

Electrify America: Wyoming ZEV Infrastructure Strategic Plan RFI Response

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1. Introduction

Electrify America, LLC, is investing \$2 billion over ten years into zero emission vehicle infrastructure, education, and access efforts. We currently operate the nation’s largest open network of DC fast chargers for electric vehicles (EVs), with nearly 3,000 ultra-fast chargers at more than 690 locations nationwide. Our stations are primarily installed through an owner-operator model, in which Electrify America owns, operates, and maintains charging equipment, in addition to procuring separate electric service at each of our sites. Recognizing a demand for third-party owned infrastructure, Electrify America launched its Electrify Commercial division in October 2020, which focuses on providing our services and solutions to support end-to-end development of third-party charging networks, such as those owned by fueling stations or other site hosts.

Recently, Electrify America announced the groundbreaking for its first charging station in Wyoming, located at Smith’s Food and Drug in Gillette, which will be the first ultra-fast, open standards charging station in the state.¹ Along with a new station announced in South Dakota, these investments will bring Electrify America’s footprint to a total of 46 states plus the District of Columbia.

The station in Gillette is one of several stations planned for Wyoming and the surrounding states, as Electrify America seeks to install ultra-fast charging along I-90 between Butte, Montana, and Albert Lea, Minnesota, I-25 between Denver, Colorado, and Billings, Montana, and I-80 between Cheyenne, Wyoming, and Salt Lake City, Utah.² These routes are consistent with those identified by Wyoming in its Cycle 3 submission to Electrify America and nominated to Federal Highway Administration as Alternative Fuel Corridors, although exact deployments will be subject to the policy and utility evaluations that guide our investments.

Electrify America submits this RFI response to Wyoming Department of Transportation to lend some insight into the lessons learned from building out a national network of DC fast charging stations, and to support the State of Wyoming in planning the next stages of its corridor charging infrastructure. Electrify America appreciates the opportunity to provide input to the Strategic Plan.

¹ Electrify America (2021). “Electrify America Announces Electric Vehicle Charging Stations in Two New U.S. States.” Available at: <https://media.electrifyamerica.com/en-us/releases/160>

² Electrify America (2021). “National ZEV Investment Plan: Cycle 3,” p. 39. Available at: https://www.electrifyamerica.com/assets/pdf/cycle3_investment_plan_epa.a19109d1.pdf

1.1. Contact Information

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2. Technical Response

2.1. Infrastructure Installation, Placement, and Operation

a) What considerations should be taken into account when developing DCFC or hydrogen refueling stationing plans?

States developing DCFC infrastructure plans should consider how to develop future-proofed infrastructure that meets the needs of current and future vehicles. Electric vehicle technology is developing rapidly, and the average charging speed of new vehicle models has tripled over the last five years, from 50 kW to 150 kW.³ Several vehicle models now support charging speeds significantly faster than 150 kW, including the Lucid Air, which supports 350 kW charging, and the Hyundai IONIQ 5, which supports 225 kW.

In electric vehicle charging, power is speed, and recharging times are dependent on the power levels supported by the charging equipment and accepted by the vehicle.

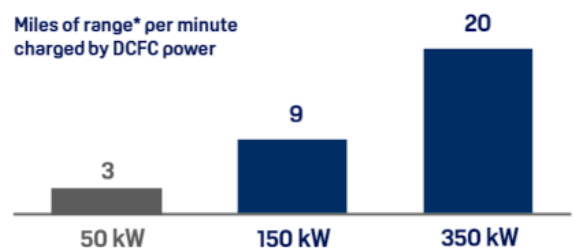
Particularly on long-distance trips that may require multiple charging sessions, minimizing refueling times

is critical to customer experience. Consumer research shows that EV drivers frequently report that using public charging stations is time-consuming, and drivers' top reported desire for improving public charging is a faster charging option that more quickly recharges the vehicle.⁴ This concern can be addressed with ultra-fast 350 kW charging, the fastest technology available on the market today, which is capable of restoring 20 miles of vehicle range per minute of charging.

As manufacturers continue to bring faster-charging vehicles to market in response to consumer demand, states must ensure that they deploy networks capable of meeting customer expectations with regard to charging speed. Wyoming should establish a minimum of 150 kW as viable to serve corridor charging for current and future vehicles, and install at least one 350 kW charger at every location, wherever feasible.

