determine where and how vehicle chargers should be deployed)
- Developing and providing a clearinghouse for electrification toolkits that incorporates stakeholder expertise and are designed for different users (such as fleet operators, communities, zoning commissions, local governments, small electricity providers, etc.);
- Publishing roadmaps to meet long-term targets, including necessary actions by stakeholders with check-in points; and
- Identifying and advancing regulatory directives.

Creating a multi-jurisdictional partnership to evaluate infrastructure needs and potential constraints:
West Coast Clean Transit Corridor Initiative

The West Coast Clean Transit Corridor Initiative provides one example of regional collaboration to develop a roadmap to create a transportation corridor along the I-5 highway in Washington, Oregon, and California.[9] The study was produced by a coalition of nine electric utilities and two agencies representing more than two dozen municipal utilities who researched vehicle, battery, and charging station technologies in addition to evaluating truck traffic to forecast EV truck populations and determine the number and size of highway charging sites. The final report offers a proposed map of charging facilities along the I-5 and arterial highways in all three states. This study represents an important first step in establishing lines of communication amongst key stakeholders and also in highlighting key issues that will need to be addressed as charging networks are built out across service territories and states. Notably, the study found that developing charging locations in rural locations will be difficult and costly. These types of studies can allow utilities and other stakeholders to begin to map out not only the infrastructure that will be required but also infrastructure build-out costs.

Since the publication of the study, PGE and Daimler Trucks North America (DTNA) have built a heavy duty charging facility in Portland near DTNA's electric truck manufacturing facilities. The Electric Island facility represents the first location specifically designed for medium- and heavy-duty trucks aligned to the blueprint of the West Coast Clean Transit Corridor Initiative. The site is designed to keep Electric Island future-proof, allowing the chargers of today to be replaced with new charger technologies of the future, including the planned 1+ megawatt chargers, when they are released. Additional plans for future on-site energy storage, solar power generation, and a product and technology showcase building remain under development.

What is critical is that the work continues beyond an initial stakeholder engagement process to make sure that state planning processes are developing and improving as this nascent market grows and develops to incorporate different types of vehicles and locations. While there are commonalities across states and regions, when actual infrastructure is installed as electric vehicle deployments scale, state leaders will need detailed and forward-looking electrification planning processes that consider the rollout of various vehicle types, where they are likely to charge, and at what voltage. Utilities can provide essential insight and expertise about topics by evaluating:

- Grid impacts of added electrification at various levels, including both costs and any resilience or reliability considerations;
- Details on vehicle charging and integration process timelines, including opportunities to mitigate those grid expansion costs and accelerate timelines;

Additional Perspectives

For more information on other regional charging collaborations, see REV West and the Electric Highway Coalition.

REV West is an initiative started by Governors from eight western states and facilitated by the National Association of State Energy Offices (NASEO).[10] The goal of the REV west partnership is to provide a framework for creating an Intermountain West EV Corridor.

Electric Highway Coalition is a coalition started by six utilities in the southeastern United States—American Electric Power, Dominion Energy, Entergy Corp., Southern Co., and the Tennessee Valley Authority— that plan to develop DC fast chargers throughout the southeastern United States.[11]

- Additional utility programs and offerings that can be coordinated with fleet electrification to increase benefits; and
- How investments across service areas and customers can be coordinated and phased.[9] [10]

Prioritize Long-Term and Coordinated Policy Signals and Incentives

To maximize utility contribution to M/HD electrification, executive action, including the MOU, should be paired with action at the relevant agencies and regulatory bodies. When policies outlined by the executive branch have not been actively implemented at the regulatory level, utilities struggle, therefore we urge regulatory authorities to take action expeditiously and approve investment and programs that are needed to support this critical emerging market. These initiatives and actions should be aligned across all agencies to ensure that agencies and regulatory bodies have the authority and agency needed to execute programming that will enable M/HD electrification. To the extent possible, state leadership should define clear directives for each agency and, where applicable, for multiple agencies to work together.

