



A ROADMAP FOR VEHICLE ELECTRIFICATION IN NEW JERSEY 2.0

Market Development Strategies and High Impact Initiatives

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Introduction

This document is an update to [A Roadmap for Vehicle Electrification in New Jersey](#) (Roadmap 1.0), published on September 13, 2017. Since its original publication over three years ago, there have been several significant developments in the New Jersey electric vehicle (EV) market. This includes:

- Enactment of a nation leading EV Law on January 17, 2020;
- Launch of an EV vehicle-purchase rebate program by the New Jersey Board of Public Utilities (NJBPU) in mid-2020;
- Approval of two utility EV filings by the NJBPU to promote charging infrastructure;
- Investment of VW settlement dollars and Regional Greenhouse Gas Initiative (RGGI) proceeds in electrification initiatives; and
- Announcement by New Jersey Department of Environmental Protection (NJDEP) of its intention to draft rules that adopt California's Advanced Clean Truck Rules

Additionally, ChargeVC-NJ completed and published a [Full Market Vehicle Electrification Study In New Jersey on October 7, 2020](#) (Study), which helped identify the next phase of market development priorities for the State. The Study considered the potential for electrification of all road-vehicles in New Jersey, including both light-duty and medium/heavy-duty vehicles. The updated Roadmap (Roadmap 2.0) expands recommendations to cover the full market and reflect learning and market developments over the three years.

Background

The expanding use of EVs will reshape both our energy markets and the way we travel. Over the last three and a half years, we have seen rapid growth of the EV market in New Jersey that has been bolstered by strong state government support. Further, we expect the continued release of a variety of EVs with improved range and pricing, which makes EV ownership more feasible across all segments.

To appreciate the scope of the potential impact, consider the following:

- Approximately 41% of energy related greenhouse gas (GHG) emissions in New Jersey are from the transportation segment, with three-quarters of that coming from the on-road use of gasoline, predominantly in cars.¹
- Every electrically fueled mile in New Jersey is 50% - 70% cleaner than an average gasoline or diesel fueled mile for key emissions such as CO₂ and NO_x. Widespread EV adoption results in large reductions of emissions that harm public health, along with lower GHG

¹ As represented in 2019 by the NJ Department of Environmental Protection

emissions associated with climate change. These reductions increase when EV adoption happens at the same time as increased renewable energy use.²

- Fueling cars with electricity rather than petroleum can have a large beneficial impact on electricity infrastructure and markets. Widespread EV adoption could increase electricity use by as much as 30% over current levels. If guided through proactive programs and policies, electrification of transportation has the potential to enable more robust utility infrastructure and more optimal loading patterns that reduce costs to utility customers and increase reliability.
 - The widespread adoption of EVs brings significant economic benefits, including lower electricity rates and reduced vehicle operating costs. Notably, the benefits to front line communities impacted by air quality in the urban core and along dense travel arteries are compelling.
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ChargEVC-NJ was founded to identify high impact EV market development strategies for New Jersey and to provide a unified voice to advocate for effective implementation. This coalition of diverse interests, including automotive retailers, utilities, national and local environmental NGOs, consumer and equity advocates, labor associations, power plant owners, and technology companies, including original equipment manufacturers (OEMs), are united by the common goal of expanding and accelerating EV adoption in New Jersey. Please see Appendix A for a list of current members.

In 2017, a newly formed ChargEVC-NJ published our first market development roadmap (Roadmap 1.0), which focused primarily on increasing light-duty EV adoption. Over the past four years, ChargEVC-NJ has worked with state agencies, market participants, and other stakeholders to make New Jersey a national market leader in EV adoption. New Jersey has devoted significant funding towards EV infrastructure, electrifying municipal fleets, and has established the most generous EV incentive program in the nation. **Roadmap 2.0 provides a comprehensive plan which builds off the recent successes in the light-duty sector and expands to actions that must be taken in the medium-/heavy-duty sectors.**

ChargEVC-NJ has combined [comprehensive New Jersey specific full market research](#), subject matter expertise offered by our diverse members, and consensus building to identify the actions needed to expand and accelerate EV market development in the state. Roadmap 2.0 is the result of that effort, outlining the high impact initiatives necessary for New Jersey to continue to lead nationally in EV market development and ensure that the associated benefits accrue equitably to all New Jerseyans.