Furthermore, charging equipment should have minimum current specifications, supplying a minimum of 375A per dispenser. Charging speed is determined by both voltage and amperage, so lower-voltage vehicles are not able to maximize their charging speed without high-amperage charging equipment. To date, the vast majority of EVs are

Figure 1 - Charging Power and Speed



³ Electrify America (2021). "National ZEV Investment Plan: Cycle 3," p. 23. Available at:

https://www.electrifyamerica.com/assets/pdf/cycle3_investment_plan_epa.a19109d1.pdf

⁴ Volvo Car USA/The Harris Poll (2019). "The State of Electric Vehicles in America." Available at:

<https://www.media.volvocars.com/us/en-us/media/documentfile/249123/volvo-reports-the-state-of-electric-vehicles-in-america>

400V, with a few 800V vehicles in the market being concentrated in the luxury car segment. Lower amperage ratings result in underperforming chargers that provide slow charging speeds to many affordable 400V vehicles on the market.

Additionally, states should consider the long-term operation and maintenance of charging equipment to prevent stranded assets and promote driver confidence in the reliability of the network. An effective operation and maintenance plan for an EV charging network should demonstrate the operator's ability to monitor network performance in real time, anticipate and respond to potential technical issues, and minimize downtime by rapidly deploying technicians and maintaining sufficient parts inventory to immediately repair or replace underperforming equipment.

b) How does corridor development and funding help or hinder statewide infrastructure emplacement?

Corridor development is critical to enabling electric vehicle travel, particularly in large states with long travel distances, such as Wyoming. While the majority of charging still occurs at home, DC fast charging, and particularly ultra-fast 350 kW charging, is critical to supporting long trips and enabling drivers to use an EV as a primary vehicle that can serve all their travel needs. With the approximately \$27 million that Wyoming is expected to receive as a result of the federal Infrastructure Investment and Jobs Act,⁵ the state is well positioned to support planned corridor charging investments, provide ultra-fast, open standards charging coverage on key travel corridors around the state, and connect Wyoming drivers to the national network of DC fast charging stations.

c) How close or far from major travel routes should refueling and charging stations be located?

Charging stations located close to major travel routes are most convenient for drivers traveling along those routes. Electrify America seeks to locate charging stations within three miles of highway exits, and in many cases, builds stations much closer to the highway, often within half a mile of the highway exit.

d) Are there any additional environmental, safety, or other issues that must be addressed (parking, access, amenities, future expansion)?

Electrify America leases station sites from a national network of more than 50 real estate companies to develop high-quality sites that meet consumer needs for safety, convenience, and co-located amenities. From a safety perspective, Electrify America considers site lighting, the location of the chargers within the parking lot, and other factors. Electrify America also seeks to develop charging stations that include restrooms, retail, and other co-located amenities. Additionally, Electrify America builds its charging

⁵ The White House (2021). "The Infrastructure Investment and Jobs Act Will Deliver for Wyoming." Available at: <https://www.whitehouse.gov/wp-content/uploads/2021/08/WYOMING-Infrastructure-Investment-and-Jobs-Act-State-Fact-Sheet.pdf>

stations with future expansion in mind, including the ability to construct additional dispensers, or install additional power cabinets to increase the power rating of existing dispensers.

Electrify America deploys a minimum of four dispensers per site, recognizing that larger stations are critical for redundancy and future-proofing. Historically, other charging stations have sometimes included only 1-2 dispensers, but these stations can lead to queuing and other operational issues, particularly if one dispenser fails. Wyoming should focus on larger charging installations that promote redundancy and accommodate future growth in charging demand. In addition to these operational benefits, research shows that installing larger charging stations is the more cost-effective deployment strategy in the long term, as discussed in a later response.

e) As a REV West signee, Wyoming voluntarily agreed to mutual coordination of signage and other common infrastructure, are there any other considerations necessary outside of the REV West agreement?

Wyoming should continue to coordinate with neighboring states in nominating Alternative Fuel Corridors to ensure an interconnected network of charging stations that allows travel around the Mountain West, adding regionally significant routes in addition to interstate highways. Wyoming should also ensure that its segment of these corridor charging networks meets industry best practices for charging speed and reliability, to ensure that the state is a strong link in national charging networks. The REV West coalition may also consider establishing common minimum standards for charging speed, reliability and repair capabilities, and non-proprietary charging standards, to ensure region-wide quality and consistency of charging experience.

f) How can revenue be collected from users after refueling?