Importantly, these directives should establish both long-term targets and clear interim steps that can enable program progress and ongoing assessment and modification. Long-term policy signals are critical in the M/HD sector for many reasons, including:

- *Fleet turnover timelines:* M/HD vehicles typically have useful lives of at least a decade. Because most fleet operators are likely to complete electrification on or close to their regular vehicle replacement cycles, full fleet turnover will take multiple decades. This means to meet long-term state targets, fleet turnover must begin now, and policy must support that action. Furthermore, fleet operators will need to plan charging infrastructure and long-term capital spending now—and will need the certainty that those investments will remain economical and supported by policy further down the road.
- *Large infrastructure build-out:* M/HD electrification will require large utility infrastructure projects, such as new interconnections or distribution system and substation upgrades. These projects often take multiple years to plan and site—and then additional time to build and operationalize. Utilities and regulators need to begin planning these investments now—and to feel confident that these larger investment upgrades will be worthwhile over the long-term.
- *Utility Ratemaking Timelines:* Utilities often undergo ratemaking proceedings on a scheduled two to four-year basis. For the jurisdictions where EV programs are primarily authorized through rate proceedings, these proceedings will be a critical means for utilities to gain approval of new programs (including advisory services, rate designs, or other incentives) and investments (such as make-ready infrastructure or distribution upgrades) that will be necessary to support growing M/HD vehicle demand. Ensuring that policies remain consistent leading up to and across these ratemaking cycles, in the applicable jurisdictions, will ease regulatory review and allow utilities to propose the proactive and cost-effective solutions to aid electrification efforts.

Developing a multipronged approach to M/HD vehicles electrification: **California's M/HD Vehicle Strategy**

States have an opportunity to provide clear policy and market signals to stakeholders throughout the vehicle value chain by coordinating policy initiatives throughout the state and coupling those initiatives with incentives and other support mechanisms to ensure that key stakeholders—including OEMs, utilities, and fleet operators, among others—have the support they need to take swift and coordinated action to achieve transportation electrification goals.

The State of California has taken a leadership role in approving a number of policies in recent years designed to reduce emissions from M/HD vehicles, including the approval of two landmark rulings—the Advanced Clean Truck Rule and the Heavy-Duty Low NOx Omnibus Rule.[11] Both of these rulings are designed to address M/HD vehicle emissions in distinct and complementary ways—with one program focused on developing a market for new zero-emitting M/HD vehicles and the other designed to reduce emissions from existing trucking fleets. By addressing both local harmful air pollution in the short-term and developing a supply chain for zero-emitting trucks in the mid- to long-term, the state is both considering the immediate and long-term needs of communities located in heavily trafficked areas. These initiatives, coupled with the state's aggressive vehicle sales targets, send a clear signal to vehicle owners and manufacturers that the state is moving towards a zero-emission vehicle future.

In addition to providing clear regulatory signals to OEMs and fleet operators, the state has also implemented a wide variety of incentive programs developed through the state Air Resources Board and Public Utilities Commission. While some of this programming is funded through traditional government and regulatory financing mechanisms (e.g., annual state budgets and utility ratepayer funds) these programs additionally receive a significant amount of support from the state's Low Carbon Fuels Standard. Utilities note the important role that Low Carbon Fuels Standards have played in supporting the state's electrification goals by funding the development of increased programming and support that would have otherwise been difficult to implement through either traditional state budget funding or through utility ratemaking procedures. For example, the Sacramento Municipal Utility District (SMUD) Commercial EV Program rebate funding—which allows customers within the SMUD service territory to receive incentives for commercial electric vehicles in addition to electric vehicle charging installation—is fully funded by the state's Low Carbon Fuels Standard.

Additional Perspectives

For more examples of state and regional programs that create long term incentives, see the Transportation and Climate Initiative Program (TCI-P), a regional collaboration between Massachusetts, Connecticut, Rhode Island and the District of Columbia that will require large gasoline and diesel fuel suppliers to purchase "allowances" for the pollution caused by the combustion of fuels they sell in participating jurisdictions.[12] The funds from this program will be directed towards projects and programs that increase transportation electrification. An additional eight other states in the Northeast and Mid-Atlantic region are actively working with CT, DC, MA and RI to fashion this regional program and some of those states may formally join the TCI-P in the coming months.

Summary of Recommendations

Develop coordinated policy that incorporates utility expertise: States should consider coordinating efforts around transportation electrification in order to set predictable goals and targets for OEMs and utilities to plan against. Comprehensive policies provide many benefits, such as better-defined roles, long term price signals, and can help to create a forum for coordination (including across state lines). Utilities have unique insight into how to prepare for shifting electricity use cases and can apply lessons learned from light-duty vehicles to the M/HD vehicle sector. States should encourage and/or require consistent and regular outreach to utilities.

Develop clear regulatory and long-term policies: Fleet operators struggle to plan for operations without clear pricing. Some of this uncertainty can be lessened with clear regulatory and long-term policy certainty. For utilities, sequencing critical grid investments, future proofing, and resilience planning is more achievable with transparent targets and consistent market signals.

