REV WEST

Regional Electric Vehicle Plan for the West

Progress Report: December 2020

Acknowledgements

The REV West partnership has prepared this report to update the Governors of Arizona, Colorado, Idaho, Montana, Nevada, New Mexico, Utah, and Wyoming, as well as the general public, on progress towards building electric vehicle charging corridors throughout the Intermountain West region.

The REV West partnership is made possible by the leadership and staff from all eight states, through their Governors, departments of energy or the environment, departments of transportation, and collaborations with various other state agencies. The work of the National Association of State Energy Officials (NASEO) to provide administrative, facilitation, and analytical support has also been instrumental in making the REV West Partnership a success. Finally, the willing engagement of Clean Cities Coalitions, federal agencies, national labs, private sector partners, and other stakeholders has bolstered this partnership and helped advance the REV West Memorandum of Understanding goals.

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Introduction

In October 2017, the Governors of Arizona, Colorado, Idaho, Montana, Nevada, New Mexico, Utah, and Wyoming signed a Memorandum of Understanding to establish a Regional Electric Vehicle Plan for the West ("REV West Plan"). Under the REV West Plan, the Signatory States are working together to create an interconnected Intermountain West Electric Vehicle (EV) Corridor that will make it possible to seamlessly drive an EV across the western states' major transportation corridors.

In 2019, the Governors of all eight states recommitted to the partnership and updated the founding Memorandum of Understanding (MOU). The updated MOU expanded the scope of the partnership to include new interstate highway routes, defined seven activities for state collaboration, and included an annual progress report to update each Governor, and the general public, on REV West's progress to date.

Major accomplishments over the last three years include:

- Over 100 DC fast-charging (DCFC) stations built by private and public sectors since MOU launch, with at least 50 additional stations in the planning phase;
- Collectively engaged the Federal Highway Administration (FHWA) for federal support through the Alternative Fuels Corridor program, leading to nearly 1,000 miles of designated electric charging corridors, and over 7,750 miles of "corridor pending" highways;
- Policy Baseline report released in October 2018;
- Voluntary minimum standards for DCFC stations released on December 13, 2019;
- Enhanced coordination between state energy offices and transportation agencies on:
  - Addressing regulatory barriers to station development and signage;
  - Identifying infrastructure gaps;
  - Developing DCFC station analysis maps for internal planning;
  - Exchanging model EV programs and sharing strategies for EV program design;
- Obtained funding from the U.S. Department of Energy under the Corridors for the West (CORWest) grant led by the Utah Clean Cities Coalition, which identifies barriers to EV adoption and infrastructure deployment in rural and remote areas, while engaging key stakeholders and increasing public awareness.
- Enhanced state engagement with Electric Service Providers as partners on infrastructure development.

One of the key goals of REV West is to increase the adoption of zero emission vehicles by facilitating a reliable, accessible, and consistent charging network. An August 2019 survey by Autolist found that three of the top four consumer-perceived barriers to EV adoption were related to charging: 1) range anxiety of the vehicle, 2) local availability of charging, and 3) length of recharging process. These concerns are particularly acute in the Intermountain West, where there is a strong driving culture and vast geographical expanses in some of the biggest states in the country.

While states in the REV West partnership do not have the large population centers of either U.S.

coast, they do have growing electric vehicle markets, and host tourists from all around the world. The Intermountain West is home to six of the ten most visited national parks in the country: Grand Canyon, Rocky Mountain, Zion, Yellowstone, Grand Teton, and Glacier. In 2019, the National Parks Service reported that those six national parks hosted 11.2 million vehicles. This equates to an average of over five thousand vehicles per day all using highway corridors to reach national parks, entering the park, and leaving via highway corridors, and allowing several opportunities for electric charging along the way.

This report will provide updates on the seven key activities identified in the MOU, detailing progress made by the group as a whole and highlighting individual state examples. The report will conclude by addressing the goals and expected accomplishments for REV West in 2021.