Electrify America charging stations support multiple convenient payment options, including credit card (swipe, tap, and EMV chip), mobile app, toll-free phone number, and the ISO 15118 “Plug & Charge” standard, which automatically starts a charging session when a vehicle is plugged in based on payment information stored in the vehicle. New charging infrastructure should support multiple payment methods, including the Plug & Charge standard, which provides the most convenient and seamless charging experience for drivers.

g) If the strategy is route or corridor based, what considerations should be given to prioritizing route or corridor build out?

Electrify America has prioritized its Wyoming investments along the major interstates that serve the state: I-25, I-80, and I-90. Wyoming has nominated the same corridors to Federal Highway Administration’s Alternative Fuels Corridors program. As the Infrastructure Investment and Jobs Act requires that states fully build out designated Alternative Fuels Corridors before considering other locations for corridor charging

investment, Wyoming may consider increasing density along these interstates or prioritizing additional travel corridors important to the state.

Electrify America prioritizes corridor investments based on numerous factors, including travel volumes, importance for reaching major travel destinations, and continuity with other corridor charging investments.

h) What is the best way to address off corridor or route communities?

Auto manufacturers are bringing increasingly long-range products to market, with new EV models in 2021 having an average range of over 250 miles.⁶ These longer-range vehicles will allow many drivers who live off-corridor or off-route to travel from where they live to the corridors they use for long-distance trips. However, it is critical that these drivers have ultra-fast and reliable charging options available along major travel corridors, as they may need to charge when arriving along the corridor to continue their trip, or upon leaving the corridor to ensure sufficient range to return home. Ultra-fast and reliable 350 kW charging will be critical to ensuring that drivers who live a long distance from travel corridors can quickly and conveniently charge their vehicle, whether arriving at or leaving from a major travel corridor.

Prioritization of regionally significant travel corridors in addition to interstates is also important as states consider the phasing of project investments. In both its Cycle 2 and Cycle 3 investments, Electrify America has augmented interstate coverage with chargers on regional routes that fill long stretches between existing corridors, serve important travel destinations, and connect additional communities to the national charging network.

To provide additional support to drivers who live off-corridor or off-route, Wyoming may consider additional programs or incentives that increase access to home charging or promote the installation of DCFC infrastructure in underserved parts of the state.

i) The National Institute of Standards and Technology (NIST) publishes Handbook 44, Specifications, Tolerances, and Other Technical Requirements for Weighing and Measuring Devices. Currently, Section 3.40, Electric Vehicle Fueling Systems – Tentative Code, has not been fully approved by the National Conference on Weights and Measures and is non-enforceable.

1. What is your familiarity with the development of the tentative code?

Electrify America is highly familiar with the development process for section 3.40, and we are engaged in the ongoing process at NCWM to refine the tentative code.

⁶ Electrify America (2021). "National ZEV Investment Plan: Cycle 3," p. 23. Available at: https://www.electrifyamerica.com/assets/pdf/cycle3_investment_plan_epa.a19109d1.pdf

2. Are you manufacturing or installing charging equipment that complies with the current version of the tentative code?

Electrify America does not manufacture charging equipment. We do install charging equipment that complies with Section 3.40, to the extent that compliance can be tested. There is currently no accepted testing equipment to carry out the accuracy test in Section 3.40 for the DC fast chargers that we install.

3. Do you anticipate any difficulty supplying charging equipment that will meet the requirements of the National Type Evaluation Program administered by NCWM?

NTEP does not currently conduct type evaluations for DC fast chargers, which is the type of equipment we install. When NTEP does begin such evaluations in the future, we do not anticipate difficulties obtaining NTEP certificates for the devices that we are supplying at that time.

j) In what ways can we posture aviation infrastructure to be ready for the integration of zero emissions aircraft?

Electrify America does not currently install charging infrastructure for zero emissions aircraft, but has experience supporting a range of heavy-duty use cases, including transit and freight, and has interest in exploring additional use cases in the future.

2.2. Utilities

a) What utility access and capability considerations should be present (power, broadband, wireless, cellular, other)?

