



Electric Vehicle Charging Needs Assessment

Identifying Needs and Opportunities
for Electric Vehicle Fast Charging in
Rural and Underserved Areas of the
Intermountain West



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Glossary

AFDC.....	Alternative Fuels Data Center
DCFC.....	Direct Current Fast Charger
DOT.....	Department of Transportation
ESP.....	Electric Service Provider
EV.....	Electric Vehicle
EVSE.....	Electric Vehicle Supply Equipment
FHWA.....	Federal Highway Administration
NREL.....	National Renewable Energy Laboratory
MOU.....	Memorandum of Understanding
REV West.....	Regional Electric Vehicle Plan for the West
CORWest.....	Corridors of the West

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Introduction and Background

In 2017, Governors from Arizona, Colorado, Idaho, Montana, Nevada, New Mexico, Utah, and Wyoming signed a Memorandum of Understanding (MOU) to develop a Regional Electric Vehicle Plan for the West (REV West), with the goal of supporting a seamless electric vehicle (EV) driving experience along key driving corridors in the intermountain west. The REV West states have achieved several key accomplishments in support of the MOU: there are over 100 new direct-current fast-charge (DCFC) stations along regional corridors; voluntary minimum standards for DCFC stations were released and adopted by numerous intermountain states; and states have streamlined EV policy and program design processes by regularly meeting to exchange model policies and best practices. In 2019, all eight REV West governors (four of whom were newly elected in 2018), signed an updated MOU to signal their recommitment to the agreement and broad support for transportation electrification.

In support of two key activities listed in the MOU – “collaborat[ing] on funding opportunities to support the development of the REV West Plan,” and “educat[ing] consumers and fleet owners to raise awareness of electric vehicles, reduce concerns related to ‘range anxiety,’ and increase electric vehicle adoption” – the REV West states partnered with Utah Clean Cities Coalition and eight additional Clean Cities Coalitions in the region to pursue and obtain funding to support infrastructure build-out and awareness activities. The resulting project, “CORWest,” is a three-year initiative to support EV infrastructure investment and educational opportunities in rural and underserved areas of the intermountain west – with an emphasis on gateway communities to national parks and other recreational destinations in the region.

A key first step under the project is to understand barriers to EV adoption and, more specifically, DCFC station deployment in rural and underserved areas of the intermountain west, and identify potential pathways for addressing these barriers through the CORWest project. In support of this objective, the project team developed a “CORWest Questionnaire” that was disseminated to select stakeholder groups to gather feedback. Concurrently, the Alternative Fuels Data Center Station Locator and the REV West Charging Station Map were consulted to identify infrastructure gaps along interstate and key highway corridors in the region, and EV registration information and additional literature were reviewed to understand the current state of EV adoption in the region. The following pages review the research methodology and key findings from the questionnaire, EV registration data collection, and mapping exercise; provide a summary of trends and typical issues being faced in the region; and offer recommendations for ways the CORWest project partners – state agencies and Clean Cities Coalitions – may address high-priority needs and support EV deployment and DCFC investment in the region.

Methodology

The project team undertook a three-prong approach when assessing barriers to EV adoption in the intermountain west: developing a questionnaire for targeted audiences; identifying infrastructure gaps along interstate and highway corridors in the region; and reviewing EV adoption trends by examining registration data.

Questionnaire

The project team developed a questionnaire with tailored questions for four specific audiences: local governments; parks and tourism agencies/organizations; electric service providers; and dealerships. A fifth “general” questionnaire was sent to additional stakeholders in the region. Each questionnaire included a set of universal general questions, and unique questions were included for each stakeholder group. The National Association of State Energy Officials (NASEO) worked with each participating REV West agency and Clean Cities Coalition to develop the questionnaire and identify stakeholders in each state to receive the questionnaire. The questionnaire was administered from July through August, 2020. A copy of each questionnaire is included in the appendix.

The project team sent the questionnaire to over 500 individuals in the intermountain west,¹ and received 229 responses across eight states, including: 67 from local governments; 73 from parks and tourism agencies and organizations; 29 from electric service providers; 13 from auto dealerships; and 47 responses from the general questionnaire. Because the vast majority of responses to the dealerships questionnaire were from a single state (Arizona), an analysis of dealership responses has been excluded from this analysis. A summary of responses to the questionnaire is detailed in the following section.

Mapping

The project team reviewed EV infrastructure location data from two sources: the Alternative Fuels Data Center Station Locator (AFDC), and the REV West DCFC Map. The AFDC is a fairly comprehensive database of existing and planned alternative fuel stations nationwide. Users can sort by fuel type, and within the EV database can sort by level of charger (Level 1, Level 2, and each DCFC standard), search for public, private, or planned stations, and can zoom to see stations at the zip-code and jurisdiction level. The database is populated by Clean Cities Coordinators (funded by the U.S. Department of Energy’s Clean Cities program), and the station locations can be uploaded by other users and are posted after vetting by the U.S. Department of Energy. Users can also download station location data into a CVS or excel file and upload the information to their own mapping locations.

The REV West DCFC map was developed by the Utah Department of Transportation on behalf of the REV West agencies to identify infrastructure gaps along key corridors in the region. The map includes location data for existing and planned DCFC stations, as well as a visualization of 50-mile buffers around each station to illustrate the extent to which key corridors in the region are compliant with the Federal Highway Administrations Alternative Fuels Corridors program.² Finally, additional data layers allow the user to overlay other information that may be helpful when identifying potential partners in DCFC deployment, such as rest areas, national and state parks, and electric retail service territories.

¹ The project team directly sent the questionnaire to approximately 500 stakeholders in the region; however, several stakeholders shared the questionnaire within their networks. Because of this, the exact number of people who received a copy of the questionnaire is unknown.

² The U.S. Department of Transportation’s Alternative Fuels Corridors Program designates national EV charging and hydrogen, propane, and natural gas fueling corridors in strategic locations along major highways to improve the mobility of alternative fuel vehicles. Additional information may be found here:

https://www.fhwa.dot.gov/environment/alternative_fuel_corridors/

Data Request

Electric vehicle registration data for each intermountain state was obtained from the National Renewable Energy Laboratory (NREL). NREL receives EV registration data from Polk Automotive on an annual basis, and Clean Cities Coalitions can submit data requests as needed. The project team worked with NREL to obtain light-duty EV registration data by make and model for each state, as well as a trends analysis for EV registrations in each state from 2015-2018. The most recent year of registration data available is 2018.

Region-Wide Results

The intermountain west has made significant progress toward infrastructure build-out in recent years. As noted above, over 100 DCFC (non-Tesla) stations have been built since the original REV West MOU was signed in 2017, with a total of 266 DCFC stations available in the region as of November, 2020 (see table below).³

Table 1: EV Charging Stations in the Intermountain West (non-Tesla) as of November, 2020

State	Level 2 Ports	DCFC Ports	DCFC Locations
Arizona	1133	92	43
Colorado	2293	185	91
Idaho	115	31	12
Montana	48	16	4
Nevada	542	102	46
New Mexico	152	52	15
Utah	1152	132	53
Wyoming	65	3	2
Total	4474	1650	266

Stations are primarily located along interstates and major highways; however, the project team's analysis has shown that there are significant gaps in DCFC infrastructure in or near national parks or gateway communities leading to national parks. For the purpose of this analysis, "gaps" is defined as lack of DCFC infrastructure within 50 miles (as the crow flies) of another DCFC station; the 50 mile radius was chosen because analysis from NREL, supported by the Alternative Fuels Corridors Program from the Federal Highway Administration, shows that charging stations must be placed no more than 50 miles apart to ensure that the majority of available EVs on the road can make it to their next charging destination. The national parks in the table below do not have any DCFC infrastructure within 50 miles of the park entrance (as of December, 2020), although some states have indicated that they will be prioritizing station investment at or near some of the parks listed below. Specific conditions at DCFC gaps near national parks and other underserved areas (e.g., lack of electric service along highway, etc.) are noted in the individual state summaries in the appendix.

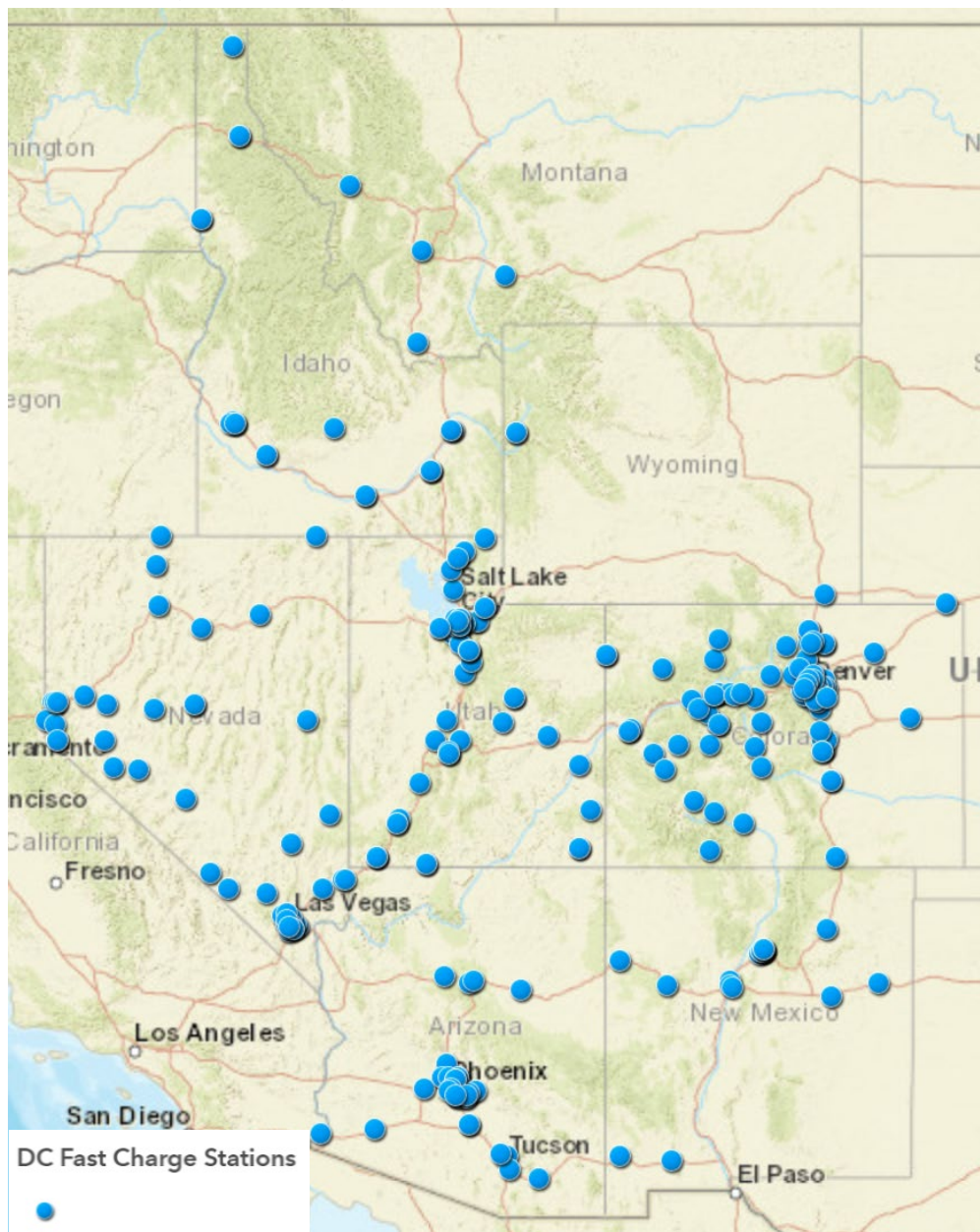
³ U.S. Department of Energy, Office of Energy Efficiency and Renewable Energy. Alternative Fuels Data Center, Alternative Fueling Station Locator. Retrieved October 10, 2020. <https://afdc.energy.gov/stations/>

Table 2: Parks Farther than 50 Miles from a DCFC Station⁴

National Parks Farther Than 50 Miles from a DCFC		
Chiricahua (AZ)	Hagerman Fossil Beds (ID)	Capitol Reef (UT)
Fort Bowie (AZ)	Glacier (MT)	Grand Staircase- Escalante (UT)
Coronado (AZ)	Bighorn Canyon (MT)	Bryce Canyon (UT)
Petrified Forest (AZ)	Big Hole (MT)	Natural Bridges (UT)
Hubbell Trading Post (AZ)	Lake Mead (NV)	Flaming Gorge (UT)
Canyon de Chelly (Navajo Nation)	Aztec Ruins (NM)	Yellowstone (WY)
Grand Canyon (AZ)	Chaco Culture (NM)	Devil's Tower (WY)
Organ Pipe Cactus (AZ)	Gila Cliff Dwellings (NM)	Fort Laramie (WY)
Four Corners (AZ, CO, NM, UT)	White Sands (NM)	Flaming Gorge (WY)
Mesa Verde (CO)	Salinas Pueblo Missions (NM)	Fossil Butte (WY)
Canyons of the Ancients (CO)	Carlsbad Caverns (NM)	Monument Valley (Navajo Nation)
Craters of the Moon (ID)	Glen Canyon (UT)	Lake Powell (Navajo Nation)

⁴ This table lists national parks farther than 50 miles from an existing DCFC station as of December, 2020. Several states are planning to install stations near these parks in 2021. Parks included in this table are locations recognized under the national park system and tribal nations park system.