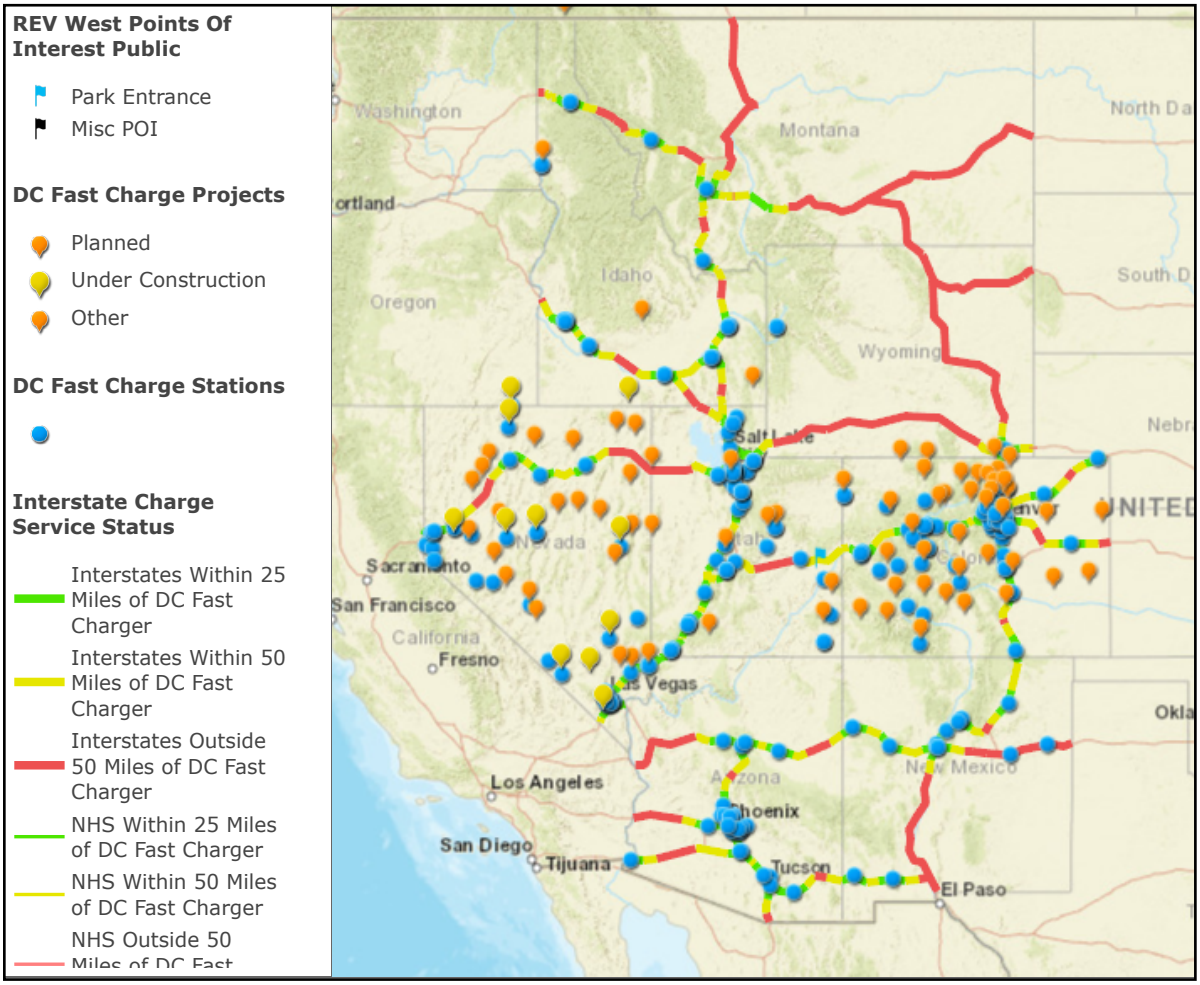

Figure 1: REV West Regional Planning Map

Activity 1: Educate consumers and fleet owners to raise awareness of electric vehicles, reduce concerns related to "range anxiety," and increase electric vehicle adoption.