² Based on the current electricity supply mix in New Jersey and average gasoline vehicle efficiencies

Recommended Market Development Actions

The following are recommended policy actions for New Jersey, organized into actions that encourage focused market development in key strategic areas. Each of these actions has been updated significantly from Roadmap 1.0 (published in October 2017) to reflect the following changes:

- Adjusting Roadmap 1.0 to align with recent market development progress (legislation, agency actions, etc.), in cases where ChargeEVC-NJ is in support of those actions;
- Building on Roadmap 1.0 and/or recent market development actions to identify more advanced goals and activities that would improve New Jersey's position as an EV market leader; and
- Adding entirely new actions or details that were not evident in Roadmap 1.0 and/or for which minimal market development progress has been made in New Jersey. Roadmap 2.0 goes beyond Roadmap 1.0 by considering electrification of the full market – including both light-duty vehicles (LDVs) and medium-/heavy-duty vehicles (MHDVs).

As a preview, this updated Roadmap includes several especially important revisions:

1. Expansion to include numerous details related to MHDVs, especially support for New Jersey's adoption of the Advanced Clean Truck rules from California and other market-leading policies, and goal setting for the MHDV segment similar to what has been done for LDVs;
2. Emphasizing all the goal setting and market development actions associated with ensuring equitable access to vehicle electrification benefits;
3. Adding a goal that 100% of LDV sales be electrified by 2035, consistent with the emerging consensus on this approach by other EV market leaders; and
4. Compressing the LDV vehicle rebate program into a five-year program (through 2025), rather than over ten years, so that a) the rebates can be available when they are most needed, in direct support of the 2025 goals and b) to avoid the harmful stop/start cycles that have emerged with the current program.

Action 1: Set State Goals

Setting formal goals provides the framework for other market development actions that need to be taken, which is why it is the first action in the Roadmap. The following goals have been updated to build on the original recommendations as expanded to cover the full market. Additionally, updated goals also align with the goals already established in law or implied in other strategic state plans (such as the NJBPU's Energy Master Plan (EMP), and the NJDEP's 80x50 plan), or other agency actions. In some cases, previous provisions have been updated to better align with the more advanced state of the market, or to encourage more aggressive market development given the progress evident in recent years.

Action 1A: Set goals for the number of **light-duty EVs** in New Jersey (weight class 1 and 2a):

- Consistent with provisions established in the EV Law: At least 330,000 plug-in light-duty EVs registered in New Jersey by the end of 2025.
- Consistent with provisions established in the EV Law: At least 2 million plug-in light-duty EVs registered in New Jersey by the end of 2035.
- 100% of all new light-duty sales and leases are plug-in EVs by 2035, which is an advancement over current goals in the EV Law (85% by 2040) to realign with emerging consensus among electrification market leaders.
- Lead by example – state level: goal for state non-emergency light-duty fleet – by the end of 2025 at least 25% of fleet vehicles are plug-in EVs, increasing to 100% by the end of 2035, consistent with provisions in the current EV Law.
- Lead by example – local level (i.e., county and municipal government): Establish a new goal (not addressed in the current EV Law) for local government non-emergency light-duty fleets – by the end of 2025 at least 10% of fleet vehicles are plug-in EVs, increasing to 100% by the end of 2040.
- As new consensus emerges in the market for electrification of LDVs, continue to update formal New Jersey goals to stay in lockstep with other market leaders.