Due to the significant power requirements of its sites, Electrify America installs a new utility service at every charging station that we build. As such, we have substantial experience working with more than 200 utilities nationwide to assess sites for power availability, design a utility interconnection, and deploy a transformer and equipment pad to power the site. Even within the same property, utility interconnection costs can vary by as much as \$1,000,000, depending on the specific site location and construction work needed to deliver power to the site. Therefore, while three-phase power is a minimum requirement for high-power charging, access to power alone is not sufficient to deploy stations effectively and economically, and a track record of collaborating with utilities on station interconnections is critical to ensuring successful deployment.

In addition to electric power, Electrify America's stations rely on cellular data to connect to our backend systems and support charger networking and payment functions.

b) How should demand charges be addressed?

Utility demand charges are a critical barrier to DCFC deployment and financially sustainable operation, accounting for as much as 90% of charging station electricity

costs.⁷ Research from the Great Plains Institute found that demand charges in many cases lead to “operating costs that far exceed the revenue these chargers can receive from customer payments,” meaning that many DC fast chargers will operate at a loss when faced with unmitigated demand charges.⁸ Importantly, the Great Plains Institute study found that demand charges particularly impact high-power charging, and that without substantially reducing or eliminating demand charges, these stations will not reach financial sustainability even at a more mature utilization profile of 10 charges per day.

Many Wyoming utilities currently impose costly demand charges, ranging from approximately \$8.25/kW to as much as \$23.95/kW in utilities Electrify America has analyzed to date. By contrast, the Great Plains Institute study finds that demand charges greater than \$3/kW prevent the economic operation of 350 kW charging infrastructure, even at a utilization rate of 10 charges per day.

Recognizing the barrier to EV charging deployment, many states have implemented rates that reduce or eliminate demand charges, allowing EV charging stations to operate economically and encouraging additional investment from charging providers. Furthermore, Section 40431 of the Infrastructure Investment and Jobs Act (IIJA), signed into law on Monday, November 15, amended section 111(d) of the Public Utility Regulatory Policies Act of 1978, 16 U.S.C. 2621(d), establishing a new requirement that all public utilities—investor-owned utilities, customer-owned cooperatives, and public power utilities—must consider establishing EV-specific rates for residential customers, EV drivers, and commercial customers, who operate public and fleet EV charging stations, to promote greater electrification in the transportation sector.

There are numerous viable approaches to rate reform. Several rate designs that promote DC fast charging for electric vehicles are shown in Table 1, below.

Table 1: Summary of Selected Alternative Rate Designs

Rate Design Type	Utility	Rate	Description
Volumetric	SCE -CA	TOU-8-EV	Volumetric rate to be available for at least 5 years
	Georgia Power – GA	GS -TOU	Volumetric rate with peak and off-peak periods.
	DTE - MI	GS-D3	Fully volumetric C&I distribution rate
	Eversource & UI - Connecticut	Volumetric EV Rate Riders	Optional volumetric rates that are revenue neutral to the otherwise applicable C&I demand based rate

⁷ Rocky Mountain Institute (2017). “EVgo Fleet and Tariff Analysis,” p. 1. Available at: https://rmi.org/wp-content/uploads/2017/04/eLab_EVgo_Fleet_and_Tariff_Analysis_2017.pdf

⁸ Great Plains Institute (2019). “Analytical White Paper: Overcoming Barriers to Expanding Fast Charging Infrastructure in the Midcontinent Region,” p. 4. Available at: https://scripts.betterenergy.org/reports/GPI_DCFC_Analysis_July_2019.pdf

Rate Design Type	Utility	Rate	Description
Low Load Factor Rates	National Grid, Eversource - MA	Rates w/ Load Factor Tiers (Proposed)	Optional rate variants where the proportion of usage and demand charges vary based on load factors from the prior year. As load factor increases, the demand discount is reduced.
Hours of Use Demand Rate	Rocky Mountain Power - UT	Schedule 6A	Rate structure is comprised of volumetric price tiers determined based on peak demand and declining unit costs for higher load factors. Off-peak consumption is discounted
Demand Limiters	Duke - OH	Rate DS	Billed demand is limited to charges applicable with a 10% load factor
Unit Cost Limiters	AEP - WV	General Service	Total unit cost maximum of \$0.20/kWh
	Dayton Power & Light – OH	D19	Distribution costs have a maximum of \$0.0435/kWh
Time Bound Discounts	Ameren – IL	Rider EVCP	Unit costs for certain DC Fast Charging facilities limited to unit costs determined via a formula using load factor by year
	PacifiCorp – OR	Rate 45	Declining discount to demand charges by year

c) What utility incentives aid in infrastructure development?