Range anxiety remains the number one consumer-perceived barrier to EV adoption. Technological improvements in vehicles, batteries, and charging infrastructure are all advancing transportation electrification and providing consumers more options. However, none of these technical advances matter if the traveling public is unaware of the availability, benefits, and operating characteristics of EVs, and therefore remain unwilling to adopt them. In response, the REV West Partnership has explored new ways of raising EV awareness, alleviating common concerns around cost, range, how to charge, and encouraging consumers to make the switch. Through the CORWest project (noted above), the REV West Partnership states are working with their local Clean Cities Coalitions to pair EV infrastructure investment with awareness-raising activities in rural and underserved communities, as well as gateway communities leading to national and state parks. The CORWest project includes all of the REV West states' Clean

State Highlights:

In April 2020, the **Montana** Department of Environmental Quality's Energy Office (MT DEQ) worked with a diverse group of EV owners and car dealerships to develop testimonials about the benefits of driving and selling EVs. MT DEQ coordinated with Earth Day activities across the state to promote these testimonials on social media. The series of testimonials focused on reducing range anxiety and uncertainty around the charging process and was intended to replace a Ride and Drive event that was canceled due to the COVID-19 pandemic.

The **Colorado** Energy Office worked with E-Source to develop an EV Education & Awareness Roadmap for the state to identify current public perceptions of EVs and develop targeted messaging to increase awareness among key population segments. The results indicated a broad-based consumer willingness to consider EV adoption within the next 10 years, but highlighted common concerns and a lack of understanding around existing financial incentives; where, how, and when EV charging occurs; and the real and perceived availability and range of current EV models. Differences in perception across geographic regions and demographic groups were also noted and will help the Colorado Energy Office and its partners develop messaging for new education and awareness efforts in the coming years.

Utah has worked to bridge the topics of EV availability with the broader transportation funding discussion. The Utah Department of Transportation (UDOT) launched the state Road Usage Charge program which provides an alternative to the current registration fee for alternative fuel vehicles. This voluntary program creates a per-mile fee as a way for EV or plug-in hybrid drivers to pay their portion of roadway operations and maintenance. The costs incurred never exceed the flat registration fee, further demonstrating the benefits of EV adoption for drivers.

Cities Coalitions, who will leverage their expertise in consumer awareness and education to host consumer-focused events.

Even before this formal partnership, states including Wyoming, New Mexico, and Idaho worked with their Clean Cities Coalitions and other local nonprofit groups to promote EV awareness and provide up-to-date information to interested members of the public, first responders, and those wishing to participate in (pre-COVID-19) Ride and Drive events. Educational webinars, workshops, and other events have drawn public interest and helped to identify and address misperceptions among potential EV users. Nevada has supported a series of Ride and Drives in partnership with the investor-owned utility NVEnergy, while also actively promoting available utility incentives, driving media coverage of their infrastructure build-out, and raising public awareness of new travel possibilities.

Figure 2: NV Energy hosts a ride and drive event in Las Vegas, NV. Oct. 2019.

Activity 2: Coordinate on electric vehicle charging station locations to avoid redundancy and to ensure stations are sited at a frequency and locations so as to optimize utilization and a consistent user experience between charging infrastructure in each state.

Facilitating a reliable, accessible, and consistent charging network is at the core of the REV West partnership. To coordinate on this infrastructure regionally, the REV West partnership worked with UDOT to develop a station planning map. This shared resource helps visualize existing and planned stations across regional charging corridors, as well as additional geographic data on electric service providers and national and state parks. States have used this map to coordinate on stations located on or near state borders to avoid duplication. For example, Utah and Nevada coordinated on their border, with Nevada planning a station along the border in West Wendover, enabling Utah to allocate funds elsewhere.