Action 1B: Set goals for the number of **medium-/heavy-duty EVs** in New Jersey (class 2b and class 3-8) through a two-level structure:

- **Level One MHDV Goals:** Set high level goals organized by vehicle weight class, consistent with the Advanced Clean Truck (ACT) requirements established in California when scaled to the New Jersey MHDV fleet population. These rules set goals for the fraction of sales each year that should be electrified by vehicle class and are consistent with New Jersey's participation in the regional Memorandum of Understanding (MOU) regarding the widespread electrification of MHDVs. These goals are focused on targets for electrification as a percentage of new sales each year. Make sure to reflect other market-

leading policies for MHDV electrification that may be applicable and encourage realization of the transportation objectives associated with New Jersey Protecting Against Climate Threats (NJ-PACT).

- **Level Two MHDV Goals:** Refine the class-level ACT goals further to quantify specific adoption goals for certain high priority vehicle types and applications, including:
 - **New Jersey Transit:** at least 10% of new bus purchases are zero-emission plug-in vehicles in 2024, increasing to 50% by 2026, and 100% by 2032 and thereafter, consistent with the current requirements in the EV Law.
 - **K-12 School Buses:** at least 10% of new bus purchases are zero-emission plug-in vehicles in 2024, increasing to 50% by 2026, and 100% by 2032 and thereafter. This schedule is not currently part of the EV Law but adopts the same schedule as established for New Jersey Transit for bus electrification.
 - **Medium Duty Local Delivery and Shuttle (typically class 2b and 3):** at least 10% of medium-duty local delivery and shuttle vehicles and chassis sold in New Jersey are plug-in by 2025, and 100% of such vehicles registered in the state are plug-in by 2040.
 - **Short Haul Drayage (typically class 8):** at least 10% of short haul (average <150 miles/day) drayage tractors sold in New Jersey are plug-in by 2025, and 100% of such vehicles registered in the state are plug-in by 2035.
 - **Refuse Trucks:** at least 10% of short haul (average <150 miles/day) refuse trucks sold in New Jersey are plug-in by 2025, and 100% of such vehicles registered in the state are plug-in by 2040.

Action 1C: Establish public charging infrastructure goals:

- Establish a goal for at least two independently operable DC Fast Chargers (DCFCs) in service at no less than 100 corridor locations and no less than 100 community locations by 2023. Two chargers per location is a minimum requirement, and more chargers per location are preferred (especially for corridor locations). This goal represents an acceleration of the current requirements in the EV Law.
- Ensure that there are enough chargers per location that wait-times for use by EV drivers are minimized.
- Promote key technical requirements for fast public charging, as defined in the current EV Law: Publicly available DCFCs should serve the full market of light-duty EVs, be available for public use, and support at least 150KW at corridor locations and at least 50KW at community locations. Avoid gaps in charger availability by ensuring that corridor locations are no more than 25 miles apart, as measured along the road they serve, with the understanding that this goal is not intended to discourage more closely sited chargers

where appropriate. Open access by the full market of EVs should be a top priority at strategic locations such as rest stops, service areas, or other tactical settings.

- Once the critical mass of public fast charging locations is created as established in the EV Law, ensure that sufficient charging capacity is available in the state to meet the needs of all EV drivers in a convenient, equitable, reliable, and cost-effective way.
- Establish a goal for a total of at least 1,000 public Level 2 (L2) chargers at community locations, including (but not limited to) municipal, retail, entertainment, and tourist destinations, where longer charge durations are appropriate, distributed by county according to population, by 2023. This goal represents an acceleration of the current requirements in the EV Law.

Action 1D: Establish private charging infrastructure goals:

- Establish goals so that at least 15% of multi-family properties are equipped with L2 chargers for their residents, or are “charger ready,”³ by 2025, increasing to 30% by 2030.
- Establish goals so that at least 25% of non-residential properties have L2 chargers available for use by their employees by 2025, increasing to 50% by 2030. Recognize that these workplace chargers play a variety of important roles in the EV charging ecosystem, including providing routine access to charging by multi-family residents or other EV drivers that don’t have convenient charging access at home.
- Establish goals so that at least 20% of overnight lodging establishments (hotels, etc.) have chargers available for use by their guests by 2025, increasing to 50% by 2030.