Develop incentives to encourage electric vehicle procurement: It is important to pair requirements (e.g., electric vehicle sales requirements) with incentives – a "carrot" to accompany a "stick" – to realistically expect significant adoption.

Evaluate ways to streamline fueling experiences and costs for fleets operating in multiple service territories and/or states: Utilities have an important role to play in electrifying regional and long-distance trucking by participating and providing technical assistance to regional corridor planning exercises that span service territories and states. Large utilities should work with cooperatives and other small utilities to ensure that electrification planning is occurring throughout the state and region.

Enable Proactive and Dynamic Programming

Transportation electrification will require fleet operators to undertake significant planning, changes to logistics, and infrastructure development. Utilities can both educate and assist customers in assessing options and in designing transportation electrification plans. This will require not only an iterative process between the utility and customer once a customer has decided to electrify but will also require forward looking data collection efforts to ensure that utilities are able to plan for the increased load from electrification. By enabling proactive action through advisory services and education, utilities can ensure that customers are given the assistance they need both in the near-and long-term and that utilities are given the data they need to adequately plan for system upgrades.

Prepare for a dynamic market place by enabling advisory services and education

Electricity costs will be a significant input for M/HD vehicle operators considering electrification. These costs will vary by customer given each customer's unique fleet characteristics. However, vehicle operators and fleet managers are often inexperienced with key variables concerning electrification, including:

- How to compare electric rates with vehicle "fuel costs", including how electricity prices may vary from one service territory to the next (particularly important for regional fleets that span multiple service areas or long-haul trucking);
- The amount and size of chargers needed in order to serve their electric vehicles;
- When to charge vehicles in order to reduce electricity costs and avoid demand charges (which may be especially important for smaller customers who to date have not been subject to demand charges); and
- How to adapt their operations and maintenance of new vehicles and new fueling logistics (including reliability, resiliency, and safety concerns).

Combined, these factors can lead to uncertainty about true total cost of ownership and can contribute to significant over-build or under-build of a charging system and lead to increased expenses or lack of reliable services. This delay not only leads to missed opportunities and benefits for the specific fleet operator, but at scale, can lead to failure to meet critical state electrification and environmental goals.

Utilities, as advisors, can help customers assess, manage, and project electrification costs thereby easing uncertainty and improving the electrification transition process. There are many different ways in which utilities can provide support to fleet operators—ranging from offering comprehensive one-on-one advisory services to developing easy to understand make-ready infrastructure applications. This variety of approaches can help meet the needs of different customer sizes and fleet types. For example, while large fleet operators will need to coordinate with utilities to make sure they are able to adequately plan for load increases, large fleet operators may have a dedicated electrification team that can plan and project vehicle electrification. For that type of fleet operator, a utility may not need to provide one-on-one advisory services. For small to mid-sized fleet operators—who may have less administrative staff—a one-on-one approach may be essential to ensuring the fleet operator is able to make an informed transportation electrification plan. Utilities can develop a wide range of tools that can help assist this diverse group of customers in their transportation electrification process.

Developing tools and resources to enhance customer understanding: **Southern California Edison's Charge Ready Transport Resources**

Southern California Edison's Charge Ready Transport program has developed a number of tools and online resources that allow the fleet operator to learn more about fleet electrification options at their own pace and using language that is more familiar to a transportation expert as opposed to an electricity expert.[13] For example, SCE's Electric Fleet Fuel Savings Calculator allows a customer to enter specific details about their vehicle type —including typical driving behavior and charging schedule—and provides costs savings in terms of dollar per mile instead of $ per kWh, thereby allowing fleet operators to easily compare an electric vehicle's "fuel costs" to their current diesel fleet. This "plug and play" option enables fleet operators to become more comfortable with potential electrification costs and savings which may encourage early transportation electrification adoption. SCE has additionally developed a Guidebook for Fleet Operators which provides a step by step look at the key considerations to electrifying a fleet including additional information on how to engage with SCE's existing programming.

Additional Perspectives

For additional examples of resources to assist fleet operators in their electrification process, see PG&E's EV Fleet Program Fuel Savings Tool and Funding Filtering Tool.[14]

Create Nimble Utility Programs That Can Respond to Changing Market Conditions and Customer Needs

Utilities need a defined role in transportation electrification but will also need flexibility to develop programs that benefit differing M/HD vehicle operators whose needs are not currently well defined and could change as the market develops.