Figure 1: Existing DCFC Stations in the Intermountain West⁵



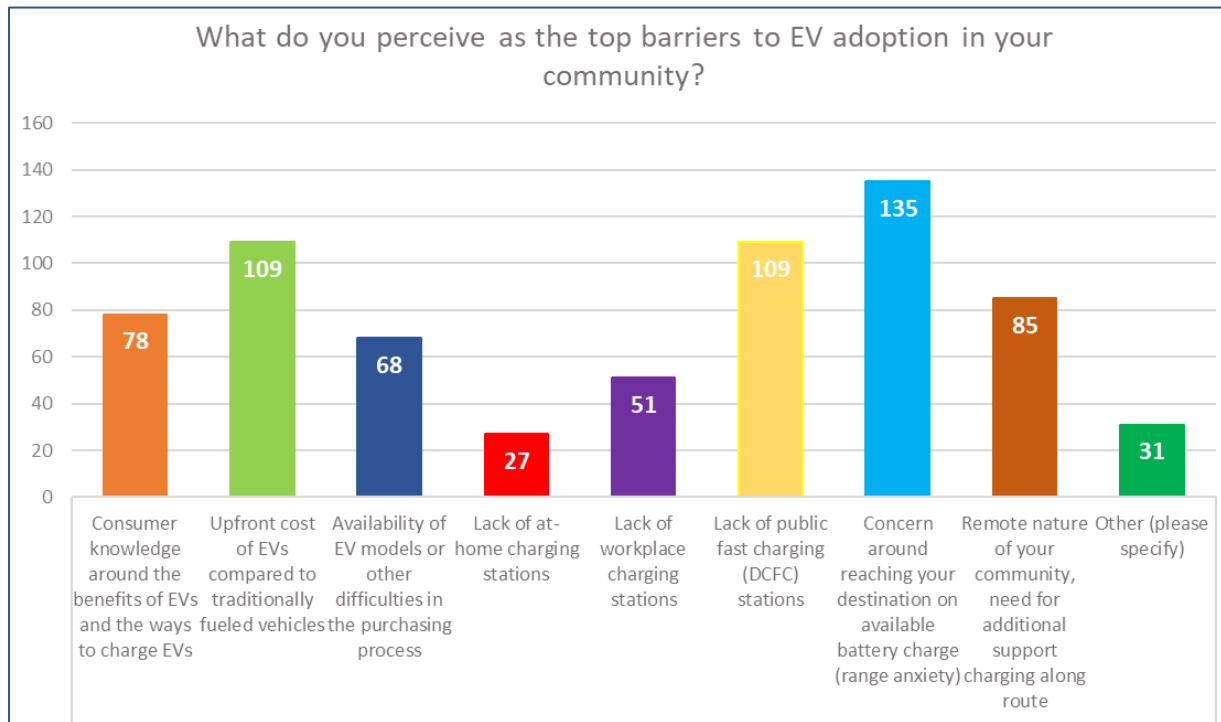
As noted above, the project team supplemented its mapping exercise with a needs assessment questionnaire that was administered to key stakeholders in the intermountain west, in order to better understand the real and perceived barriers to EV adoption in the region. While results specific to each target group are examined below, there were several overarching trends across all respondents.

When asked “what do you perceive as the top barriers to EV adoption in your community,” the top three responses across all audiences were: concern about reaching your destination on available battery

⁵ The REV West – DC Fast Charging Map is maintained by the Utah Department of Transportation. State agencies participating in REV West provide or directly upload station location data to the REV West – DC Fast Charging Map. Data retrieved January, 2021.

charge (range anxiety); lack of public DCFC stations; and the upfront cost of EVs compared to traditionally fueled vehicles.

Figure 2: Questionnaire Results: Top Barriers to EV Adoption



Responses to several other questions were notable:

- In response to the question, “What do you perceive as the top barriers to EV fast charging investment along key highways and interstates,” respondents cited: availability of up-front financing to ease the cost of infrastructure investments (160); charging station revenue streams during operations or lack of demand (128); and lack of electric infrastructure to support EV charging (106). The top two answers – dealing with the cost to purchase, install, and maintain a station – underscores that cost is the primary perceived barrier to EVSE installation.
- In response to the question, “What local or state actions would be most helpful to encourage further investment in EVs and EV charging stations,” the top three answers had similar response rates and were: offer financial incentives to reduce the cost of charging stations (120); increase public awareness and education (110); and offer financial incentives to reduce the cost of the vehicle (108). While the perceived need for financial incentives for both EV infrastructure and the vehicles themselves is in line with the perceived barriers from the previous question, the response “increase public awareness and education” speaks to an additional need for state and local leaders to take action to enhance information campaigns to drive EV adoption.
- As a follow-up to the question above, respondents were asked “what actions or information would be helpful to improving public awareness and perception of EVs?” The top three responses were: highway signage to indicate locations of public fast charging stations (151); tourism-focused outreach on EV road trips (114); and ride-and-drive events to enable public test

drives (105). The top choice of highway signage reveals that many respondents still perceive on-road signage (rather than relying entirely on apps or other in-car navigation systems) as needed to raise awareness and drive adoption for EVs. The second-highest response – tourism-focused outreach on EV road trips – also highlights the need to tie EV promotion with tourism; a significant economic driver in the region.

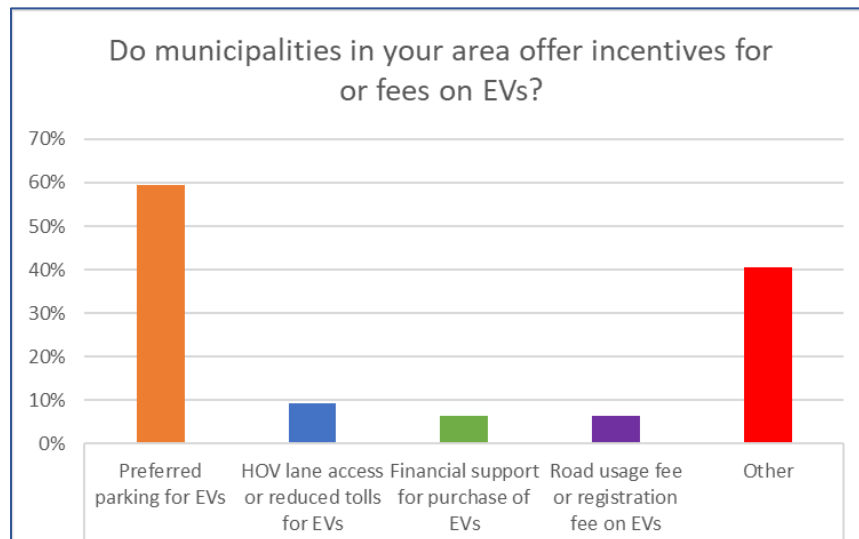
Questions for specific stakeholder groups – local governments, parks and tourism agencies/organizations, and electric service providers – helped the project team identify additional barriers that may hinder EV adoption in the intermountain west. A high-level summary of results from each stakeholder group’s questionnaires are included below; however, many of the most valuable insights from the stakeholder-specific questionnaires are found within the qualitative long-form answers from specific respondents. Additional details on responses from each stakeholder group can be found on the state-by-state summaries in the appendix.

Local Governments

Local governments in the intermountain west provided information on the composition of their municipal fleet, incentive structures, zoning and building code regulations, planning studies, and potential for EV infrastructure investment. Of the 67 local governments that responded to the questionnaire, only 19 percent indicated that their municipal fleets operate EVs. Of those that operate EVs, most respondents had a small number of light-duty vehicles, and two municipalities noted that they have medium- and heavy-duty EVs in operation (transit buses and a paratransit fleet).

A variety of municipal-level incentives and fees were offered by responding jurisdictions, although the one incentive common to the majority of respondents (59 percent) was preferred parking for EVs. Only a handful of jurisdictions provide HOV lane access or reduced tolls for EVs, financial support for EV purchase, or a road usage fee/registration fee (9 percent, 6 percent, and 6 percent respectively). There were several “other” incentives noted by respondents, including free charging for EV drivers, free parking, and EV station rebates.

Figure 3: Questionnaire Results: Municipal EV Incentives



The questionnaire revealed that there were very few zoning regulations governing where charging stations are permitted, with only five percent of respondents indicating that their local government had adopted zoning regulations on this issue. Similarly, only 10 percent of respondents noted that charging stations were addressed in their local building codes. However, a number of jurisdictions have incorporated EVs into their planning studies, or have conducted a stand-alone EV plan. Thirty-one percent of respondents answered that municipalities, MPOs, utilities, or electric cooperatives in their area have completed planning for EV deployment and/or have incorporated EV charging into their transportation and land use plans. Similarly, 23 percent of respondents answered that their jurisdiction has completed EV-related studies.

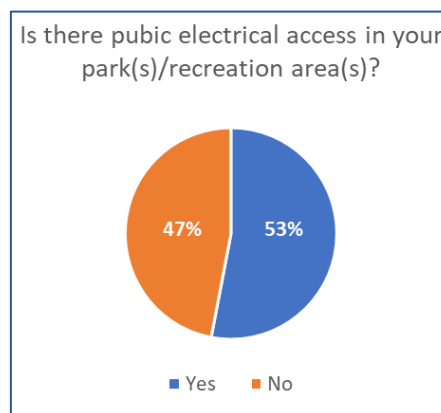
Finally, when asked if their jurisdiction is interested in owning and operating EV charging stations, 68 percent of respondents answered “yes.” A number of these respondents expressed interest in installing a charging station, and additional respondents identified financial, technical, or procedural barriers they are facing that inhibit EV infrastructure investment.

Parks and Tourism

Respondents from parks and tourism agencies/organizations, as well as “gateway communities” near the entrances to national parks, provided details on tourist destinations within their community that would benefit from increased EV charging infrastructure, as well as information on the type of information displays, safety considerations, and other amenities that may make certain tourist destinations particularly ripe for EV infrastructure investment. A total of 71 respondents answered the parks and tourism questionnaire; however, most of the questionnaire results are not summarized in this section, due to the qualitative, location-specific information that was provided in answer to most questions. More detailed information on the parks/tourism responses can be found in the state summaries in the appendix.

There are two trends that can be identified from the parks and tourism survey results. Fifty-three percent of respondents answered that there is public electrical access in their parks/recreation areas, revealing that almost half of state and local parks in the region are without electrical service. Respondents also shared estimates of the average length of a visitors’ trip to their parks and recreation areas. Forty percent of respondents noted that the estimated dwell time at their park or recreation site was over three hours, with 37 percent answering that the average dwell time was 1-3 hours. These answers indicate that the majority of visitors spend multiple hours parked at a recreation site, which opens the possibility of investing in Level 2 charging stations at select parks and recreation sites, rather than DCFC stations.