Utility rate reform to reduce or eliminate demand charges is by far the most important utility policy measure for supporting DCFC deployment. However, utilities can pursue a number of other programs that help to incentivize EV charging deployment, such as make-ready programs that help to cover the cost of utility upgrades to serve new charging sites. The most important considerations to ensure these programs are successful are 1) rebate program, rather than grant program, structures that don't delay station construction while utilities process applications, 2) avoiding onerous application and eligibility requirements that discourage participation, and 3) ensuring that reporting requirements don't impose undue administrative burden on program participants or require sharing of confidential business information.

2.3. Statutory and Policy Considerations

a) What current Wyoming statutes hinder infrastructure development? How should they be changed?

Wyoming's EV registration fee is among the highest in the nation and charges EV drivers significantly more than their gasoline counterparts for use of the road. This policy discourages EV adoption and leads to lower station utilization in the near-term, exacerbating station economics and discouraging infrastructure investment. See additional discussion in response e) below.

b) What state agency rules and regulations hinder infrastructure development? How should they be changed?

Electrify America is not aware of any issues with state agency rules and regulations that have hindered our infrastructure development to date.

c) What incentives should the state implement to encourage infrastructure development? What has worked best in other states?

Through the Infrastructure Investment and Jobs Act, Wyoming is expected to receive approximately \$27 million over five years to support the expansion of an EV charging network in the state. Wyoming should seek to establish an incentive program using these funds that results in ultra-fast, reliable and future-proofed infrastructure that will be useful for years to come, with non-proprietary charging standards that serve the vehicles coming to market now and into the future. Additional information and references on effective program design for these funds is provided in the Incentives section response.

Regarding other statutory and policy initiatives to support the growth of the EV market, Electrify America relies on research from the National Association of State Energy Officials (NASEO) and the Cadmus Group in terms of policy efficacy.⁹ The NASEO/Cadmus analysis evaluated state and local EV policies from around the country based on academic research findings regarding their impact on electric vehicle adoption, and ranked the policies in three tiers based on effectiveness. NASEO found that vehicle adoption standards and vehicle purchase incentives were most effective in driving the ZEV market; Tier 2 policies included grants and rebates for charging infrastructure, utility rate reform to address demand charges, streamlined permitting processes for charging station installation, and transportation sector carbon pricing to help offset ongoing operational costs from EV charging equipment.

While the NASEO study looked specifically at policy impact on EV adoption rather than infrastructure deployment, it is important to note that all four of the Tier 2 policies are focused on deployment of charging infrastructure. These policies directly impact the economics of charging station deployment and operation, encouraging additional infrastructure deployment, and indirectly leading to the growth of the EV fleet by building range confidence among consumers.

d) Should the use of state lands be considered for infrastructure emplacement? Why or why not?

Electrify America finds that co-locating EV charging infrastructure with existing retail establishments is usually the most customer-friendly option for station development, providing travelers with amenities to use while charging. However, in some cases where co-location with existing retail amenities is not feasible, state lands may be a viable

⁹ National Association of State Energy Officials (2021). "Supporting Material: Plug-In Electric Vehicle Policy Impact Rubric." Available at:

https://naseo.org/data/sites/1/documents/publications/PEV_Policy_Impact_Rubric_FINAL.pdf

option for station deployment although federal prohibitions on commercial activity in the right-of-way prevent the development of charging stations at safety rest areas and other locations along highways. Wyoming should prioritize co-location with existing retail amenities wherever possible to promote the best customer experience, and should partner with charging providers who have existing relationships with large real estate networks to effectively develop these sites.

e) What should be considered as “fair” road system maintenance taxation rates for zero emissions vehicles?

Electrify America recognizes that states may seek to recoup lost gas tax revenue from EVs and implement policies to appropriately charge these vehicles for use of the road. However, EV fees should be set commensurate with forgone gas tax revenue, and not set at punitive levels that charge EVs substantially more than their gasoline counterparts.