The group has also engaged with federal partners to advance EV infrastructure throughout the region, primarily through the Alternative Fuels Corridor program administered by FHWA. The program provides designations of highway corridors as 'ready' or 'pending' depending on the availability of alternative fuel

Figure 3: FHWA Map depicting approved Alternative Fuel Corridors, with Signage Ready segments shown in solid green and Signage Pending segments shown in dashed orange.

infrastructure and signage that alerts drivers of charging options. In February 2020, state energy offices and departments of transportation collaborated on applications for the fourth round of corridor nominations through FHWA. A map showing the approved designations for rounds 1 through 4 is shown above.

The REV West partnership also engaged with FHWA around the program requirements related to DC Fast Charger (DCFC) station placement. Under the current requirements, corridors will only be designated as "Corridor-Ready" if DCFC infrastructure is available every 50 miles. The region's unique geography poses challenges to providing adequate power supply or highway amenity services along vast stretches of highway, thus making it difficult for some of the REV West partnership states to attain "Corridor-Ready" designation. To address this designation requirement, Nevada has set up their Nevada Electric Highway program to achieve the FHWA standards of having charging infrastructure every 50 miles along many of their key corridors. However, given the remote nature of many of the region's highways, FHWA has acknowledged this concern and has engaged with the group on feasibility studies.

Activity 3: Use and where appropriate, promote the REV West Voluntary Minimum Standards for electric vehicle charging stations, released in 2019, and explore opportunities for championing and implementing the standards in the signatory states; identify opportunities for Signatory States to adopt and where appropriate, promote the stretch, tiered standards included within the Voluntary Minimum Standards, as well as go above and beyond the tiered standards, if of interest.

REV West partnership states have incorporated the Voluntary Minimum Standards for DCFC stations into state funding programs and other projects. These standards address concerns such as station siting, safety and accessibility, infrastructure functionality, and signage to foster the development of a convenient, reliable, and safe charging experience for EV drivers. The

State Highlights:

The Nevada Electric Highway (NEH) is a partnership between the Governor's Office of Energy, Nevada Department of Transportation, electric service providers, and site hosts around the state to expand the Nevada's EV charging infrastructure. The NEH has a goal of completing the statewide system by the end of 2020. The NEH has incorporated the REV West Voluntary Minimum Standards into the program's minimum standards for funding eligibility.

The **Colorado** Energy Office's EV Fast-Charging Corridors Program comprises 34 DCFC stations at locations across the state and developed in partnership with ChargePoint and site hosts such as local governments, utilities, and private companies. Colorado has incorporated most of the *Additional Stretch Standards* into this program's DCFC standards.

document acknowledges that there may be some conditions at certain locations that limit the application of all the Voluntary Minimum Standards, but states are encouraged to develop charging options that meet as many of the minimum standards as possible. Current state programs that incorporate the Voluntary Minimum Standards into their best practices and eligibility criteria for DCFC stations include: Montana's *Charge Your Ride* program, Colorado's *EV Fast-Charging Corridors Program*, the *Nevada Electric Highway* program and Idaho's EVSE program using VW Settlement funds. Other REV West states are seeking to incorporate the Voluntary Minimum Standards into their plans for future programs supporting DCFC infrastructure.

In addition to the Voluntary Minimum Standards, the REV West partnership also developed *Additional Stretch Standards* that go above and beyond the minimum and can be promoted by states who choose to do so. These standards include operational and future-proofing standards that help ensure reliability, consistency and keeping pace with advancing technology. Several of the states have incorporated at least some of these stretch standards into their fast charging stations and programs.

Activity 4: Identify and develop opportunities to incorporate electric vehicle charging station infrastructure into planning and development processes, such as building codes, metering policies, and renewable energy generation projects.

In the last few years, several REV West partnership states have started to explore options for incorporating EVs into planning and development processes. For example, both Montana and Utah have started to examine ways to pair electric vehicle infrastructure with renewable resources in their communities to enhance grid resiliency; New Mexico is reviewing a potential policy through House Bill 521 that could be passed during their next legislative session; and Colorado is working to provide educational toolkits to any jurisdiction interested in adopting an EV capable stretch code standard.