Figure 4: Questionnaire Results – Electric Service in Parks



Electric Service Providers

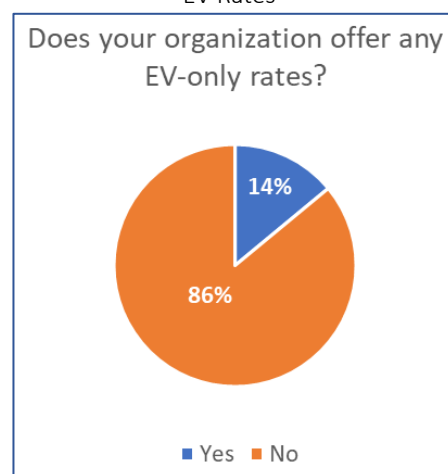
Electric service providers (ESPs), including employees of investor-owned utilities, municipal utilities and electric cooperatives, and associations for cooperatives, were asked a variety of questions related to rate structures, incentive programs, and company policies to support EV adoption.⁶ Thirty-four percent of the 29 respondents answered that they knew how many EVs were in their service territory, although respondents obtained this information from a variety of sources, including Polk Automotive, DMV registration data from their state, Atlas Public Policy, and county vehicle registration records. Only about a quarter of respondents – 28 percent – noted that their organization offers rebates or incentives for EV purchases or the installation of Level 2 or DCFC stations.

Only fourteen percent of respondents offer EV-only rates for either Level 2 charging or DCFC; similarly, 14 percent of respondents have made changes to demand charges to accommodate EV charging infrastructure. Twenty-eight percent of respondents noted that their public utilities commission has opened a docket to investigate EVs and issues related to charging. While these numbers seem relatively low, it is important to note that electric service providers' geographic territories and number of customers served vary widely from jurisdiction to jurisdiction (i.e., one ESP may serve hundreds of thousands of customers).

The questionnaire revealed that a number of electric service providers in the intermountain west provide education and training to customers who are interested in purchasing EVs or installing charging stations. Thirty-nine percent of respondents answered that their organization offers services related to preparing new sites to host charging or working with fleets to assess the potential for electrification. For example, Idaho Power provides assistance to customers to help evaluate billing and infrastructure impacts from charging, and provides education on the different types of charging, benefits of EVs, and ways to mitigate charging costs. Similarly, 28 percent of respondents noted that their organization sponsors or promotes EV charging programs to customers, cooperative members, or fleets fueled by electric charging.

Finally, a number of respondents shared information on programs or incentives that the electric service providers offer to employees. Almost half of respondents (48 percent) offer EV charging to their employees; similarly, about a third (31 percent) of respondents have incorporated EVs into their fleet (a mix of light-duty EVs, forklifts, and bucket trucks). Of these, several ESPs indicated that they provide company EVs to customers within their service territory for a short period of time to test drive the vehicle. For example, Otero County Electric Cooperative in New Mexico has two Tesla Model 3's and one

Figure 5: Questionnaire Results – EV Rates



⁶ Electric service providers from Colorado were not asked to respond to the questionnaire; however, two separate surveys were issued to Colorado ESPs from the Colorado Energy Office. The surveys conducted by the Colorado Energy Office gathered information from over 20 utilities in the state on topics such as EV rates, smart/managed charging pilots, feasibility for ultra-fast charging (350kw), whether utilities own/operate EV chargers, infrastructure incentives, and education/outreach/marketing programs. Results from the Colorado Energy Office-administered surveys are not included in this summary, although an initial review of results suggest that findings are in-line with the CORWest questionnaire responses.

Chevy Bolt for general fleet use, marketing, and member education, and allows members to test-drive EVs.⁷ Sixty-two percent of respondents also answered that their organization is interested in owning and operating EV charging stations.

Key Findings and Opportunities

The questionnaire results revealed a number of key barriers to EV adoption in the intermountain west, principal among which are range anxiety and/or concern around lack of DCFC stations, as well as the upfront cost of EVs compared to traditionally-fueled vehicles. The lack of DCFC infrastructure – particularly within close proximity to national parks and other recreation areas or at gateway communities – was also illustrated during the mapping exercise. The cost to purchase, install, and maintain EV infrastructure was cited as a significant barrier to addressing the larger problem – supporting EV adoption – and illustrates the need for financial incentives for both EV infrastructure and the vehicles themselves.

While additional DCFC and other charging infrastructure is needed, the questionnaire also identified the broader need for information and education campaigns to raise the level of EV awareness across the region. Highway signage, EV-focused tourism campaigns, and ride-and-drives are strategies that respondents cited as high-value. A number of questionnaire respondents – particularly electric cooperatives – offer modest EV educational opportunities, but additional, coordinated support is warranted.

The table below includes a summary of the top barriers to EV adoption in the intermountain west, and potential actions that each CORWest project partners can take to address these barriers.

⁷ CORWest Questionnaire, Electric Service Providers, 2020.

Table 3: Barriers and Actions to Support EV Adoption and EV Charging Installation

Barrier	Potential Actions by Actor	
	State Agency	Clean Cities Coalition
Range Anxiety	<p>Prioritize funding or financing for publicly accessible charging infrastructure along major highways and other high-visibility locations.</p> <p>Support public education campaigns to raise awareness about how EVs work and infrastructure availability.</p> <p>Work with state DOT and FHWA to install FHWA-approved EVSE signage along major routes.</p> <p>Explore opportunities to place branded signage on and leading to EV stations.</p>	<p>Lead public education campaigns to raise awareness about how EVs work and infrastructure availability.</p> <p>Work with fleets and private sector partners to invest in publicly available charging infrastructure.</p> <p>Work with state agencies and FHWA to install FHWA-approved EVSE signage.</p>
Lack of Public DCFC Stations	<p>Provide funding or financing for publicly accessible charging infrastructure.</p> <p>Incentivize and encourage private-sector infrastructure investments through public-private partnerships.</p> <p>Work with local governments and others to streamline permitting processes.</p> <p>Engage ESPs to discuss options for EV-friendly rate structures and mitigated demand charges.</p>	<p>Work with private sector partners to identify appropriate sites for DCFC.</p> <p>Provide information and funding avenues on DCFC options to potential site hosts.</p>
Upfront Cost of EVs	<p>Provide tax credits, rebates, sales tax exemptions, or other financial incentives to reduce up-front cost of EVs.</p>	<p>Provide information on where buyers can go to learn about EV incentives and financing options.</p> <p>Provide information on the total cost of EV ownership to communities with prospective buyers.</p>
Availability of Up-Front Financing for Stations	<p>Provide funding or financing for publicly accessible charging infrastructure.</p> <p>Work with utilities and public-utility commissions to enable utilities to directly invest in EV infrastructure</p>	<p>Provide information on funding and financing options for DCFC investment.</p> <p>Work with site hosts to understand the business model for DCFC.</p>

<p>EVSE Revenue Streams/Lack of Demand</p>	<p>Convene dialogues with utilities, financial institutions, and other private sector partners to identify ways to strengthen the DCFC business model.</p> <p>Encouraging or require automakers to sell EVs in your state.</p> <p>Integrate EVs into the state fleet.</p>	<p>Participate in dialogues with utilities, financial institutions, and other private sector partners to identify ways to strengthen the DCFC business model.</p> <p>Provide information to educate dealerships to encourage prospective buyers.</p>
<p>Lack of Electric Service</p>	<p>Offer incentives to pair DCFC with on-site generation or storage.</p>	<p>Provide information to site-hosts on ways to pair DCFC stations with on-site generation or storage.</p>
<p>Public Awareness/Education</p>	<p>Host “one-stop-shop” website with information on EVs, incentives, EVSE locations.</p> <p>Encourage Governors, agency heads, and others to attend ribbon-cuttings and drive EVs.</p> <p>Engage and work with tourism agencies to develop “EV Road Trip” resources and suggestions.</p> <p>Encourage Governors, agency-heads, and others to attend local ride-and-drive events.</p> <p>Work with local governments and ESPs to provide an EV installation “checklist” to EVSE site hosts.</p> <p>Offer financial incentives to dealers, ESPs, local governments, and others to host educational events or provide information on EVs to their customers/citizens.</p> <p>Support an “EV Hotline” for local governments, ESPs, fleets, and others to contact with questions about EVs.</p>	<p>Host or direct drivers to “one-stop-shop” website with information on EVs, incentives, EVSE locations.</p> <p>Organize ribbon-cuttings.</p> <p>Encourage Mayors, Governors, and other leaders to lead by example, drive EVs, and incorporate EVs into their fleets.</p> <p>Build long-term relationships with community-based organizations and other local leaders to understand their mobility needs and explore ways EVs may meet those needs.</p> <p>Work with businesses to install workplace chargers and other EV programs.</p> <p>Work with tourism agencies to develop “EV Road Trip” resources and suggestions.</p> <p>Work with state and national parks to host information about EVs and EV charging at parks’ visitors centers.</p> <p>Host educational events (e.g. ride-and-drives, “ask and expert,” etc.) at national parks, in partnership with parks management.</p> <p>Work with ESPs to host ride-and-drives,</p>

		<p>encourage EV “loaner” programs, and other educational initiatives.</p> <p>Work with dealerships to provide the latest information on EVs and available incentives.</p> <p>Provide an “EV Hotline” for local governments, ESPs, fleets, and others to contact with questions about EVs.</p>
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Conclusion

States have made significant progress in recent years to build-out DCFC infrastructure along key corridors in the intermountain west, and there is an opportunity to complete the intermountain EV network by prioritizing investment in DCFC stations along rural corridors of the region – and specifically leading to national parks. Local governments, electric service providers, and parks representatives throughout the region expressed interest in owning and operating stations, but noted that financial incentives and educational initiatives are needed in many cases. States and Clean Cities participating in the CORWest project have an opportunity to engage these partners to raise EV awareness at gateway communities leading to parks, and to build confidence in EV travel throughout the region by investing in EV signage, working with electric service providers to offer EV-friendly rates and mitigate demand charges, and connect stakeholders with resources to streamline and simplify EV charger investment.

Appendix: State Summaries

Arizona

EV Registration and Rural Infrastructure Gaps

As of 2018, there were approximately 15,000 battery-electric vehicles and 8,500 plug-in hybrid electric vehicles registered in Arizona; about 8,000 of those vehicles were Tesla models.⁸ EV adoption has steadily increased since 2015, and is expected to continue to grow as more EV models are introduced to market.

Arizona currently has 1133 Level 2 EV charging ports, 92 DCFC ports, and 43 unique DCFC station locations across the state.⁹ As can be seen in the map below, DCFC stations are located primarily along interstates and major highway routes. Most major cities have DCFC infrastructure in or leading to them; however, there are significant DC infrastructure gaps near the state's borders and in rural areas, specifically along I-40 and I-10, with smaller gaps along I-8 and I-17. Highways leading north (89 and 60) also lack DCFC stations, and there are infrastructure gaps near the Grand Canyon, Glen Canyon, Canyon De Chelly, Petrified Forest, and Organ Pipe Cactus.