A 2019 study from Consumer Reports found that Wyoming’s \$200 annual registration fee for EVs was among the most punitive in the nation, roughly three times higher than the annual gas tax for the average new car in 2025.¹⁰ Fees set at a punitive level unfairly require EV drivers to pay significantly more than other road users for maintenance of the transportation system, and discourage electric vehicle adoption.

f) What are additional considerations for commercial vehicles?

While many medium- and heavy-duty EVs use the same charging standards as light-duty vehicles, commercial vehicles often have different infrastructure requirements from passenger cars and trucks and may require separate charging installations to charge effectively. As an example, the chargers that Electrify America installs in retail parking lots are a good fit for light-duty vehicles, but are not configured to accommodate parking for larger trucks. Additionally, commercial vehicles typically have large battery packs and high power requirements, which can lead to increased demand charge exposure without mitigation strategies such as managed charging, battery energy storage systems, and other approaches.

Electrify America has substantial experience installing charging infrastructure to support heavy-duty vehicles, including transit shuttles and buses in partnership with Sacramento Regional Transit and the Yolo County Transit District. In addition, Electrify America and NFI Industries recently announced plans for the nation’s single largest charging infrastructure projects to support heavy-duty electric trucks, with 34 ultra-fast DC chargers slated for completion by December 2023.¹¹

¹⁰ Consumer Reports (2019). “Rising Trend of Punitive Fees on Electric Vehicles Won’t Dent State Highway Funding Shortfalls but Will Hurt Consumers,” p. 2. Available at: <https://advocacy.consumerreports.org/wp-content/uploads/2019/09/Consumer-Reports-EV-Fee-analysis.pdf>

¹¹ Electrify America (2021). “Electrify America and NFI Industries Collaborate on Nation’s Largest Heavy-Duty Electric Truck Charging Infrastructure Project.” Available at: <https://media.electrifyamerica.com/en-us/releases/156>

g) Are there climate change or carbon policy considerations?

Electric vehicles are a critical strategy for meeting greenhouse gas reduction targets, and provide greater carbon reductions when powered by green energy. Electrify America's stations are already powered by 100% renewable energy in some markets, and we are committed to supplying renewable energy to the remainder of our national network.

2.4. Incentives

a) Should corridor and local travel infrastructure incentives be handled differently? If so, how?

Electrify America installs a minimum of two 350 kW chargers at every corridor charging location that we develop, specifically to ensure that drivers on long-distance trips have access to the fastest and most convenient recharging speeds. However, ultra-fast charging is also important for metro drivers. Some drivers do not or cannot charge at home – such as those who live in apartments or townhomes, or those who rent their home, and are not able to install a Level 2 charger. Ultra-fast charging is also a good fit for many metro area use cases, such as retail locations where consumers spend an hour or less, enough time to fully charge on a DCFC station but not enough time to receive significant charge from a Level 2 charger.

Plans for corridor charging infrastructure need to take into account additional considerations such as distance between stations, and have an even greater need for supporting the fastest charging speeds to meet consumer expectations on long trips. However, ultra-fast charging is important for serving charging demand in both corridor and metro use cases.

b) What type and amount of financial incentives work best to encourage infrastructure installation?

Through the Infrastructure Investment and Jobs Act, Wyoming is expected to receive approximately \$27 million over five years to support the expansion of an EV charging network in the state. Wyoming should seek to establish an incentive program using these funds that results in ultra-fast, reliable and future-proofed infrastructure that will be useful for years to come, with non-proprietary charging standard to serve the vehicles coming to market now and into the future.

Under the IIJA program, either grant or rebate program designs are permitted, and the legislation specifically directs states to work with the private sector to deploy charging infrastructure. Under a grant program, Wyoming may contract with EV charging providers or site hosts to provide funds towards the installation of charging equipment. Under a rebate program, entities that have completed a charging station installation consistent with program requirements would be eligible for a rebate to cover a portion of their costs. Past experience in other states has shown that, under grant program designs, funds are sometimes awarded to or reserved by companies that prove incapable of successfully deploying charging stations. Rebate programs avoid this potential problem by only providing funds for stations compatible with program criteria that have successfully been installed.