Action 1E: Recognize the need for managed charging and responsible grid integration to ensure widespread electrification benefits:

- Establish policies, programs, rate-design, and utility ratemaking to ensure that most EV charging happens at times and in ways that maximizes public benefit and minimizes grid reinforcement that could be avoided, including time-of-day tariffs, active managed charging programs, a focus on responsible grid integration, innovative make-ready programs, and rate-design that fairly balances utility cost-recovery needs with supportive market development.
- For LDVs, encourage the development of policies and programs that motivate optimal loading on the utility grid, primarily residential charging at off-peak times and emerging advanced technologies such as Vehicle-to-Grid (V2G), and the use of private LDVs to provide back-up power.

³ “Charger ready” means pre-wired and ready for easy charger installation at multi-family locations, with signage that indicates charger ready.

- For MHDVs, focus on make-ready programs that facilitate higher power charging needs, mitigate avoidable grid impacts, and encourage the development of the charging infrastructure (especially within depot settings) needed to enable MHDV electrification. Explore innovative rate designs that fairly balance utility cost-recovery needs with supportive market development.

Action 2: Ensure Electrification Solutions Reach All Communities Equitably

Create programs in urban centers and low-income and environmental justice (LI/EJ) communities, especially in those communities designated as overburdened communities by the NJDEP, for electric transit, fleets, taxis, public-school buses, and other advanced mobility services. For people that live in our most densely populated urban centers, car ownership may not be an option and/or may not be desirable. There is a need for electrically fueled fleets and other electrically fueled transit options to move people through and around our cities, which will have a direct impact on urban air quality. Focus should be ensuring charging infrastructure in LI/EJ multi-family settings, EV options in local car-share and ride-hailing services, and rapid electrification of buses and other vehicles that support the mobility needs of these communities.

Action 2A: Establish programs for electric fleets, taxis and rideshare services, public transit and school buses, and other advanced mobility services. In urban areas, electrifying these transportation modes will have a direct beneficial impact on urban air quality. Widespread vehicle electrification will only be successful if all New Jersey residents benefit equitably.

Action 2B: Given the significant public health benefits that result from vehicle electrification, support allocating a meaningful percentage of public and regulated utility transportation electrification budgets for underserved, LI and/or EJ communities which ensures equitable investment in electric public transportation and deployment of charging infrastructure.

Action 3: Expand Public Charging to Eliminate Range Anxiety

Ensure the development of a comprehensive DCFC network that establishes a critical mass of geographic coverage that directly addresses the consumer range anxiety barrier. The rapid advancement of DCFC technology now allows most vehicles to be fully charged in 30 minutes or less, and within a few years, an electric “fill up” will take less than 10 minutes. New Jersey is in a unique position to leverage this new technology because the state is geographically compact, and most travel is accomplished on a relatively small number of roads. Approximately 67% of daily miles driven in New Jersey are supported by only 42 federal and state roads. That means that a relatively small number of publicly available⁴ fast chargers can have a large impact on

⁴ “Publicly available” refers to charging infrastructure that may be owned by a variety of entities, but which is generally available to the public with minimal limitation.

consumer range anxiety. With such action, the state lays the foundation for subsequent natural growth of public charging infrastructure driven by growing demand. Public/private partnerships, and the use of public support (potentially through utility programs) combined with private investment, will be necessary for both phases of public charging infrastructure growth.

Action 3A: Immediately establish policies, programs, and utility initiatives to ensure the development of a critical mass of a DCFC network to serve light-duty EVs in New Jersey in support of the DCFC goals established in Action 1C:

- Pursue a statewide initiative to develop a critical mass of DCFC facilities consistent with public DCFC goals, with an objective of at least 400 DCFCs at no less than 200 locations, consistent with current provisions in the EV Law. Target at least 100 corridor locations along the most heavily traveled roadways, with no more than 25 miles between locations as measured along the roadway being served, and at least 100 community locations distributed so as to provide convenient access near where EV drivers live and work. Build upon the corridor guidelines established by the NJDEP, which identifies the number of locations needed for each designated corridor roadway. Where gaps in charging availability become evident, encourage “gap filling” actions to ensure consistent access to convenient public fast charging.
- Support policies, programs, and utility-engagement that ensures public DCFC economics that attract private investment and sustainable long-term operation of DCFC facilities. Pursue an “ecosystem approach” to infrastructure investments, which allows for joint action by the state, utilities, and private investors to create the necessary infrastructure. Focus on three key factors that impact economics: a) up-front capital costs, b) the cost of make-ready and related grid reinforcements, and c) the barriers associated with demand-charges during the initial phases of low utilization. Promote the adoption of utility programs and ratemaking to encourage DCFC development, since utilities are in a unique position to address make-ready, reinforcement, and rate-design/rate-making issues associated with DCFC economics.
- Ensure programs can be used in a harmonious and complementary way where these market development incentives and programs are provided from multiple parties or parallel channels.
- Establish standards for technology, access, and payment methods to ensure maximum public benefit of public DCFCs and create a framework for public-private partnerships that empower hosting sites (especially public sites) to participate, set goals for the allocation of space at rest stops or other public spaces, and encourage partnerships between competitive solution providers and regulated utilities to deliver the necessary solutions. Draw from experience in other states, where supportive of New Jersey goals and market development strategies, to create consistency across states and leverage lessons learned.
- Allow all hosts of charging equipment to offer kilowatt-hour pricing if desired without being considered a public utility. This promotes consistent and understandable price

signals to drivers. Where consistent with New Jersey goals and market development strategies, strive for consistency with other states, and leverage lessons learned. To the greatest extent possible, promote a driver experience that is convenient, reliable, and transparent.

- Ensure a strong promotion and education campaign to maximize the impact on consumer perceptions and encourage widespread signage that creates public DCFC awareness. Consumer education can highlight both the availability of public charging and its benefits, while also emphasizing the proper use of public charging facilities.

Action 3B: Short term, pursue planning, policies, programs, and utility initiatives that lead to the development of appropriate high-power DCFC at “en-route” settings that meet charging needs for commercial vehicles away from the depot. These facilities may include “open use” locations available to all MHDVs, as well as specialized “charging barns” that may be privately owned and targeted for use by high volume fleet operators. Recognize that mid-range DCFCs (150-350KW) may serve “double duty” supporting both LDVs and MHDVs.

Action 3C: Medium term, begin planning and the development of regional partnerships that ensure the development of ultra-high powered DCFCs for long haul heavy-duty vehicles along key travel corridors. Target development of a critical mass of appropriate DCFCs in at least 50 “truck stop” (or similar) locations by 2025.

Action 4: Address the Affordability Gap to Help Achieve Scale

EV prices are dropping, especially in response to lower battery costs, increased industry scale, and growing competition. But in the short term, EVs are more expensive than equivalent petroleum fueled vehicles. This price premium is a primary barrier to adoption, and this first-cost difference slows the rate at which industry can achieve the scale necessary to achieve price parity. This is a short term market condition, however, which can be addressed through temporary programs that compensate for the price premium.

Action 4A: Implement a \$300M grant program to reduce the price premium associated with light-duty EVs to accelerate adoption, expand consumer awareness, and increase industry scale, consistent with the provisions in the current EV Law.

- Focus program design on making the incentive easily available at the point of purchase, either as an offset against the purchase price or for use in vehicle financing. Ensure consistent availability throughout the sales year, vary the incentive by electric range but with a target of \$5,000 per EV initially, and adjust incentive levels slowly, predictably, and in lockstep with vehicle price reductions. Consistent with the EV Law, funding for the grant program should come from allocation of the Societal Benefits Charge already being

collected. Consider augmenting funding through other revenue sources (like the Transportation Climate Initiative (TCI), RGGI and/or a Low Carbon Fuel Standard (LCFS)), or as a recoverable incentive provided by the electric utilities.