For most capital projects, like developing electric vehicle infrastructure, utilities are often held to very strict requirements for receiving rate recovery to ensure: 1) that rates remain just and reasonable to utility customers and, 2) utilities are not developing infrastructure that is unnecessary. While it is important to ensure that cost remains reasonable for customers, there are situations in which modifying program design can enable reductions in costs over the long term and, importantly, can streamline infrastructure development leading to a more efficient siting and construction experience for customers. Utility programs should include flexibility provisions that ensure appropriate oversight but allow adaptations to best serve customer needs, including developing a more coordinated system between different fleet operators looking to electrify in a concentrated area.

One opportunity for flexibility is in allowing anticipatable upgrades if it is indicated by mid- or long-term needs—a concept commonly referred to as "future-proofing". For example, if a customer is planning to add additional eM/HD vehicles over the course of a few years and those vehicles will require the utility to upgrade a substation or other electrical infrastructure. It might make sense for the utility to make the necessary upgrades to their system while the initial infrastructure upgrades are occurring so that infrastructure complications can be avoided for future charger upgrades. Similarly, it is far more cost efficient to trench up a parking lot in order to upgrade service equipment once rather than twice or (even three or more times)—even if this means installing equipment in excess of current electric charging needs but in anticipation of future needs.

Increasing this flexibility in utility programming can allow utilities to prepare adequatetly for fleet electrification. It is likely that many customer fleets will convert to electric vehicles slowly over time. Especially in the early stages of vehicle electrification this will mean that the number of electric vehicles and the associated vehicle infrastructure need could be low. Not planning for future electrification at scale could lead a utility to add on incremental capacity upgrades only for a particular customer— increasing cost and creating additional hurdles for infrastructure development over the long term that can create delays in infrastructure build-out. Allowing utilities

Increasing program flexibility to enable utility programming that can adapt to meet customer needs:
Xcel Energy's Transportation Electrification Plan Approval

While each state and jurisdiction would have to determine how to appropriately enable utility flexibility, the State of Colorado's recent approval of Xcel's Transportation Electrification Plan provides one example of regulatory flexibility.[15] Xcel, within its Transportation Electrification Plan, requested that the Commission allow increased flexibility surrounding annual program funds in addition to enabling the utility to move funds within and between its electrification programs. The Commission approved this request allowing Xcel to move funds between portfolios—subject to cap of 150%—and to increase the overall budget up to 125% of annual estimated costs, stating, "this flexibility will allow [Xcel] to efficiently address the evolving market and expand or contract programs in response to customer demand and market costs." This type of increased flexibility can allow utilities to be dynamic in the beginning stages of their program development enabling them to be responsive to their customer's evolving needs without having to wait for the next utility rate case —which typically occurs every 2-3 years for utilities—or to file a petition to amend a program which can also be time consuming.

to build-out some of the infrastructure upgrades during the initial construction of the charging site — and, where possible to coordinate among multiple customers planning to electrify — utilities could create a more organized and planned approach to electrification that minimizes the long-term total system upgrade costs for each section of the electric grid. For most investor-owned utilities, this would require increased flexibility in the utility rate design process. [13] [14] [15] [16]

Additional Perspectives

For more examples program flexibility, see Portland General Electric (PGE)'s partnership with TriMet. In 2018, TriMet's board set an ambitious goal to transition its fleet to non-diesel vehicles by 2040. In order to achieve this goal, TriMet partnered with PGE and allowed the utility to own and operate the infrastructure related to its inaugural electric bus fleet. By allowing PGE to own and operate the charging infrastructure, TriMet was able to reduce its costs and use that savings to purchase an additional electric bus.[16,17] While utility ownership will not be the most common or in many cases, feasible option for increased electrification, this example displays that it can be a useful model when deployed appropriately.

Another important need for flexible program design may be in overall funding. Traditional funding for utility infrastructure programs, is often capped which prohibits additional short-term expenses. In other situations, utilities may find that they experience an influx in requests for charging infrastructure within a given year but will be unable to meet those requests because their mutli-year program has yearly budget caps that would prohibit additional expenses. These two examples display how rigid funding mechanisms can create unintended consequences for utilities and their customers thereby leading to less efficient program development. As utilities begin to develop their M/HD vehicle electrification programs and infrastructure incentives, it will be important for them to be able to have enough flexibility to change programming tactics—including developing more innovative solutions to managing load— in order to ensure that state M/HD vehicle electrification targets can be met.

In both cases, having a better understanding of how many fleet operators are planning to electrify and the timeline for that electrification enables utilities to make important programmatic changes to ensure customer electrification goals are met without negative impacts to the grid. By understanding how large the fleet is, what type of vehicles make up the fleet, and what the electrification timeline is will allow utilities to make more informed infrastructure planning decisions that look beyond the first instalment of vehicles and into the second and third.