In either case, Wyoming should prioritize deployment of 350 kW charging infrastructure wherever feasible, and establish a minimum of 150 kW charging as viable to serve corridor charging for current and future vehicles. Recent research from Atlas Public Policy, a leading policy expert in the electric vehicle space, finds that installing large-format 350 kW charging stations does not only provide the best customer experience, but is also the most cost-effective strategy for meeting charging needs. Atlas' analysis found that the total investment in public charging needed to achieve 100 percent passenger electric vehicle sales by 2035 was \$13 billion less, a 25% decrease, if states install 350 kW rather than 150 kW charging infrastructure. The analysis also found that larger-format charging stations with 6-10 dispensers per site were more cost effective than stations with two dispensers per site, saving \$8.4 billion or 18% in total investment.¹²

While these findings may be counterintuitive on their face due to the increased capital cost of faster charging equipment, Atlas' findings suggest that the higher throughput of these stations – the ability to serve more vehicles – more than offsets the incremental equipment cost. Larger-format stations yield savings because states can meet charging demand with fewer total locations by building fewer, larger sites, thereby avoiding soft costs like design and permitting, and minimizing construction costs such as trenching, by performing a smaller number of installations.

In order to ensure Wyoming's incentive program is aligned with these findings regarding best practices for station development, Wyoming should ensure that its program encourages the development of large-format, ultra-fast 350 kW charging stations. For instance, the program should not establish a per-site cap on rebate amount, recognizing that larger stations with more high-powered equipment may be more expensive on a per-site basis, but provide substantial savings relative to other deployment strategies in the aggregate.

Ongoing operations and maintenance are also critical to ensuring a successful, reliable charging network that builds confidence among Wyoming EV drivers. Some early EV network deployments have been hindered by unreliable and poorly-maintained equipment, leaving drivers uncertain of whether a charging station will be functional when they arrive to use it. Particularly in large states like Wyoming, where the next nearest charging station along a corridor may be a significant distance away, confidence that charging infrastructure will be working properly will be critical to drivers embracing electric vehicles as their primary mode of travel. As such, Wyoming's formula funding program should require that charging providers demonstrate operations and maintenance capabilities to ensure compatibility between vehicles and chargers, monitor the network for potential issues, and rapidly diagnose and repair technical

¹² Atlas Public Policy (2021). "U.S. Passenger Vehicle Electrification Infrastructure Assessment." Available at: https://atlaspolicy.com/wp-content/uploads/2021/04/2021-04-21_US_Electrification_Infrastructure_Assessment.pdf

problems with the chargers, including by maintaining sufficient parts inventory to rapidly repair or replace underperforming equipment.

Lastly, under the federal legislation, formula funds can be used to cover up to five years of operational costs for charging stations. In Wyoming, where high demand charges combined with lower near-term utilization may pose a particular challenge to financially sustainable operation, the state should implement incentive structures that treat demand charges as a covered operating expense. Without this provision, financially sustainable operation of the charging network will not be possible, given that many demand charges in Wyoming are so costly that they cannot reasonably be passed along to customers.

c) Other than government financial assistance, what other incentives may be helpful?

As discussed in a previous response, demand charges are a critical barrier to financially sustainable operation of DC fast chargers in Wyoming. Demand charge reform is therefore one of the most powerful steps Wyoming can take to incentivize private sector investment in public charging in the state.

d) If the strategy is route or corridor based, what is the best way to incentivize infrastructure installation in off-corridor communities?

As discussed in an earlier answer, longer-range EVs are making these vehicles a more viable option for off-corridor communities so long as drivers have a home or workplace charging option to support their local travel. As Wyoming builds out charging coverage of major travel routes, it should consider prioritizing additional corridors that help to increase coverage across the state and provide charging for an increasing share of residents. However, in the near term, incentives that support access to home or workplace charging may be effective in providing charging options in locations where DCFC is not yet deployed. Several states have established rebate programs to cover part of the cost of home or workplace charging equipment, and in other states, utilities provide incentives for the installation of a residential or commercial charger.¹³ One such incentive program was previously offered by the Yellowstone-Teton Clean Cities Coalition.

e) Are there climate change or carbon policy considerations?

Electric vehicles are a critical strategy for meeting greenhouse gas reduction targets, and provide greater carbon reductions when powered by green energy. Electrify America's stations are already powered by 100% renewable energy in some markets, and we are committed to supplying renewable energy to the remainder of our national network.

¹³ More information on state and utility incentive programs for home and workplace charging can be found in the U.S. Department of Energy's Alternative Fuels Data Center database: <https://afdc.energy.gov/laws/state>