- Accelerate the vehicle rebate timing compared with the current EV Law, and target distribution of this \$300M LDV purchase incentive fully by the end of 2025 so as to maximize the impact on 2025 goal attainment, and to align deployment with when EV price premiums are at their greatest. The NJBPU has the authority to achieve this acceleration since the provisions in the EV Law were “... at least ...” funding levels, not maximums. The initial \$300M program should be extended if certain success criteria are met.
- Actively monitor the LDV rebate program, encouraging consistent and orderly program delivery, strong reporting and transparency, and the incorporation of stakeholder input in any program changes. Also ensure that the full value of rebates is passed through to EV buyers in a transparent way.
- Consider the development of a rebate program for used EVs a) only after the rebate program already defined in the EV Law is operating and b) ensuring that any funding for used EVs is separate and incremental to the \$300M in funding targeted for new EV purchases.

Action 4B: Implement a “truck voucher” grant program to encourage the accelerated adoption of MHDVs (classes 2b and 3-8), including particular focus on electric school buses, medium-duty local delivery and shuttle vehicles, refuse trucks, and short haul drayage vehicles. These segments have an especially large impact on local emissions, and electrification of these vehicles brings critical public health improvements to LI/EJ communities in particular. Design the funding and programs to ensure the attainment of the diesel displacement goals in Action 1B, including incentives to cover the full costs of electrification including the incremental vehicle cost, charging infrastructure, and other associated implementation costs. Electric school buses are a top priority for policy and incentive support, especially for LI/EJ communities, given the combination of a large price premium, limited budget headroom for higher first costs by school districts, and extraordinarily large electrification value.

Action 5: Ensure Sufficient Private Charging Infrastructure

The public DCFC program addresses range anxiety (Action 2), however, it is also important to ensure that all drivers have routine access to private chargers for long duration charges. This routine charging infrastructure will deliver the majority of vehicle charging needed, and without access to appropriate routine charging infrastructure, most private drivers or fleet operators will not adopt EVs. All EV owners should be assured of a “right to charge” in long duration settings, especially vehicle owners in multi-family settings, or residential and commercial rental situations. For the fraction of vehicle charging energy delivered in residential settings, it is critical to ensure

that those transactions happen at optimal times to minimize negative impacts on the public grid and ensure maximum economic benefit for all utility customers. As EV adoption grows, it will be crucial that electric utilities are proactive in upgrading the distribution system infrastructure to keep pace with greater electricity use, which brings broader benefits related to a more robust public grid.

Action 5A: Pursue “Right to Charge” policies, programs, and especially utility initiatives that encourage the installation of **L2 chargers for LDVs** in single-family residential, multi-family, overnight lodging, workplace (for use by employee), and commercial fleet applications. Adopt a “charging ecosystem approach” to the development of this private charging infrastructure, recognizing a role for state programs, utility initiatives, and private investment. Encourage the use of networked “smart chargers” that provide key functions (such as point of sale transactions, user administration, usage tracking, etc.), and allow for the collection of detailed charging information to inform utility load planning and program or rate design.

Action 5B: Pursue policies, programs, and especially utility initiatives, including advanced make-ready programs, that encourage the installation of **L2 and DCFC chargers for MHDVs** in the depots that support commercial fleets. These chargers will, in aggregate, represent relatively high-power loads that in addition to basic charging equipment costs, could impose significant make-ready and grid reinforcement costs. Active support by electric utilities will be necessary to ensure responsible grid integration of this crucial new infrastructure and to minimize barriers that might otherwise slow MHD EV adoption.

Action 5C: Encourage utility rate-design and other incentive programs that address “cost of electricity” barriers to private charging and establish high priority programs for “managed charging” in the residential and MHDV sectors especially. Promote utility rate designs or other pricing-related incentives that address barriers to routine charging, especially on commercial tariffs where demand charges may result in high costs for routine vehicle charging. Strive to find an appropriate balance between rate design that encourages EV adoption and fair and timely recovery of utility costs to provide distribution infrastructure.

- Establish high priority strategic initiatives to influence when EV charging occurs, especially in residential settings where most charging will take place, so as to direct load to optimal (typically off-peak) periods. Utilities may provide rates designed for EV charging, or other tariffs, programs, or incentives that influence when charging occurs.