This advance planning process can enable utilities to make infrastructure build-out decisions that anticipate future vehicle deployment, thereby potentially reducing infrastructure costs associated with returning to a location to re-upgrade equipment to accommodate for the increase in vehicles. California's large fleet reporting requirements, described above, provide a leading example of how to ensure utilities and other stakeholders are able to project and plan for future M/HD vehicle deployment.[17]

Setting requirements for early and consistent coordination between utilities and fleet operators:
California's Utility Notification and Large Fleet Reporting Requirements

The siting and construction of electric vehicle infrastructure can take over a year to deploy even when developed in a streamlined and coordinated way. Depending on the site characteristics and the number of vehicles, chargers, and number of other locations ahead of a particular project can further delay charging infrastructure. In discussions with utilities as part of this stakeholder engagement, several utilities noted that M/HD vehicle infrastructure — starting with developing an electrification plan to installing infrastructure — can take anywhere from three to five years to deploy. Fleet operators who are unaware of this timeline may procure an electric vehicle only to find that they will be unable to charge it for years. It is essential that fleet operators engage early and often with their utility to make sure that they will be able to develop adequate charging to meet fleet needs.

States can take a leadership role in requiring fleet operators to notify utilities at the beginning of their electrification process. The State of California has taken multiple steps to enable utilities and other stakeholders to evaluate both near- and long-term fleet electrification. The state requires that a customer notifies their utility of any electrical additions or upgrades at their facility regardless of the scope or scale. This requirement makes sure that utilities are engaged early in the infrastructure process so that they can help their customers better understand what their infrastructure needs are. As part of the Advanced Clean Trucks Rule, the state has also required large entities to complete a survey detailing their existing medium- and heavy-duty fleets and contracted services to enable the state to better understand procurement goals and vehicle estimates.[18] While this type of survey will not display exactly how and when a fleet electrifies, it can provide useful context for utilities and other stakeholders looking to prepare for future fleet electrification.

Summary of Recommendations

Work with state regulators to define a role for utilities: To the extent that policymakers are able, clearly defining the utility role in M/HD electrification can help drive planning, coordination, and program development in addition to helping maintain consistency for customers.

Encourage fleet operators to engage early and often with their utility: Early engagement with utilities is critical. Infrastructure planning should consider phasing requirements and incentives that optimize infrastructure build-out and provide utilities access to key fleet data (e.g., number of vehicles, duty cycles, charging times, etc.) from the fleet operator early on in the process.

Coordinate with utilities on education campaigns and incentive program outreach: Because of their existing interactions with customers, utilities can provide a platform to share existing incentives throughout their service territory.

Design Incentive and/or Rates to Manage and Plan for Vehicle Charging

As discussed above, utility customers and fleet operators have the potential to gain significant benefits through the transition to electric vehicles. These benefits, however, are not guaranteed and require thoughtfully planned programs and/or rate-design in order to ensure cost effective deployment. These rates, and/or other charging incentives or utility programs, will have multiple objectives, which may include:

- *Assisting customers in lowering their fleet fuelling costs*: M/HD vehicle operators will not transition to electric vehicles at scale unless there are real cost savings. Rate design and/or customer incentive

programs must be designed to continue to recover the costs of providing electricity and all services while encouraging beneficial charging behavior and providing opportunities for significant cost reductions.

- *Providing ongoing incentives for charging M/HD vehicles in a way that minimizes grid impact:* It is important for utilities to be able to efficiently manage new M/HD vehicle charging load in a way that does not negatively impact grid reliability—and in fact can be utilized as a tool for increasing local resilience. Minimizing negative grid impacts could be achieved through shifting charging to off-peak times, encouraging customers to charge gradually rather than quickly, integrating charging needs into a customer's broader electricity usage patterns (at a warehouse or factory, for example), or incorporating additional resources such as onsite storage. In total, helping to manage and shape charging patterns will minimize the costs of integrating new electric vehicles into the electric system, both for fleet operators and the electric system as a whole.
- *Ensuring that costs and benefits of M/HD electrification are distributed equitably across customers*: Because M/HD vehicle electrification can provide significant benefits to both fleet operators and the rest of utility customers, it may also be appropriate to recognize that M/HDV electrification puts downward pressure on rates for all consumers. As discussed above, regulatory processes should take into account the broader range of costs and benefits. Regulators and utilities should work together to determine if additional support should be deployed to ensure that disadvantaged communities are prioritized to enable even greater short-term health benefits.
- *Helping to create a streamlined and consistent fuelling experience for fleet operators, including possibly across utility service areas*: Determining electricity fuel costs—which may vary by vehicle class and the current state of the market—will be critical to fleet planning. As discussed above, many fleet operators have little experience in evaluating fuel costs in terms of kWh and will not have sufficient experience or time to understand and evaluate complicated rates that vary between utility service territories and across state lines, in situations where fleets are operating in large geographic areas. Additionally, transportation electrification, unlike other forms of utility investment, may benefit from increased coordination across service territories simply because the vehicles themselves, for certain fleets, are moving across service territories — sometimes many — in a given day. Providing consistency will make the total cost of ownership calculation more understandable, and potentially lower the barrier of adoption for many fleets that operate across state lines.