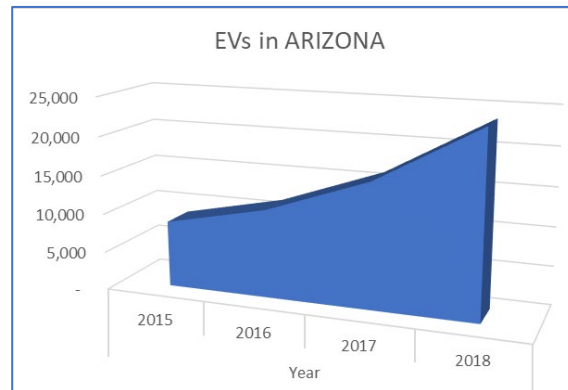
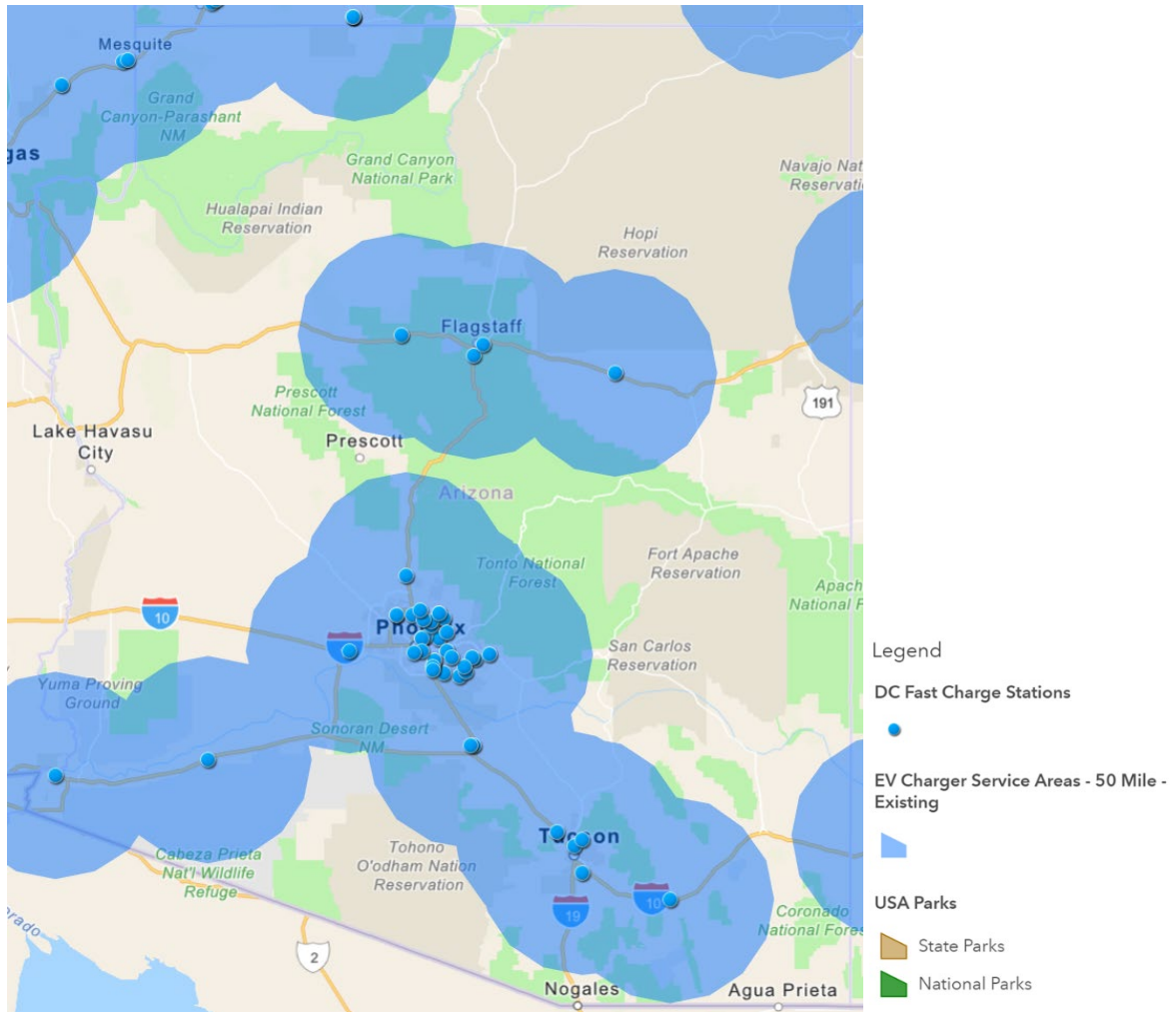


Figure 6: EV Registrations in Arizona, 2015-2018

⁸ Derived registration counts by the National Renewable Energy Laboratory

⁹ U.S. DOE Alternative Fueling Station Locator. Retrieved October 10, 2020. <https://afdc.energy.gov/stations/>. Excludes Tesla stations.

Figure 7: DCFC Stations in Arizona



Barriers and Actions to Support EV Adoption

A questionnaire administered to stakeholders in Arizona and other intermountain states provided insights on perceived barriers to EV adoption and gathered information on actions local stakeholders are taking to support EVs. While there were limited responses from local governments and parks representatives, electric service providers or related stakeholders provided helpful information. Consumer knowledge around the benefits of EVs and the ways to charge EVs was cited as the top barrier to EV adoption among respondents, while charging station revenue streams were identified as the top barrier to DCFC investment. Offering financial incentives to reduce the cost of the vehicle was cited as the most helpful action local and state governments can take to encourage further investment in EVs and charging stations, followed closely by setting long-term EV adoption goals, and increasing public awareness and education. Along those lines, ride-and-drive events, and training dealerships were identified as two actions that would be helpful for improving public awareness and perception of EVs.

Half of respondents knew how many EVs were in their service territory. Only one respondent offered rebates or incentives for EV purchases or the installation of EV chargers, and the same respondent noted that a pilot program is underway to offer EV-only charging rates and evaluate options for demand charges. Half of respondents also:

- Offer services related to preparing new sites to host charging, and/or work with fleets to assess the potential for electrification;
- Offer EV charging to employees;
- Have incorporated EVs into their fleets (mostly light-duty vehicles); and
- Sponsor or promote EV charging programs to customers, cooperative members, or fleets fueled by electric charging.

Most respondents were interested in owning and operating EV chargers, and also expressed interest in pursuing additional work related to EVs (e.g., developing a transportation electrification plan, hosting ride-and-drives, etc.). Importantly, one electric co-op respondent noted that defining the financial need and benefit to their members is a step that they would like to take in the future to promote EV use and adoption.

Opportunities to Support EV Adoption in Arizona

- Prioritize DCFC investment along rural corridors and gateway communities near national parks, specifically: along I-40, I-10, I-8, I-17, 89, and 60; and near the Grand Canyon, Glen Canyon, Canyon De Chelly, Petrified Forest, and Organ Pipe Cactus.
- Work with electric cooperatives to help define the financial need and benefit for their members.
- Work with investor-owned utilities and electric cooperatives to host education/outreach events (e.g., ride-and-drives, loaner vehicles, etc.).

Colorado

EV Registration and Rural Infrastructure Gaps

As of November, 2020 there were approximately 21,123 battery-electric vehicles and 9,794 plug-in hybrid electric vehicles registered in Colorado (see Figure 8 below).¹⁰ EV adoption has almost doubled since 2018, and is expected to continue to grow as more EV models are introduced to market. The most popular EVs on Colorado roads are Tesla, Nissan, and Chevrolet.¹¹

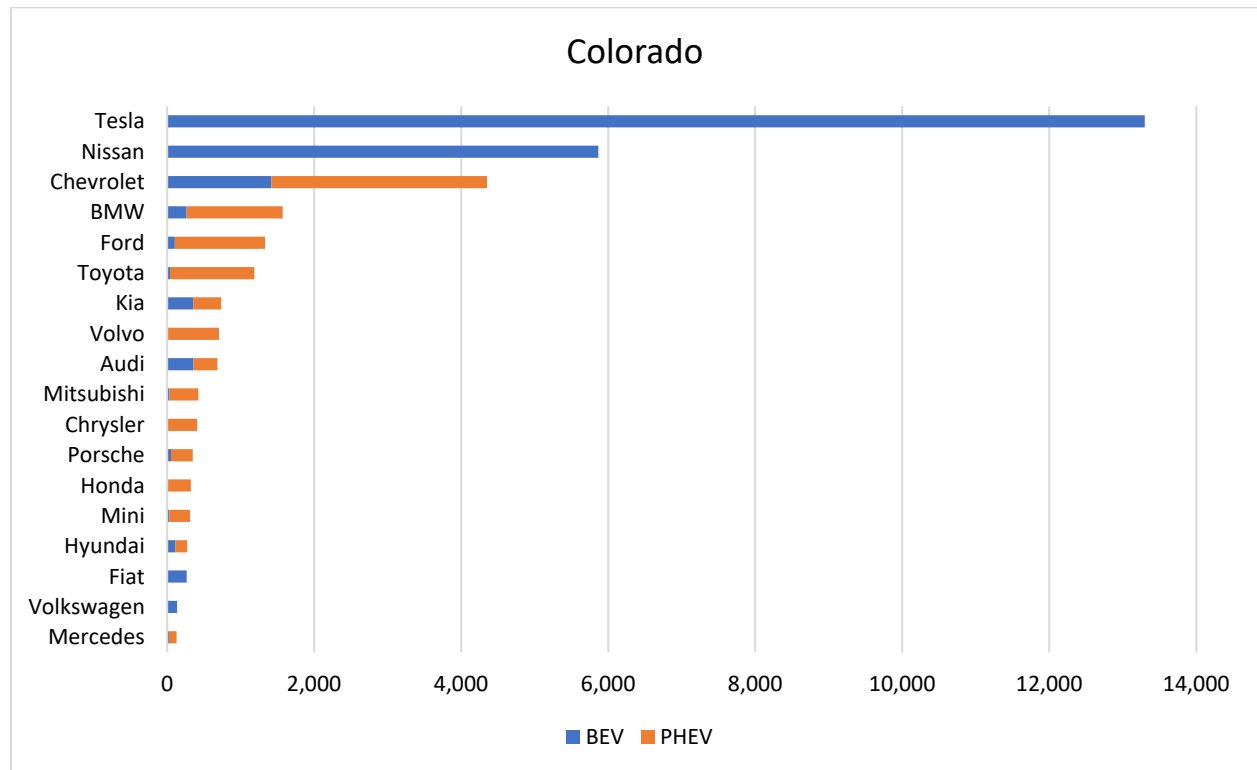


Figure 8: EV Registrations in Colorado by Vehicle Make

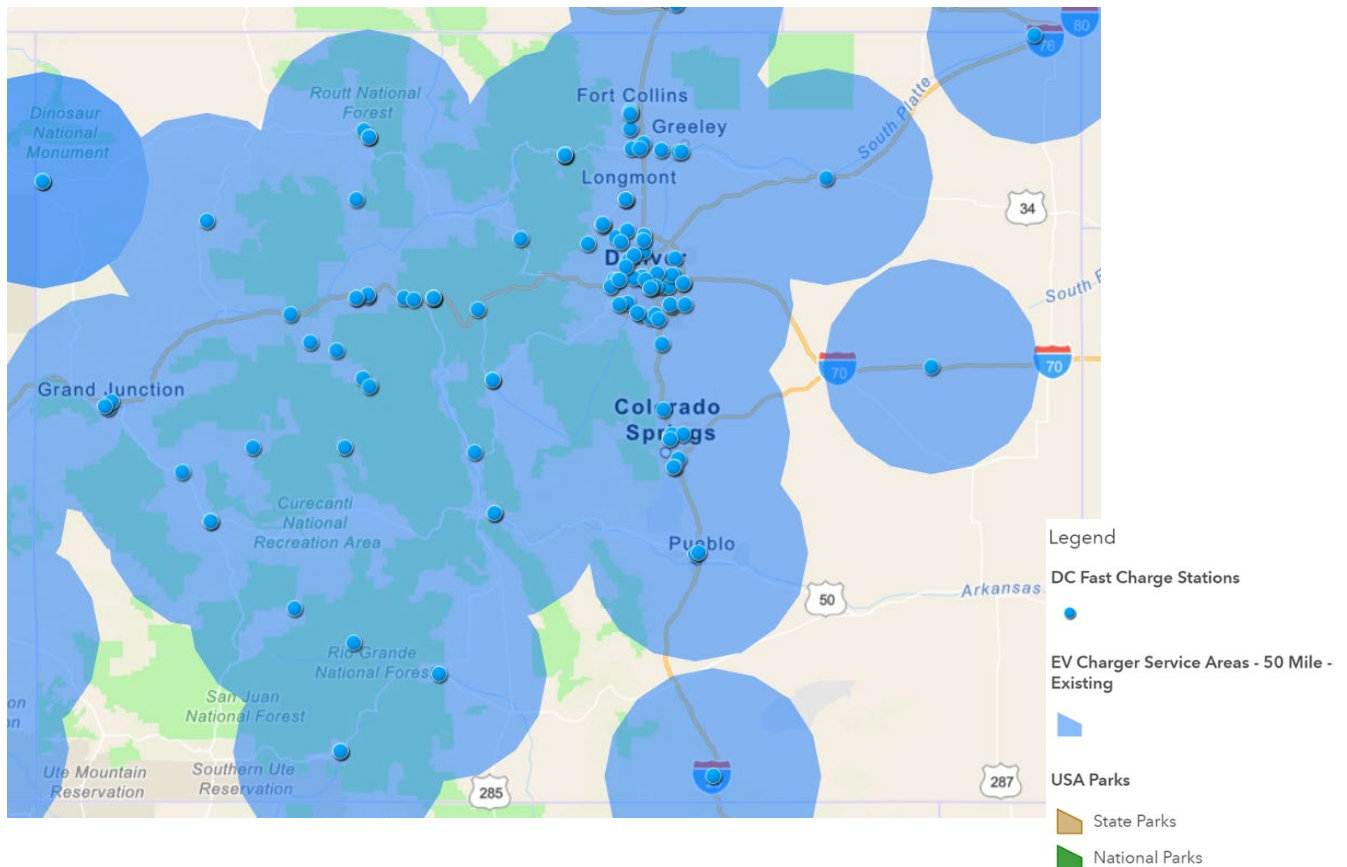
Colorado currently has 2,293 Level 2 EV charging ports, 185 DCFC ports, and 91 unique DCFC station locations across the state.¹² As can be seen in the map below, DCFC stations are located primarily along interstates and near urban centers, although stations are also available along more remote highways throughout the state. Most cities have DCFC infrastructure in or leading to them, and the majority of interstates and highways have DCFC infrastructure at 50 mile intervals or less. With the exception of small stretches of highway leading to Oklahoma and Nebraska, almost all major roadways are already electrified, and all national parks have DCFC stations within 50 miles of their entrance(s).