Figure 4: EV charging stations located at the Utah State Capitol in Salt Lake City, Utah.

Vehicle electrification requirements in building codes is a concept that has gained momentum in recent years. Jurisdictions that have adopted EV-ready provisions of building codes have enacted an additional stretch code beyond the current 2018 suite of International Energy Conservation Codes (IECC). The 2021 IECC development process nearly adopted formal code language but ultimately released two EV ready provisions called CE217-19 Part I (for commercial buildings) and Part II (for residential buildings). States and local governments now have the option of adopting these, standards, which could provide great benefits, as installing charging infrastructure during construction drastically reduces the price.

State Highlights:

Montana's Department of Environmental Quality (MT DEQ) partnered with the National Renewable Energy Lab on their Solar Energy Innovation Network and three communities interested in pairing EV infrastructure with renewable resources to enhance the town's grid resiliency. This project produced a decision-making guide and roadmap for communities interested in adding charging infrastructure and renewable energy to their grid.

The **Colorado** State Legislature passed legislation requiring local jurisdictions to adopt and enforce one of the three most recent versions of the IECC. To help local jurisdictions through that process, the Colorado Energy Office helped to develop two toolkits, the *Energy Code Adoption Toolkit* and the *EV Infrastructure Buildings Codes: Adoption Toolkit*, that provide guidance on energy code adoption and responses to frequently asked questions about energy code subjects, respectively. These toolkits also include guidance for any local jurisdictions that are interested in adopting stretch codes on vehicle electrification standards for buildings.

Activity 5: Encourage electric vehicle manufacturers to stock and market a wide variety of electric vehicles within the Signatory States.

The availability of a broad variety of EVs that satisfy varying consumer preferences for cost, make, model and vehicle features are important for helping consumers "go electric," particularly in an area of the country with challenging landscapes and climates. Automobile manufacturers may be more inclined to direct available EVs to bigger EV markets in more densely populated areas, leaving states with smaller populations unable to guarantee a sufficient and varied stock of EVs for consumers. Eventually, more EV makes and models will be available across the country, but in the short-term additional measures may be required to ensure that EVs are available in the intermountain west.

Figure 5: EV stations funded as part of the DCFC Corridors Program in Dinosaur, CO.

In August 2019, Colorado became the tenth state in the U.S. to adopt a Zero Emission Vehicle (ZEV) standard. The Colorado rule was approved by an 8–1 vote by the Colorado Air Quality Control Commission and was supported by automobile manufacturers representing more than 99 percent of the market. The standard requires automakers to sell more than 5 percent zero emission vehicles by 2023 and more than 6 percent zero emission vehicles by 2025. Automakers supported the rule because it allowed for proportional and early action credits, and also because of the state's supportive policies and investments.

Similarly, Nevada Governor Sisolak announced that he will consider adopting new standards requiring a higher percentage of vehicles sold in-state be electric. The "Clean Cars Nevada" program would mandate that 6-8 percent of vehicles offered for sale by automobile dealers be electric by 2025. Several other states are investigating these types of zero emission vehicle programs, while also considering other approaches to encouraging vehicle dealers and manufacturers to make more EVs available to consumers. Montana has used dealer surveys to better understand current barriers to selling EVs in the state, while Utah has noted the global impact of COVID-19 on the availability of electric models for local dealerships. New Mexico's legislature has also started a hearing process to formally consider the impacts of adopting the ZEV standard. Overall, states are taking a variety of approaches to this issue and are learning from one another and the rest of the country as the EV market continues to develop.

Figure 6: Nevada Governor Steve Sisolak (middle) charges an electric vehicle at the ribbon cutting of Mesquites' Nevada Electric Highway charging station that completes the I-15 corridor in Nevada. Also, pictured is Mendis Cooper (left), Manager of Overton Power District No. 5 and Doug Cannon (right), NV Energy, President and CEO. January 2020.