Together, utility rates and/or programs, when developed to have greater flexibility, can help provide appropriate price signals while supporting electrification. The exact objectives may vary based on a number of factors, such as the status of the market, the utility's existing rate structure, and the specific M/HD market segment in question. For example, a rate design or incentive program that is appropriate for a small number of fleet operators just beginning to electrify may be different than one serving a series of large, fully-electric fleets. Each utility is subject to different existing state and regulatory rules which may lead it to pursue one load management strategy over another. Utilities and state agencies should work together to evaluate which approach, or approaches, may work best within a given state and utility service territory.

It is important that as the market develops, utilities and regulators learn more about fleet operator needs and, as utilities gain experience implementing different incentive programs and/or rate designs, that utilities and their regulators remain nimble and able to revise and improve incentive and/or rate designs. In order to understand how this new vehicle load will impact existing utility infrastructure, utilities have begun to implement pilots and test differing types of approaches to managing load in a way that is beneficial to the grid and also cost effective

for customers. As a result of these pilot programs, a number of different load management strategies have begun to be developed. The following section outlines three possible approaches to addressing this concern.

Incentives plus existing rates: Incentive programs layered on top of existing rates can be a useful option to encourage managed charging and serve as a bridge towards economic viability achieved naturally as utilization increases when compared to implementing specific or tailored rates. Incentives can often be implemented and modified more quickly and can be designed to be targeted towards customers with low, medium, and high usage rates as well as specific groups of customers needing additional support such as those in disadvantaged communities and environmental justice areas. As with other utility offerings, incentive programs may require communication and outreach to customers to ensure that eligible customers are aware of these program offerings.

Existing Rates and Incentivizing Off-peak Charging: **Con Edison's Smart Charge New York Program**

Some utilities have chosen to avoid setting rates that target specific loads opting instead to offer incentives on top of existing rate structures that provide price signals based on cost causation principals in order to encourage customers to shift their charging behavior, without removing the underlying price signal inherent in rates.

Con Edison's SmartCharge New York program, for example, uses a tracking system to reward EV drivers for off-peak charging.[19] Participants who charge in the Con Edison service territory receive $150 for installing and activating the monitoring device, $5/month for continuing to charge in the service territory and a bonus $20/month for avoiding summer-peak charging weekdays between the hours of 2 PM to 6 PM and $0.10/kWh for charging between midnight and 8 AM year-round. Additionally, participants can receive bonus payments for installing their device within one week, submitting feedback through annual surveys, and referring additional customers. Unlike Time of Use (TOU) rates, SmartCharge New York is an off-bill, nontariff program that monitors charging through a tracking system installed in the vehicle. Nonfleet participants receive their incentive on a monthly basis through PayPal and fleet participants receive rewards by check.

Tailoring rates to meet specific customer needs: Utilities could also choose to tailor rates to target a certain behavioral shift from customers—either incentivizing or disincentivizing a behavior beyond what is typically included in a traditional rate. For example, some utilities offer time-of-use (TOU) rates that incentivize customers to reduce their consumption during peak usage hours. Tailored rates offer another way to modify rate structure to encourage managed charging without developing a rate that only targets one specific customer segment.

Evaluating the Effectiveness of Behavioral Programs through Targeted Pilots: **Maryland's PC44 Process and Baltimore Gas & Electric (BGE)'s EV Only Time-of-Use (TOU) Rate**

As part of its proceeding to transform the electric grid, "Public Conference 44 (PC44)," in 2019, the Commission approved a modified pilot program across four investor-owned utilities within the State of Maryland—BGE, Pepco, Delmarva, and Potomac Edison—allowing each utility to offer charging rebates to light-duty customers across the state. Notably, the Commission also required that each utility pilot program include an EV-only TOU rate for its residential rebate offerings. The Commission paired these offerings to enable each utility to collect data and information on EV charging patterns and behavior to better inform future EV programing.