¹⁰ Atlas Public Policy, "Atlas EV Hub," 2021 [Online]. Available: <https://www.atlasevhub.com>

¹¹ Figure 8 lists automakers that have sold more than 100 EVs in Colorado.

¹² U.S. DOE Alternative Fueling Station Locator. Retrieved October 10, 2020. <https://afdc.energy.gov/stations/>. Excludes Tesla stations.

Figure 9: DCFC Stations in Colorado



Barriers and Actions to Support EV Adoption

A questionnaire administered to stakeholders in Colorado and other intermountain states provided insights on perceived barriers to EV adoption and gathered information on actions local stakeholders are taking to support EVs. In Colorado the questionnaire was disseminated to parks/tourism stakeholders, as well as select local communities, and a total of 21 stakeholders provided responses. As noted in the body of this report, the Colorado Energy Office issued separate surveys to utilities within the state, and those results are not included in this analysis.

Range anxiety was cited as the top barrier to EV adoption among respondents, while availability of up-front financing was identified as the top barrier to DCFC investment. Offering financial incentives to reduce the cost of the vehicle and infrastructure was cited as the most helpful actions local and state governments can take to encourage further investment in EVs and charging stations, followed closely by increasing public awareness and education. Along those lines, outreach to support EV road trips, as well as signage along highways to indicate locations of fast-charging infrastructure were identified as two actions that would be helpful for improving public awareness and perception of EVs.

Seventeen respondents offered recommendations on tourist destinations that would benefit from increased EV charging infrastructure. The same number of respondents also provided information on specific parks and recreation areas in their community, or gateway communities near tourist destinations that could host EV charging infrastructure and provide safe locations with amenities. Ten

respondents noted that there was public electrical service in their parks and recreation areas. Respondents provided a variety of answers to the question, “what kind of information booths do you have at your park/recreation area?” ranging from kiosks at welcome centers/visitors centers throughout the park, wayfinding information with trail maps and points of historical interest, roadside pullouts with interpretive signage, and online resources.

Additional barriers were cited in open-ended comments throughout the questionnaire, and notable comments included the following:

- Lack of support from local leadership posed a significant barrier to DCFC investment (i.e., getting buy-in for EV infrastructure investment, policies, or programs from local government officials)
- Grants were strongly favored over financing options, with the note that providing match can be a challenge for some communities/organizations
- Demand charges are a significant barrier
- It was difficult to find information about the process that was needed to make EV charging happen at the local level (e.g., if you were interested in installing a charger, what is the step-by-step process you need to go through?)

Opportunities to Support EV Adoption in Rural and Gateway Communities in Colorado

- Work with communities and site hosts to install DCFC stations along remaining portions of I-76, U.S. Route 34, and U.S. Route 287 leading to Oklahoma and Nebraska (U.S. Route 34)
- Work with the 18 respondents from the CORWest questionnaire that expressed interest in hosting EV infrastructure in their gateway communities
- Work with electric cooperatives and investor-owned utilities to explore options for mitigating demand charges
- Provide educational materials to help local site hosts purchase and install a charger

Idaho

EV Registration and Rural Infrastructure Gaps

As of 2019, there were approximately 1,500 battery-electric vehicles and 1,600 plug-in hybrid electric vehicles registered in Idaho.¹³ EV adoption has steadily increased since 2015, and is expected to continue to grow as more EV models are introduced to market.

Idaho currently has 115 Level 2 EV charging ports, 31 DCFC ports, and 12 DCFC station locations across the state.¹⁴ As can be seen in the map below, DCFC stations are located primarily along interstates and near urban centers. Most major cities have DCFC infrastructure in or leading to them; however, there are DC infrastructure gaps near the state's borders and in rural areas, specifically along I-84 and I-15 leading to Utah and Montana, and along U.S. Routes 95 and 93. There are DCFC stations within approximately 50 miles of national parks entrances within the state of Idaho; however, Hagerman Fossil Beds Historical Site and Craters of the Moon National Monument and Preserve are both about 50 miles from the nearest DCFC site. Given the tourist traffic at both locations, there may be an opportunity for DCFC investment at a gateway community near one or both of these parks.

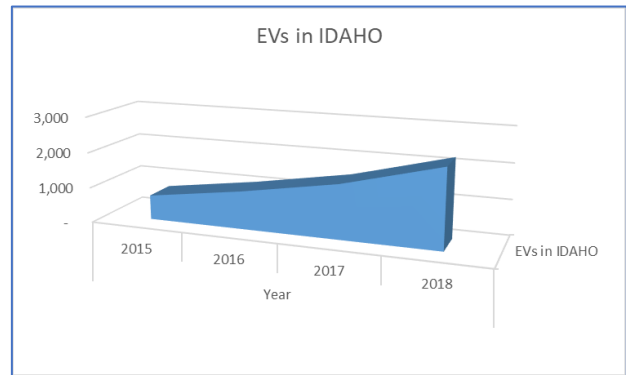
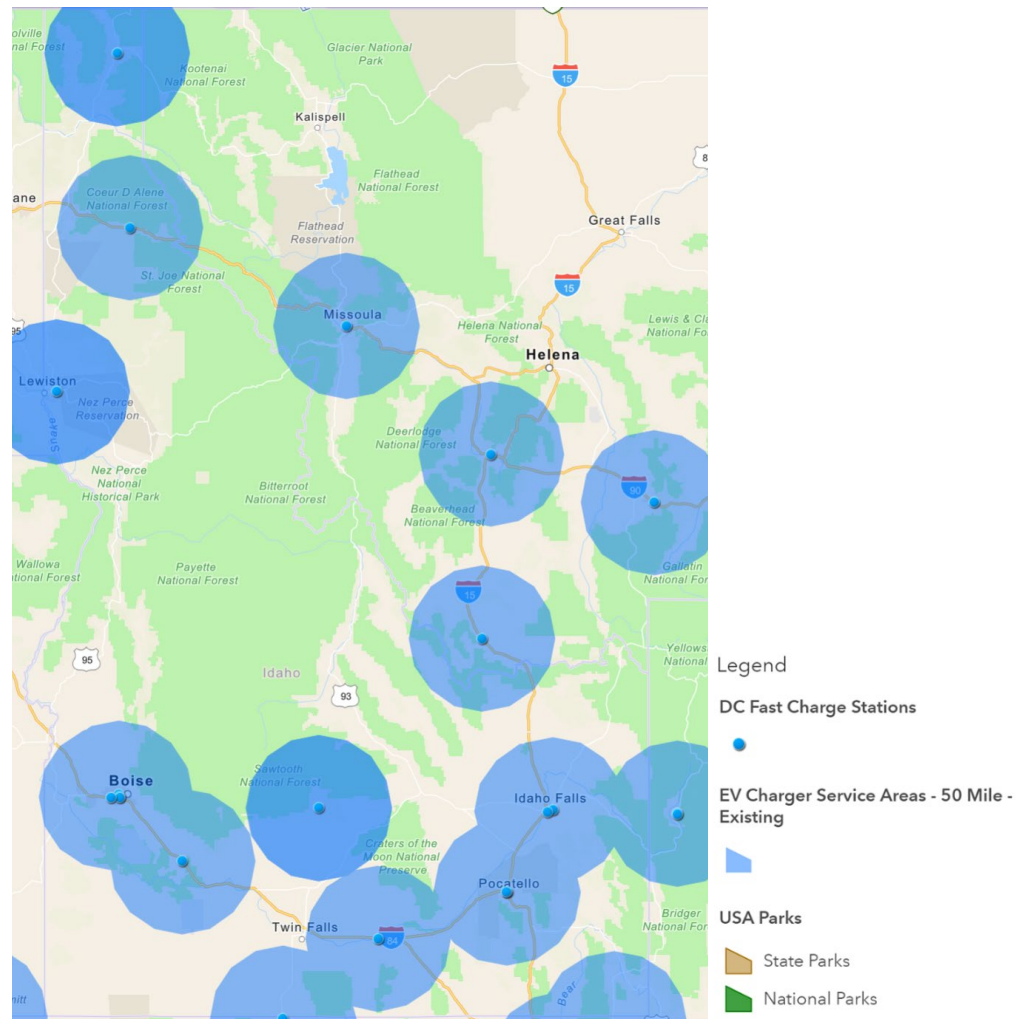


Figure 10: EV Registrations in Idaho, 2015-2018

¹³ Idaho Transportation Department. *Electric, Hybrid, and Plugin Vehicles: Statewide by Engine Type, County, and Total Count*. December 5, 2019.

¹⁴ U.S. DOE Alternative Fueling Station Locator. Retrieved October 10, 2020. <https://afdc.energy.gov/stations/>. Excludes Tesla stations.

Figure 11: DCFC Stations in Idaho



Barriers and Actions to Support EV Adoption

A questionnaire administered to stakeholders in Idaho and other intermountain states provided insights on perceived barriers to EV adoption and gathered information on actions local stakeholders are taking to support EVs. In Idaho, seven ESPs from across the state and ten respondents from three parks/tourism organizations responded to the survey. Range anxiety, upfront cost of EVs, and lack of publicly available DCFC were cited as the top barriers to EV adoption across both groups of respondents, while charging stations revenue streams, lack of electric service to site host locations, and lack of safe charging locations were identified as the top barriers to DCFC investment. Increasing public awareness and education and working with ESPs to offer economical charging rates and/or reduce demand charges were cited as the most helpful actions local and state governments can take to encourage further investment in EVs and charging stations. Along those lines, tourism-focused outreach on EV road trips and ride-and-drives were identified as two actions that would be helpful for improving public awareness and perception of EVs.

Over half of ESP respondents noted that their organization offers rebates or incentives for EVs and EV chargers; these programs include providing installation cost assistance, offering funding for charging station installation, and leasing charging stations to commercial customers. Only one respondent offers EV-specific rates, and while respondents didn't cite any local zoning regulations pertaining to EV charging, one respondent indicated that the City of Caldwell has an EVSE ordinance for new construction. The majority of ESP respondents offer workplace charging to employees, and also offer services related to preparing new sites to host charging, such as evaluating billing and infrastructure impacts from charging, providing education on the different types of charging, and working with towns to develop applications to apply for grants to help finance DCFC stations. Less than half of respondents have incorporated EVs into their fleet, and less than half expressed interest in owning and operating EV chargers, noting insufficient demand and lack of a business case for DCFC investment.

Thirteen respondents offered recommendations for tourist destinations that would benefit from increased EV charging infrastructure.¹⁵ Seven respondents also provided information on specific parks and recreation areas in their community, or gateway communities near tourist destinations that could host EV charging infrastructure and provide safe locations with amenities. Three respondents noted that there was public electrical service in their parks and recreation areas. Respondents provided a variety of answers to the question, "what kind of information booths do you have at your park/recreation area?" with the majority of respondents noting that the visitor's center contained informational booths and signage.