Activity 6: Continue to identify, respond to, and where possible collaborate on funding opportunities to support the development of the REV West Plan.

In 2019, the REV West partnership states, in partnership with Clean Cities Coalitions across the region, was awarded the CORWest grant from the U.S. Department of Energy's Vehicle Technologies Office. This three-year project, led by the Utah Clean Cities Coalition, will enable states, Clean Cities, and other partners to examine rural EV charging opportunities, needs and challenges, particularly to support EV travel to national parks and other scenic destinations. Several foundational resources will be developed to assess region-wide needs, investigate demand charge structures, identify off-grid charging solutions, examine signage and branding options, and compile online tools for the public to use when learning about EVs and planning their next EV road trip. Through the project, the REV West partnership states and Clean Cities Coalitions will also engage with national and state parks, utilities, and other key partners to pair infrastructure investment with education and awareness activities.

Figure 7: Electrify America EV charging stations along I-84 outside Heyburn, Idaho.

The REV West partnership also submitted collective recommendations to Electrify America for their Cycle 3 investment plan, asking Electrify America to consider regional collaborations and corridors in the Intermountain West as the company builds out fast-charging infrastructure across the country. Additionally, several states including Wyoming, Montana, Idaho and Colorado submitted separate state-specific recommendations to Electrify America for Cycle 3 that encourages investment in fast chargers along the corridors in each of the REV West partnership states. Other states are collaborating with public agencies and private partners to develop plans for spending the VW mitigation funds they have set aside for charging stations.

State Highlights:

The **Idaho** Office of Energy and Mineral Resources (OEMR) submitted a letter to Electrify America to propose routes in Idaho for further investment during Electrify America's Cycle 3. OEMR collaborated with the Idaho Transportation Department on an Idaho specific letter, while also encouraging the Treasure Valley Clean Cities Coalition and Idaho Power to submit their own letters and assisting NASEO to draft the REV West-wide submission.

Wyoming's Department of Environmental Quality (WY DEQ) administers the VW settlement money and is working to develop a rebate program that will allow public and private entities to leverage matching funds. A steering committee with representatives from WY DEQ, Wyoming Department of Transportation, and the Wyoming Energy Authority have also met with two public utilities and the rural electric companies in the state to promote EV charging station installations.

Activity 7: Support the expeditious build-out of fast charging stations along the corridors identified in the vision and purpose of this Memorandum, through direct state investment, partnerships with utilities, partnerships with local governments, public-private partnerships, or other mechanisms that are appropriate for the individual states.

Across the Intermountain West, there have been a number of state-led DCFC programs and investments, particularly with support from the VW Environmental Mitigation funds. These programs have resulted in strategic partnerships that have further grown the number of charging stations in each state. Some of these key intrastate partnerships have included state government agencies, local governments, private industry, and utilities. Larger utility companies have helped advance state-specific programs while also evaluating complementary utility-based incentives and grants to encourage EV adoption on a broader scale.

Figure 8: EV charging station in Big Sky, Montana.

Figure 9: EV charger stations located at the New Mexico State Capitol in Santa Fe, New Mexico.

State Highlights:

Colorado's *Charge Ahead Colorado* EVSE grant program has allowed collaboration between the Colorado Energy Office, Department of Transportation, and Tourism Office to partner with local governments and rural communities to install DCFC along scenic byways and rural corridors. Colorado's investor owned utilities have filed Transportation Electrification Plans with the Public Utilities Commission, with Xcel Energy proposing major transportation electrification investments over the next three years. Other non-investor owned utilities in the state are also developing programs, incentives, and rates that better support EV charging, and several have applied for Charge Ahead Colorado grants to operate their own infrastructure. In addition, Colorado will be conducting an EV equity study to baseline, define and map communities, EV registrations and EV accessibility, medium- and heavy-duty vehicle emission impacts, and criteria by which to evaluate and prioritize programming and outreach.