As part of the PC44 process, BGE received approval for a residential pilot program that offered a flat $300 rebate for 1,000 residential customers that purchased and installed an EV charger and implemented an EV-only TOU rate.[19] In its annual review of the program, BGE had enrolled 240 customers in its EV Only TOU rate, 70 percent of which have received a rebate. While the program has recently been deployed and while deployment was slowed due to COVID-19, BGE is beginning to collect data on its customer usage patterns so that it can develop a more refined EV TOU rate that better serves its customers and continues to encourage managed charging. In pairing both of these programs while prioritizing data collection and analysis, BGE will be able to both implement and analyze its EV programming in a way that will allow it to learn while providing programming that serves its customers. While this program focuses on the light-duty sector, this model could be used in the M/HD space to balance the need to rapidly deploy rate or incentive options in the short-term while continuing to collect data on customer needs and create long-term programs that meet those needs.

Shifting Customer Behavior through Tailored Rates: **Examples from PacifiCorp and Con Edison**

There are a wide variety of ways that utilities can modify their rates to encourage a shift in behavior from their customers. A number of utilities have implemented TOU rates that charge customer's higher rates for consumption during "peak hours" and lower rates during "off-peak hours". These types of rates often fluctuate seasonally and usually impact larger customers the most who are able to see larger savings on their utility bill by shifting their load. PacifiCorp utilizes two different seasonal TOU rates that target evening peak during the spring and summer months and that target both evening and morning peaks during the winter months.[20]

Rate structures should provide price signals that encourage customer behaviors that benefit the utility system, thus helping to control infrastructure costs to the benefit of all customers. For example, commercial EV charging customers in the Con Edison service territory can take service under various rate structures that promote demand management in EV charging. These include non-coincident demand charges, time-of-use rates and optional standby rates that include a combination of daily as-used and contract demand charges.

Through its Business Incentive Rate, Con Edison also offers public DCFC stations, limited-term delivery rate reductions during the initial period of low station utilization. This program offers limited-term relief from operating costs while maintaining appropriate price signals that encourage demand management in EV charging.

Sector-specific rates: * Sector-specific rates target M/HD vehicles by offering a specific tiered rate structure for different categories of M/HD vehicles. For example, a utility could provide a transit fleet rate that is designed to match the duty cycle and usage pattern of the transit vehicle to encourage the transit fleet operator to develop a managed charging strategy. Sector specific rates can be very useful for M/HD fleets that have very consistent load and usage patterns but must be designed to reflect the underlying utility cost structure in order to send appropriate price signals to the fleet operators regarding charging patterns.

Developing Tiered Commercial EV Rates: **PG&E's Business EV Rate**

Developing EV-specific rates can enable a utility to maintain price signals encouraging customers to avoid charging during peak usage periods while also optimizing opportunities for charging characteristics of an electric vehicle fleet. It is critical that utilities and regulators design rates that accomplish both of these goals as electric vehicles and — in particular, M/HD vehicles — vary significantly in their duty cycles and charging needs.

PG&E offers two Business EV rate plans for customers with on-site EV charging — a low use EV rate for smaller workplaces and multi-unit dwellings and a high use EV rate for fleets and fast-charging stations.[21] Customers receive a separate meter and then choose between a variety of monthly subscriptions plans that are based on the customers maximum monthly EV charging consumption, which can be adjusted over the course of the month depending on the fleets consumption levels. If a fleet's actual consumption exceeds the subscription level, the fleet is charged an overage fee of two times the cost of one kW for each kW that exceeds the subscription level. In order to ensure that customers are able to choose the appropriate subscription model that aligns with their fleets usage, fleets are given a grace period of three billing cycles when they sign up for the rate to better understand their usage patterns. In addition to the monthly subscription charge, customers are charged a time-of-use rate based on how much energy the customer actually consumes and when. These types of rates allow fleet operators to better understand and manage their costs and also allow utilities to get important load data that can enable them to better understand and manage their load in the future.

* The Medium- and Heavy Duty Utility Stakeholder Group is a diverse association of utilities across the U.S. operating under different business, rate, and market conditions. Some members of this Stakeholder Group, including Consolidated Edison and Orange and Rockland, believe upfront incentives targeted according to market need and designed to alleviate operating cost barriers in an incipient clean transportation marketplace is superior to the use of sector-specific rates that effectively eliminate or obscure critically important price signals based on cost causation principles and which encourage load management and good charging behavior.