Opportunities to Support EV Adoption in Idaho

- Work with gateway communities near Hagerman Fossil Beds Historical Site and Craters of the Moon National Monument and Preserve to install L2 or DCFC stations to support EV tourism.
- Prioritize DCFC investment along key corridors, including I-84 and I-15 near the Utah and Montana borders, U.S. Routes 95 and 93, and Highways 55 and 75.
- Work with electric service providers to enhance educational activities in the service territory, such as offering an EV for lease, and providing a "checklist" that co-op customers can follow when installing an EV charger.

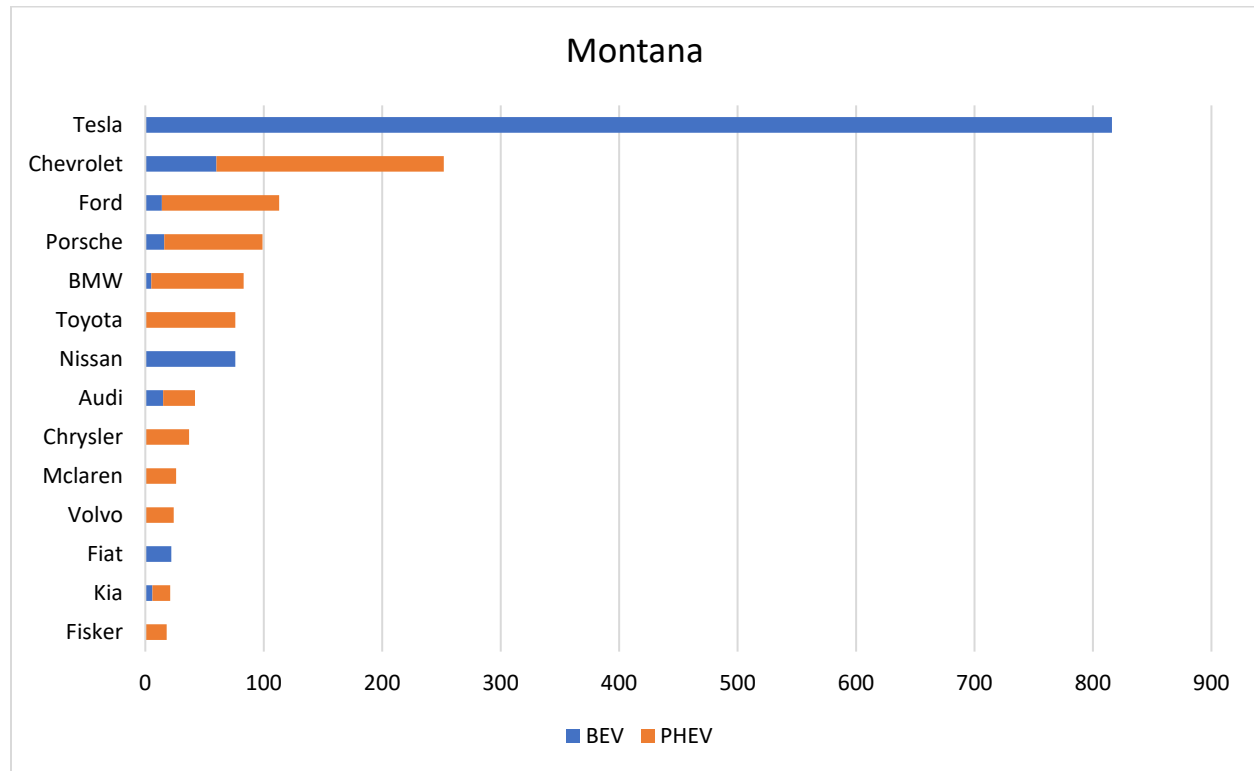
¹⁵ Combined responses from ESP and parks/tourism questionnaire.

Montana

EV Registration and Rural Infrastructure Gaps

As of 2020, there were approximately 1,071 battery-electric vehicles and 723 plug-in hybrid electric vehicles registered in Montana; about 816 of those vehicles were Tesla models (see Figure 12 below).¹⁶ EV adoption has steadily increased since 2015, and is expected to continue to grow as more EV models are introduced to market.¹⁷

Figure 12: EV Registrations in Montana by Vehicle Make



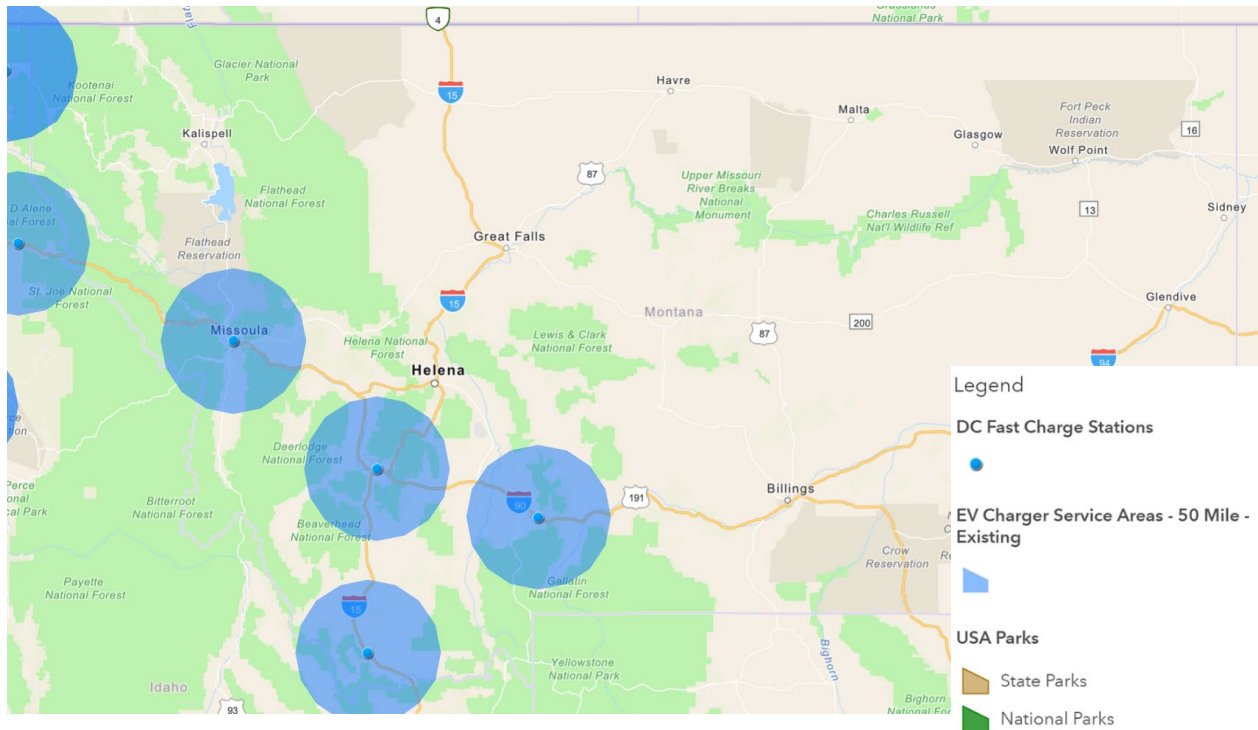
Montana currently has 48 Level 2 EV charging ports, 16 DCFC ports, and 4 unique DCFC station locations across the state.¹⁸ As can be seen in the map below, DCFC stations are located primarily along interstates and near urban centers. While there is DCFC infrastructure between several urban centers in western Montana, the majority of interstate miles are without DCFC stations. Prioritizing infrastructure investment along the cross-state interstates (I-94, I-90, and I-15) will help build a seamless network between the state's borders. In addition, electrifying U.S. Route 2 and U.S. 93 will enable EV drivers to access Glacier National Park; DCFC investment along U.S. Routes 191, 89 and 20 will also allow EV drivers to access Yellowstone from Montana.

¹⁶ Atlas Public Policy, "Atlas EV Hub," 2021 [Online]. Available: <https://www.atlasevhub.com>

¹⁷ Figure 12 lists automakers that have sold more than 15 EVs in Montana.

¹⁸ U.S. DOE Alternative Fueling Station Locator. Retrieved October 10, 2020. <https://afdc.energy.gov/stations/>. Excludes Tesla stations.

Figure 13: DCFC Stations in Montana



Questionnaire Summary: Barriers and Actions to Support EV Adoption

A questionnaire administered to stakeholders in Montana and other intermountain states provided insights on perceived barriers to EV adoption and gathered information on actions local stakeholders are taking to support EVs. In Montana, representatives from three local governments and two electric service providers ESPs responded to the survey. Consumer knowledge around the benefits of EVs, model availability, and range anxiety were cited as the top barriers to EV adoption, while availability of up-front financing to ease the cost of infrastructure investments was identified as the top barrier to DCFC investment. One local government representative emphasized in the comments that lack of model availability at dealerships as a significant, primary barrier to EV adoption. Setting long-term goals or targets for EV deployments or the statewide auto market, and increasing public awareness and education were cited as the most helpful actions local and state governments can take to encourage further investment in EVs and charging stations. Along those lines, training for dealerships on sales and maintenance of EVs, and ride-and-drive events were identified as the top actions that would be helpful for improving public awareness and perception of EVs.

None of the local government respondents indicated that their municipality owns battery-electric vehicles, but two respondents noted that their fleet includes plug-in hybrid electric vehicles. Similarly, none of the respondents' jurisdictions offer incentives for EVs, nor have they adopted EV-friendly building codes or zoning regulations governing where charging stations are permitted. Among ESP respondents, Flathead Electric Coop offers a rebate to offset the purchase and installation cost of an EV

charger, and offers a time of use rate for residential charging. Both responding ESP organizations offer workplace charging to their employees, and all respondents are interested in owning/operating EV charging stations.

Opportunities to Support EV Adoption in Montana

- Work with local governments during zoning ordinance updates to include EV-friendly zoning regulations.
- Launch education and awareness campaigns by providing training for dealerships on the sales and maintenance of EVs, and hosting public-facing events, such as ride-and-drives.
- Prioritize DCFC along U.S. Routes 93, 2, 191, 89, and 20, leading to Glacier National Park and Yellowstone National Park, and along interstates I-94, I-90, and I-15.

Nevada

EV Registration and Rural Infrastructure Gaps

As of 2018, there were approximately 4,800 battery-electric vehicles and 3,000 plug-in hybrid electric vehicles registered in Nevada; about 3,200 of those vehicles were Tesla models.¹⁹ EV adoption has steadily increased since 2015, and is expected to continue to grow as more EV models are introduced to market.