Idaho's Office of Energy and Mineral Resources (OEMR) has participated in discussions with utilities including Avista and Idaho Power on developing EV charging pilot programs that may include community charging. OEMR also collaborates with Idaho's Department of Environmental Quality and the Idaho Transportation Department to offer a funding option for DC fast charging stations along Idaho's highway corridors, under Idaho's VW Settlement EVSE program.

Montana's *Charge Your Ride* funding opportunity through VW settlement funds has allowed the MT DEQ to foster partnerships with utilities across the state and private businesses that may be suitable EVSE site hosts. The program has funded 3 fast charging stations and an expansion of the program will fund DCFC along major travel corridors.

State Highlights (continued):

New Mexico is using VW settlement funds to expand the DCFC network to areas of the state not serviced by an interstate highway. New Mexico's Department of Transportation and the Energy Minerals and Natural Resources Division have formed a strong partnership to bridge charging infrastructure gaps across the state, and are currently finalizing a plan to utilize a portion of the state's VW funding to develop new DCFC stations.

The **Utah** DOT is working to develop a state EV infrastructure plan in collaboration with key stakeholders to identify and address remaining EVSE infrastructure gaps and consumer barriers. Utah's various state-funded workplace EVSE programs have installed over 170 Level 2 chargers and 8 DCFC stations across the state. These programs have strengthened partnerships across government agencies, utilities, and private businesses. Utah's largest investor-owned electric utility, Rocky Mountain Power, worked with the State of Utah to enhance state-funded EVSE programs by offering additional EVSE incentives to reduce the cost burden to site hosts. Rocky Mountain Power has taken strides to enhance EV charging by building out DC fast charging infrastructure along major corridors such as I-15, I-70, and I-80 across their service territory which extends into Idaho and Wyoming.

In **Wyoming**, representatives from the state's DOT, DEQ, and the Energy Authority formed a steering committee to develop an EVSE buildout plan with recommendations for prioritized locations based on optimum distances between stations. This team is expected to release their plan shortly and begin the deployment of new DCFC stations.

Conclusion

Over the last several years, the Signatory States of the REV West MOU have worked collectively and individually to realize the goal of a regional network of interstate DCFC stations to provide the public with reliable, affordable, and safe EV charging. Since its inception, the REV West partnership has successfully expanded the stakeholder base of project partners beyond State Energy Offices to include Departments of Transportation and Clean Cities Coalitions. Each state will continue to expand options for electric charging throughout their highway networks while coordinating with the larger group on station placement, specifications, and advertising.

Furthermore, the CORWest project has funded several studies that are underway, with more scheduled to take place in 2021. An initial needs assessment survey was distributed to stakeholders throughout the region to get a clearer understanding of the barriers to widespread EV adoption and DCFC investment. The group will be analyzing the results of this survey to inform consumer engagement and awareness activities moving forward. A demand charge assessment is also underway, examining different electric service provider rate structures and their impact on new station deployment. This will show the impact of demand charge fees on prices paid for electric charging, an emerging issue identified as the main deterrent to station investment by national infrastructure providers. Once these assessments are completed, the CORWest team will begin studying station deployment options where grid infrastructure is lacking, leveraging batteries and/or on-site generation to address the unique geographic challenges of the Intermountain West. Finally, through collaboration with Clean Cities Coalitions, the group will undertake a joint branding and marketing effort to promote regional EV tourism to national and state parks, made possible by the REV West DCFC corridors.

Since its formation in 2017, the REV West partnership has demonstrated the unique power of regional collaboration in supporting a complex and rapidly changing market at the nexus of energy, transportation, and technology sectors. Over the past three years, the eight signatory states have learned from one another and refined their approaches, both individually and as a group, to more effectively serve the traveling public across the Intermountain West while supporting local economic development, regional tourism, and local energy production. As the REV West partnership looks to 2021 and beyond, it will continue to strengthen and broaden this collaboration to ensure success in transforming the vision of a seamless regional EV fast charging network into a reality.