Summary of Recommendations

Evaluate a wide variety of options to reduce and streamline fuel costs across regions: There are many other ways to calculate fuel costs that include considering operating and duty cycles instead of focusing exclusively on demand charges. In some situations, these approaches may be more appropriate and could allow for a broader set of solutions. Utilities and regulators should continue to provide incentives for off-peak and other cost flattening behavior and should focus on developing programs that give customers options.

Consider the variability within the M/HD vehicle market: Utilities and regulators should consider ways to develop tiers within their load management programming that serves differing M/HD vehicle usage patterns. The development of this type of programming is likely to require some trial and error as utilities and customers learn and as the market develops. Regulators should consider ways to provide flexibility to enable and support this type of dynamic market development. Allowing flexibility as the market develops and more data become available on fleet and vehicle operator needs will be critical for the development of successful load management policies.

References

[1] *Multi-state Medium and Heavy-Duty Zero Emission Vehicle Memorandum of Understanding* (2019), https://www.nescaum.org/documents/multistate-truck-zev-governors-mou-20200714.pdf

[2] New York Department of Public Service, *New York Electric Vehicle Make-Ready Program* (2020), https://www.governor.ny.gov/news/governor-cuomo-announces-make-ready-program-electric-vehicles

[3] California Public Utilities Commission, *Zero-Emission Vehicles Programs*, https://www.cpuc.ca.gov/zev/

[4] California Air Resources Board, "Governor Newsom's Zero-Emission by 2035 Executive Order (N-79-20)," (2021), https://ww2.arb.ca.gov/resources/fact-sheets/governor-newsoms-zero-emission-2035-executive-order-n-79-20

[5] Portland General Electric, "The PGE Drive Change Fund,"(2021), https://portlandgeneral.com/energy-choices/electric-vehicles-charging/pge-drive-change-fund

[6] Southern California Edison, "Fleet Charging," (2021), https://www.sce.com/business/electric-cars/charging-stations-for-fleet

[7] Hawaii Electric, *Electrification of Transportation Strategic Roadmap*, (2019), https://www.hawaiianelectric.com/products-and-services/electric-vehicles/electrification-of-transportation-roadmap

[8] LADWP, NCPA, PG&E, PGE, Pacific Power, Puget Sound Energy, SMUD, SDGE, SCE, SCPPA, Seattle City Light, *West Coast Clean Transit Corridor Initiative*, (2020) https://westcoastcleantransit.com/

[9] Tennessee Electric Cooperative Association, "Electric Highway Coalition to develop DC fast charger network," (2021), https://www.tnelectric.org/2021/03/03/electric-highway-coalition-to-develop-dc-fast-charger-network/

[10] *REV West Memorandum of Understanding*, (2017), https://www.naseo.org/issues/transportation/rev-west

[11] Transportation and Climate Initiative, *Transportation and Climate Initiative Program Model Rule*, (2021) https://www.transportationandclimate.org/final-mou-122020

[12] Southern California Edison, *Charge Ready Transport Program*, (2020), https://crt.sce.com/overview

[13] Pacific Gas and Electric, *EV Fleet Program*, (2019), https://www.pge.com/en_US/large-business/solar-and-vehicles/clean-vehicles/ev-fleet-program/ev-fleet-program.page

[14] Xcel Energy, *Transportation Electrification Plan*, (2020), https://www.xcelenergy.com/company/rates_and_regulations/filings/transportation_electrification_plan

[15] Portland General Electric, "PGE Continues to Lead the Charge on Electric Transportation with New Plan," (2018) https://investors.portlandgeneral.com/news-releases/news-release-details/pge-continues-lead-charge-electric-transportation-new-plan

[16] TriMet, "TriMet partners with Portland General Electric for a cleaner future with official launch of zero-emissions bus technology,"(2019), https://news.trimet.org/2019/04/a-us-transit-industry-first-trimets-new-electric-buses-powered-entirely-by-wind/

[17] California Air Resources Board, *Large Entity One-Time Reporting Requirement*, (2021), https://ww2.arb.ca.gov/our-work/programs/advanced-clean-trucks/large-entity-reporting

[18] Con Edison, *SmartCharge New York*, (2021), https://www.fleetcarma.com/smartchargenewyork/

[19] Pacific Power, *Oregon Choice Time of Use*, (2021), https://www.pacificpower.net/savings-energy-choices/time-of-use.html

[20] Con Edison, *Business Incentive Rate*, (2020), https://www.coned.com/en/commercial-industrial/economic-development/business-incentive-rate

[21] Pacific Gas & Electric, *Business EV* Rate, (2021), https://www.pge.com/en_US/small-medium-business/energy-alternatives/clean-vehicles/ev-charge-network/electric-vehicle-rate-plans.page