Action 5D: Encourage the adoption of grid integration methods and technologies that mitigate the impact of EV charging on the grid and electricity costs, and which enable the coordination of vehicle charging to optimize grid loading and use.

- In the short term, establish a foundation for “one-way” smart charging of the vehicle through passive managed charging paradigms (such as price signals through specialized tariffs or incentive programs, coupled with utility data collection from the chargers). Longer-term, encourage more active charge coordination and advanced vehicle-grid integration solutions that provide tightly integrated two-way transactions that optimize grid loading conditions.
- Explore strategic technical technologies that enable optimized grid integration of vehicle charging, including advocacy for advanced technical pilots where feasible. Key opportunities include V2G solutions, integrated storage, and other "smart grid" solutions. Enabling the ability of privately owned EVs to provide “back-up power” for homes could provide additional strategic value that increases EV adoption benefits.
- Recognize that what is determined to be “optimal charging” will likely shift over time with the proliferation of additional renewables and storage technologies.

Action 5E: Ensure utility infrastructure upgrade efforts as needed in the medium term. As the EV market begins to achieve significant adoption, ensure that the electric utilities track market development and EV uptake, assess evolving infrastructure requirements, plan for and implement necessary infrastructure upgrades, and maximize the broader benefit of those upgrades.

Action 5F: Encourage policies and programs that recognize and leverage the synergy between widespread EV adoption and increased renewable energy use, particularly including the value of using electricity from renewable sources for EV charging, and the ability of EV charging to absorb and firm renewable electricity generation.

Action 5G: Support “EV Ready” building codes and standards. For new and existing construction, changes to the building codes and standards will be necessary to reduce barriers to equitable and widespread private charging infrastructure access, and to minimize significant retrofit costs when deploying EV chargers in the future.

Action 6: Ensure Long Term Funding for the TTF

Identify a mechanism for ensuring that all road-vehicles are paying their fair share into the Transportation Trust Fund (TTF) on a sustainable long-term basis and begin the transition to that modernized framework as soon as possible. This framework should include fair and non-punitive treatment for EVs, and to facilitate the transition, should provide a grace period for EVs through 2025 that exempts them from TTF-related fees. From 2025 through 2030, ramp up EV coverage under the new TTF-funding mechanism, and from 2031 forward, ensure that EVs pay their fair share of TTF requirements in full. Engage with policymakers to encourage and inform the design

of this new TTF-funding mechanism and ensure full but fair contribution by EVs as the market matures.

Action 7: Build Consumer Awareness

Lack of consumer awareness remains one of the biggest adoption barriers and getting the word out about the many benefits of driving an EV is a must. To ensure this message sticks, take advantage of the multiple ways to engage consumers, from ride and drive events, signage, EV galleries, utility marketing programs, local government engagement, and both traditional media and digital/social media campaigns. A coordinated campaign with a consistent message can dramatically increase consumer awareness. Multiple messengers, including ChargeEVC-NJ members and government agencies like the NJDEP and NJBPU, should also be tapped as part of a coordinated campaign to broaden consumer awareness.

Action 8: Expand Market Development Focus Regionally

With basic market development programs established in New Jersey, it is time to expand the scope of the Roadmap to consider more regional issues, and to recognize that realizing high levels of EV adoption (in both the LDV and MHDV segments) will require coordination across state and other boundaries. The following actions begin to leverage EV activities from outside New Jersey and ensure that regional cooperation is being developed where needed:

Action 8A: Continue to monitor and learn from other market leaders so that New Jersey stays at the forefront of goal setting and market development, including leveraging experience and innovation in other states and participation in federal and regional initiatives where beneficial. Specifically:

- Continue to participate in the California ZEV program and associated adoption goals and continue New Jersey's opt-in participation in that framework. Leverage both LDV and MHDV programs.
- Leverage continued participation in the multi-state Medium-/Heavy-Duty MOU, and ensure follow-through with real world policies, programs, and initiatives in support of those commitments.
- Participate in TCI as a way to generate funding for vehicle electrification objectives, especially in relation to equity considerations.
- Begin coordination with regional partners to establish highly functional "charging corridors" for both LDV and MHDV long-distance travel.
- Expand coordination with regional partners on public promotion and outreach to expand consumer awareness of EVs and the availability of public charging infrastructure.