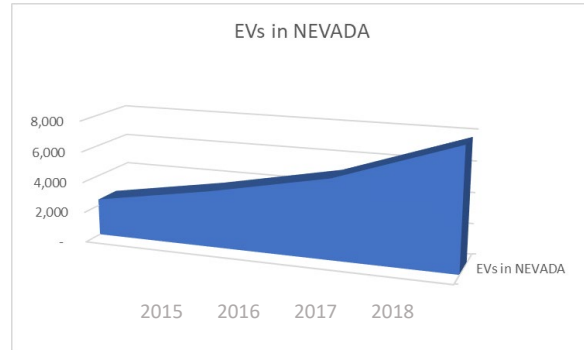


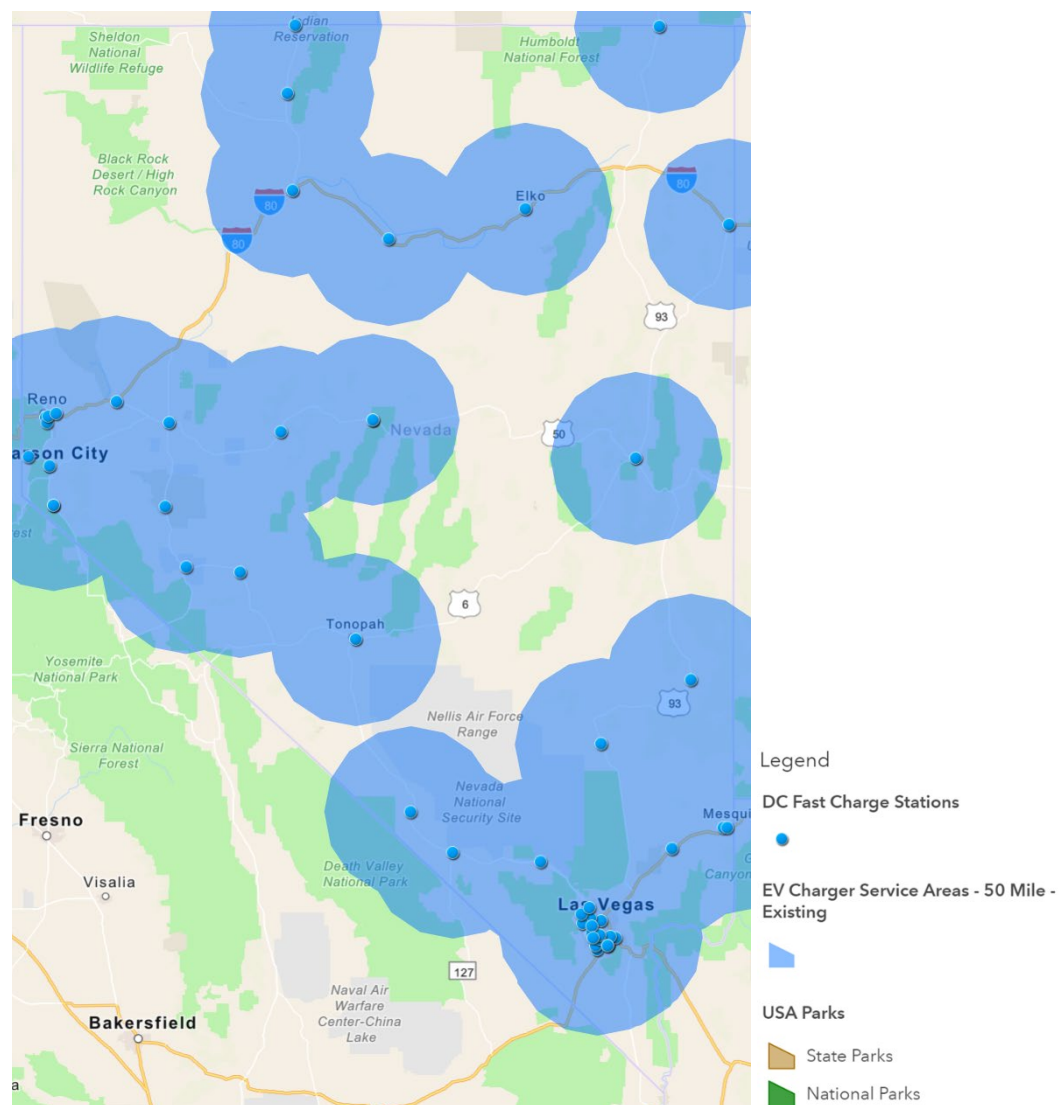
Figure 14: EV Registrations in Nevada, 2015-2018

Nevada currently has 542 Level 2 EV charging ports, 102 DCFC ports, and 46 unique DCFC station locations across the state.²⁰ As can be seen in the map below, DCFC stations are primarily located along interstates and near urban areas. Most major cities have DCFC infrastructure in or leading to them, and all interstate corridors have DCFC within 50 miles of another station. There remain some DCFC infrastructure gaps along state and federal highways, including U.S. Routes 6 and 95 and Nevada State Route 140, as well as near the southern entrance to Lake Mead National Recreation Area.

¹⁹ Derived registration counts by the National Renewable Energy Laboratory

²⁰ U.S. DOE Alternative Fueling Station Locator. Retrieved October 10, 2020. <https://afdc.energy.gov/stations/>. Excludes Tesla stations.

Figure 15: DCFC Stations in Nevada



Questionnaire Summary: Barriers and Actions to Support EV Adoption

A questionnaire administered to stakeholders in Nevada and other intermountain states provided insights on perceived barriers to EV adoption and gathered information on actions local stakeholders are taking to support EVs. In Nevada, eight local government representatives, four ESPs, and five parks or tourism organizations responded to the survey. Across all respondent groups, range anxiety was cited as the top barrier to EV adoption, while charging station revenue streams, lack of electric service to site host locations, and lack of up-front financing were identified as the top barriers to DCFC investment. Offering financial incentives to reduce the cost of charging stations, increasing public awareness and education, and reducing regulatory barriers to EV charging infrastructure investment were cited as the most helpful actions local and state governments can take to encourage further investment in EVs and

charging stations. Along those lines, highway signage to indicate locations of DCFC stations was an action that would be helpful for improving public awareness and perception of EVs.

Over half of respondents from local governments have EVs in their government fleet. Three municipalities offer preferred parking for EVs, one municipality offers free charging, and another offers EV infrastructure rebates. None of the respondents indicated that their jurisdiction had zoning regulations or building codes specific to EVSE. Six local government respondents noted that their jurisdiction – or the state – had undertaken EV planning studies, and additional respondents noted NV Energy’s EV infrastructure planning work and EV-specific rates. Seven local government respondents indicated that their jurisdiction would be interested in owning and operating EV chargers, with several adding the caveat that additional financial support or justification would be needed.

None of the ESP respondents: offer rebates or incentives for EVs or EVSE; offer services related to preparing new sites to host charging; work with fleets to assess the potential for electrification; or sponsor or promote EV charging programs to customers, cooperative members, or fleets fueled by electric charging. One respondent has an EV-rate, and that same respondent noted that demand charges do not exist in the EV-only rate. One respondent offers EV charging to employees. Only one ESP respondent expressed interest in owning and operating EV charging stations, with other respondents noting that the cost was too high, or that they would prefer for other businesses in their service territory to own the stations. Several additional comments were offered by ESP respondents, with two respondents noting that additional load requirements – particularly as coal plants are retired – raise uncertainty for their role in EV infrastructure build out and promotion.

All parks and tourism respondents, as well as ESP and local government respondents, identified tourist destinations that would benefit from increased EV charging infrastructure. While numerous destinations were cited, Lake Tahoe was mentioned repeatedly as a tourist attraction that would benefit from additional EV infrastructure. All parks and tourism respondents also provided information on specific parks and recreation areas in their community, or gateway communities near tourist destinations, that could host EV charging infrastructure and provide safe locations with amenities. About half of parks and tourism respondents noted that their parks did not have electrical access. Respondents provided a variety of answers to the question, “what kind of information booths do you have at your park/recreation area?” with the majority of respondents noting that the visitor’s center contained kiosks and signage.

Opportunities to Support EV Adoption in Nevada

- Engage with local government fleet operators to share best practices for EV adoption and EV infrastructure installation.
- Prioritize DCFC infrastructure investment along remaining state and federal highways with gaps greater than 50 miles between existing or planned DCFC stations.
- Work with electric cooperatives to explore opportunities for promoting EV adoption in their service territory through education and awareness activities.
- Work with parks and tourism organizations to install infrastructure in or near parks and recreation sites.

New Mexico

EV Registration and Rural Infrastructure Gaps

As of 2018, there were approximately 1,200 battery-electric vehicles and 1,300 plug-in hybrid electric vehicles registered in New Mexico; about 550 of those vehicles were Tesla models.²¹ EV adoption has steadily increased since 2015, and is expected to continue to grow as more EV models are introduced to market.

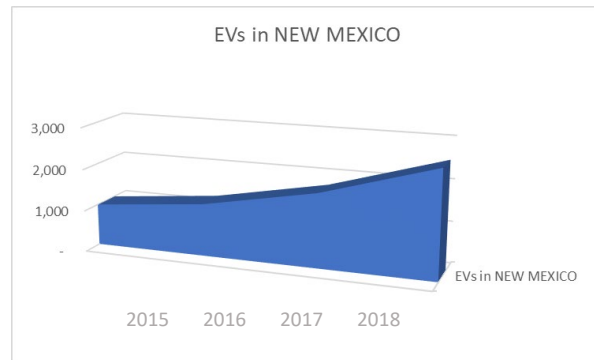


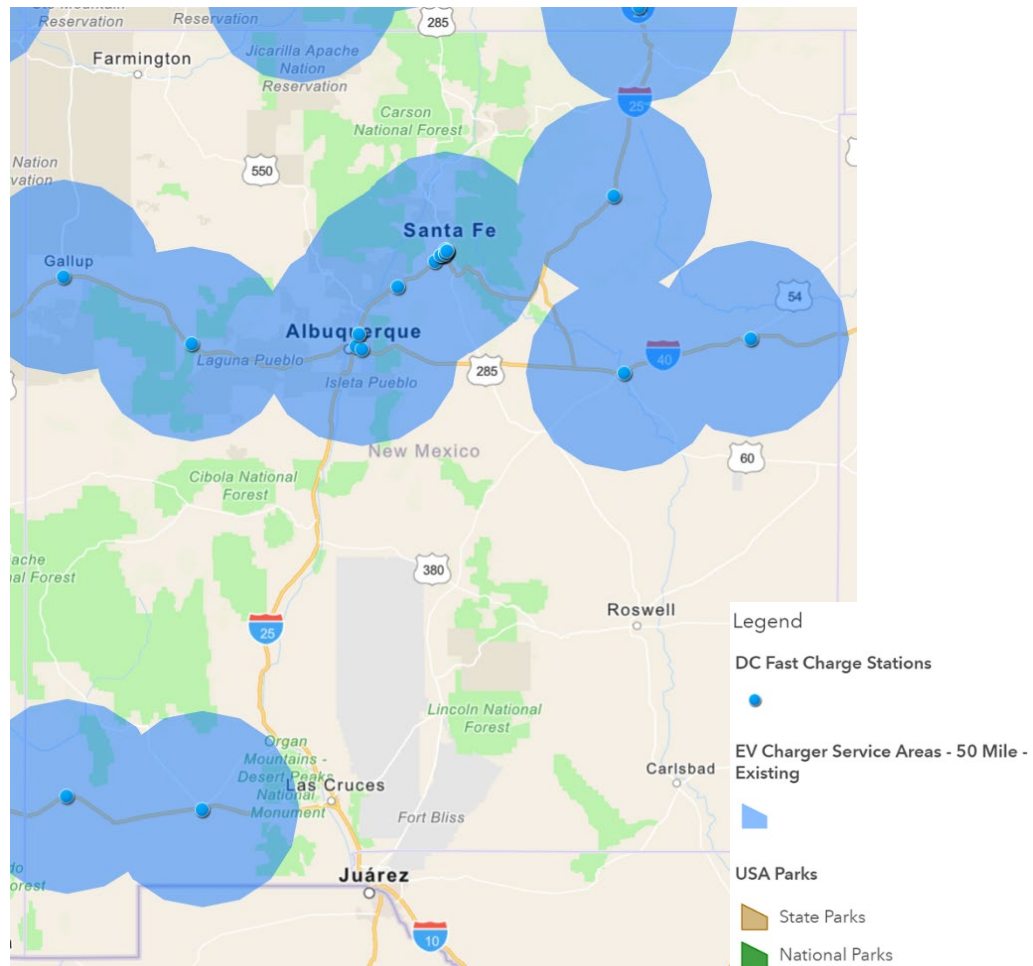
Figure 16: EV Registrations in New Mexico, 2015-2018

New Mexico currently has 152 Level 2 EV charging ports, 52 DCFC ports, and 15 unique DCFC station locations across the state.²² As can be seen in the map below, DCFC stations are primarily located along interstates and near urban areas. Most major cities have DCFC infrastructure in or leading to them, and interstate corridors in the northern half of the state have DCFC within 50 miles of another station. There remain some cities without DCFC infrastructure along I-25, as well as along several U.S. and state highways in the southeast quadrant and northwest corner of the state. In addition, routes leading to several national parks lack DCFC stations, including the Chaco Culture, Gila Cliff Dwellings, and Salinas Pueblo Missions lack DCFC infrastructure, although certain locations have Level 2 stations available. Like many of the intermountain west states, New Mexico also has some long stretches of roadway where there aren't cities, where creative solutions may be needed to install additional DCFC infrastructure to ease range anxiety.

²¹ Derived registration counts by the National Renewable Energy Laboratory

²² U.S. DOE Alternative Fueling Station Locator. Retrieved October 10, 2020. <https://afdc.energy.gov/stations/>. Excludes Tesla stations.