- Leverage and coordinate on national or regional activities related to transitioning transportation infrastructure funding from a per-gallon tax to another mechanism by which EVs (and traditional vehicles) pay their fair share (see Action 6).

Action 8B: Engage constructively with PJM and other stakeholders on promoting the reliable, cost-effective, and equitable integration of vehicle charging into the PJM markets and transmission and distribution infrastructure planning. It is important to begin to understand the statewide and PJM-wide impacts of vehicle electrification. The ChargeVC-NJ studies have quantified the significant impact that vehicle charging will have on electricity markets and the grid, and those impacts will soon aggregate to have impacts on PJM overall. This impact will be compounded by the fact that in parallel with New Jersey’s electrification efforts, other states in the PJM region are prioritizing EV adoption as well.

Action 9: Supportive Market Development Efforts

The policy initiatives outlined above directly target key market barriers or unmet needs. In addition, there are a variety of supporting efforts, programs, and action by other stakeholders that reinforce the primary initiatives. ChargeVC-NJ recognizes the mutually supportive roles for multiple parties in the EV-market ecosystem are necessary to expand and accelerate EV adoption sustainably long term.

ChargeVC-NJ, in collaboration with members and others will:

- Advocate directly for the key policy actions summarized in Roadmap 2.0 with a special focus on MHDV electrification;
- Continue to work in partnership with the New Jersey Coalition of Automotive Retailers (NJ CAR) and dealerships on education and support of these goals;
- Engage and create opportunities for competitive technology providers and utilities to deliver solutions cooperatively;
- Advocate with the NJDEP, the State Legislature, and the California Air Resource Board for a change in regulations that require vehicles to be “placed in service” or “retailed” before automakers receive full credit for vehicles delivered for sale in New Jersey under the ZEV framework;
- Identify and collaborate with other market participants that can support market development, including Clean Cities Coalition, the regional transportation planning organizations, Sustainable Jersey, etc.;
- Encourage the accelerated adoption of new, clean renewable electricity generation, which has high synergy with transportation electrification;
- Take action on consumer awareness and education;

- Create public awareness for all public charging opportunities;
- Partner with the auto and bus industries to ensure vehicle availability and strong consumer experience;
- Coordinate with the Governor's Office and specifically the Office of Climate Action and the Green Economy to implement this roadmap;
- Coordinate with state agencies and other entities to implement this roadmap;
- Attract investment to the state;
- Ensure a strong foundation for long term growth through codes and standards;
- Continue to participate in regional initiatives and expand regional involvement;
- Encourage state leadership, especially through EVs in state fleets; and
- Actively engage local government support and participation.

Appendix A

ChargEVC-NJ Members:

- ARRIVAL
- Association of NJ Environmental Coalitions (ANJEC)
- Atlantic City Electric
- BYD
- Center for Sustainable Energy
- Clearview Energy
- Climate Change Mitigation Technologies
- Environment New Jersey
- Environmental Defense Fund
- EV Box
- EVgo
- Fuel Force
- Greenfaith
- Greenlots
- Independent Energy Producers of NJ (IEPNJ)
- Isles, Inc.
- Jersey Central Power & Light
- Natural Resources Defense Council
- New Jersey Coalition of Automotive Retailers
- New Jersey Clean Cities Coalition
- New Jersey League of Conservation Voters
- New Jersey State Electrical Workers Association
- NJR Clean Energy Ventures
- NRG
- Plug-In America
- Proterra
- PSE&G
- Rockland Electric
- Sierra Club NJ Chapter
- Sussex Rural Electric Cooperative
- Tesla
- Union of Concerned Scientists
- Work Environmental Council