Figure 17: DCFC Stations in New Mexico



Questionnaire Summary: Barriers and Actions to Support EV Adoption

A questionnaire administered to stakeholders in New Mexico and other intermountain states provided insights on perceived barriers to EV adoption and gathered information on actions local stakeholders are taking to support EVs. In New Mexico, 19 local government representatives, eight ESPs, and 47 parks or tourism organizations from across the state responded to the questionnaire. Upfront cost of EVs and lack of publicly-available DCFC stations were cited as the top barriers to EV adoption, while availability of up-front financing to ease the cost of infrastructure investments, and charging station revenue streams during operations were identified as the top barriers to DCFC investment. Offering financial incentives to reduce the cost of the vehicle was cited as the most helpful action local and state governments can take to encourage further investment in EVs and charging stations. Highway signage to indicate locations of DCFC stations, tourism-focused outreach on EV road trips, and ride-and-drive events were all noted as actions that would be helpful for improving public awareness and perception of EVs.

Three respondents from local governments have EVs in their government fleet, and seven municipalities offer preferred parking for EVs. None of the respondents indicated that their jurisdiction had zoning

regulations or building codes specific to EVSE. Four local government respondents noted that various entities within their jurisdiction have completed planning for EV deployment, and activities include adopting a fleet management policy for EVs, creating a plan for EV adoption within the government fleet, and submitting a filing with the Public Regulation Commission to promote EVs through rebates, rates, and education. Twelve local government respondents indicated that their jurisdiction would be interested in owning and operating EV chargers, noting that passage of state-level tax credits or other financial incentives would help support EV adoption across the state.

One of the electric cooperative respondents offers a financial incentive for EVSE installation, with three respondents offering general support services to customers within their service territory, and four respondents offering workplace charging to employees. No ESP respondents currently offer EV-only rates or reduced demand charges for EVs, although one respondent noted that they have filed an EV-only rate that would also waive demand charges with the Public Regulation Commission. ESP respondents commented that 2019 legislation (HB 521) requires investor-owned utilities to file transportation electrification plans by January 1, 2021. Three ESP respondents have EVs in their fleet, with one noting that the EVs were intended for “marketing, member education, and general fleet use”; this same respondent allows members to test-drive their EVs. Four respondents expressed interest in owning and operating EV charging stations, with several respondents noting that they would like to take additional steps to promote EV use, such as: continue or launch customer education and outreach programs; develop a transportation electrification plan; conduct a grid impact study; and pair distributed generation and storage systems with EV chargers.

Sixty-six respondents from parks and tourism organizations, local governments, and ESPs identified tourist destinations that would benefit from increased EV charging infrastructure. Thirty-two respondents from the parks and tourism questionnaire also provided information on specific parks and recreation areas in their community – or gateway communities near tourist destinations – that could host EV charging infrastructure and provide safe locations with amenities. Twenty-four respondents noted that their parks have electrical access. Respondents provided a variety of answers to the question, “what kind of information booths do you have at your park/recreation area?” with the majority of respondents noting that the visitor’s center provides information, and several noting that businesses in local communities provide tourism and wayfinding information as well.

Opportunities to Support EV Adoption in New Mexico

- Prioritize DCFC infrastructure investment along remaining state and federal highways with gaps greater than 50 miles between existing or planned DCFC stations.
- Work with electric cooperatives to explore opportunities for promoting EV adoption in their service territory through education and awareness activities.
- Cultivate state-local partnerships to maximize state and local investments in EV infrastructure.
- Provide financial incentives to assist with EV charging installations, as well as information about the broader economic benefits of widescale EV adoption.

Utah

EV Registration and Rural Infrastructure Gaps

As of 2018, there were approximately 5,200 battery-electric vehicles and 3,500 plug-in hybrid electric vehicles registered in Utah; about 2,350 of those vehicles were Tesla models.²³ EV adoption has steadily increased since 2015, and is expected to continue to grow as more EV models are introduced to market.

Utah currently has 1152 Level 2 EV charging ports, 132 DCFC ports, and 53 unique DCFC station locations across the state.²⁴ As can be seen in the map below, DCFC stations are located primarily along interstates and major highway routes, and the majority of interstates and major highways across the state have DCFC stations every 50 miles. There are some DCFC station gaps along I-80 leading to Nevada, I-84 leading to Idaho, highway 191, and highway 50. There are also infrastructure gaps near five national park system locations in the state: Capitol Reef National Park, Flaming Gorge National Monument, Glen Canyon National Recreation Area, Grand Staircase- Escalante National Monument and Bryce Canyon National Park.

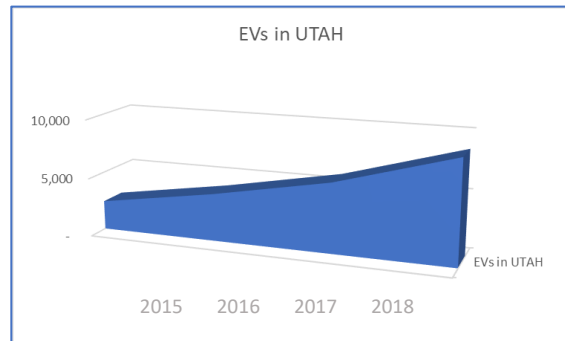
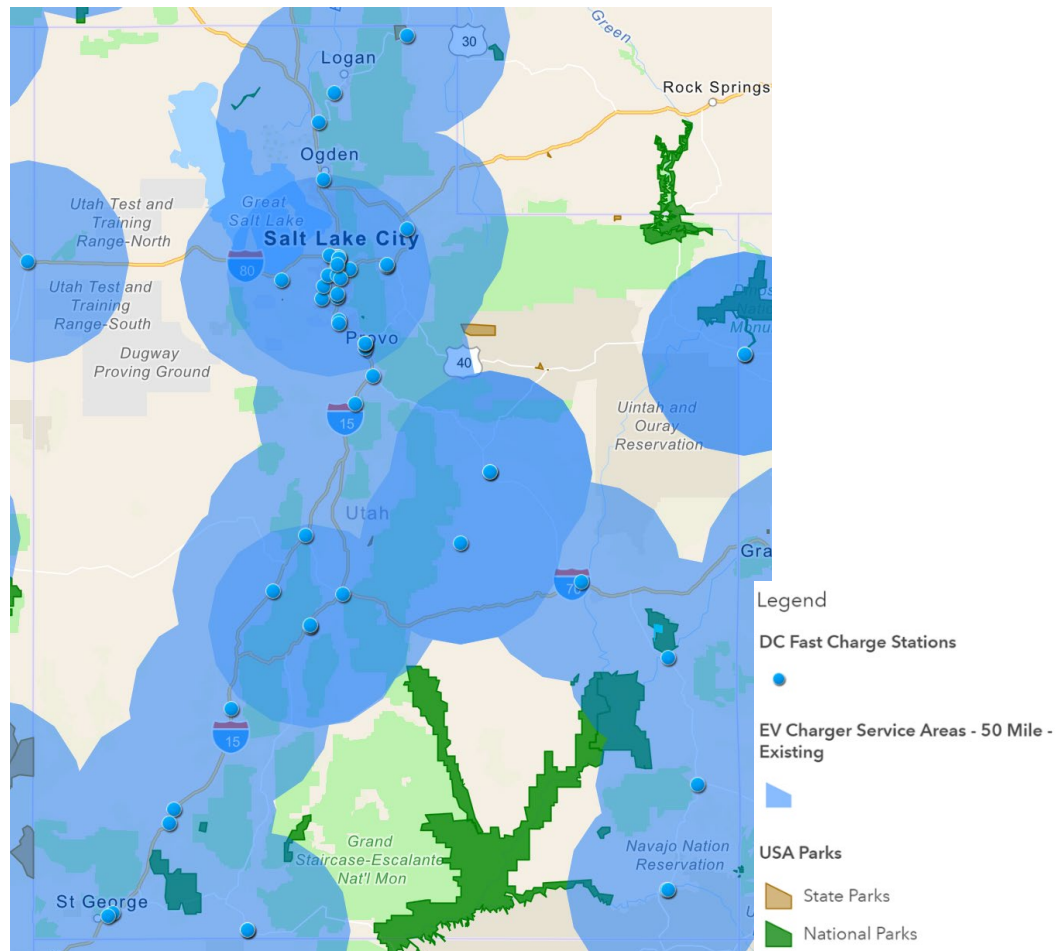


Figure 18: EV Registrations in Utah, 2015-2018

²³ Derived registration counts by the National Renewable Energy Laboratory

²⁴ U.S. DOE Alternative Fueling Station Locator. Retrieved October 10, 2020. <https://afdc.energy.gov/stations/>. Excludes Tesla stations.

Figure 19: DCFC Stations in Utah



Questionnaire Summary: Barriers and Actions to Support EV Adoption

A questionnaire administered to stakeholders in Utah and other intermountain states provided insights on perceived barriers to EV adoption and gathered information on actions local stakeholders are taking to support EVs. In Utah, 34 local government representatives, five ESPs, and 10 parks or tourism organizations from across the state responded to the questionnaire. Range anxiety and lack of publicly available DCFC stations were cited as the top barriers to EV adoption, while availability of up-front financing to ease the cost of infrastructure investments, charging station revenue streams during operations, and lack of electric infrastructure and safe site host locations with basic amenities were identified as the top barriers to DCFC investment. Working with utilities/cooperatives to offer economical charging rates/reduce demand charges, offering financial incentives to reduce the cost of charging stations, and increasing public awareness and education were cited as the most helpful actions local and state governments can take to encourage further investment in EVs and charging stations. Highway signage to indicate locations of DCFC stations, ride-and-drive events, and mobile or traveling information exhibits/events in coordination with national parks and state parks were all noted as actions that would be helpful for improving public awareness and perception of EVs.

Four respondents from local governments have EVs in their government fleet, and a number of municipalities offer incentives for EVs: eight respondents offer preferred parking; three offer HOV access or reduced tolls for EVs; two offer financial support for the purchase of an EV; and one offers free charging. Two respondents also noted that a road usage fee or registration fee is levied on EV owners. Three respondents indicated that their jurisdiction had zoning regulations specific to EVSE, with six respondents noting that charging stations are addressed in their local building codes. Nine local government respondents noted that various entities within their jurisdiction have completed planning for EV deployment, such as planning to incorporate EVs into their fleet. Nineteen local government respondents indicated that their jurisdiction would be interested in owning and operating EV chargers, noting that paying for the electricity to charge the vehicles and funding the infrastructure are significant barriers to their investment.

Most ESP respondents have taken limited action to support EV adoption. One respondent offers EV-only rates, and noted that demand charges do not exist within the EV-only rate. One respondent offers general support services to customers within their service territory, and a separate respondent sponsors/promotes EV charging programs to customers. Two respondents expressed interest in owning and operating EV charging stations, with several respondents noting that they would like to take additional steps to promote EV use, such as defining the financial need and benefit to their members.

Thirty-six respondents from parks and tourism organizations, local governments, and ESPs identified tourist destinations that would benefit from increased EV charging infrastructure, many of whom recommended electrifying Zion National Park and “the big five.” Nine respondents to the parks and tourism questionnaire also provided information on specific parks and recreation areas – or gateway communities near tourist destinations – that could host EV charging infrastructure and provide safe locations with amenities. Five respondents noted that their parks have electrical access, and nine respondents noted that the average dwell time for a visitor at their park was over three hours. Respondents provided a variety of answers to the question, “what kind of information booths do you have at your park/recreation area?” with the majority of respondents noting that the visitor’s center provides information.

Opportunities to Support EV Adoption in Utah

- Prioritize DCFC infrastructure investment along I-80 leading to Nevada, I-84 leading to Idaho, highway 191, and highway 50.
- Work with gateway communities near Capitol Reef National Park, Flaming Gorge National Monument, Glen Canyon National Recreation Area, Grand Staircase-Escalante National Monument and Bryce Canyon National Park to install DCFC infrastructure, or work directly with these parks to provide Level 2 stations at the park.
- Work with electric cooperatives to explore opportunities for promoting EV adoption in their service territory through education and awareness activities.

Wyoming

EV Registration and Rural Infrastructure Gaps

As of 2018, there were approximately 170 battery-electric vehicles and 180 plug-in hybrid electric vehicles registered in Wyoming; about 100 of those vehicles were Tesla models.²⁵ EV adoption has steadily increased since 2015, and is expected to continue to grow as more EV models are introduced to market.

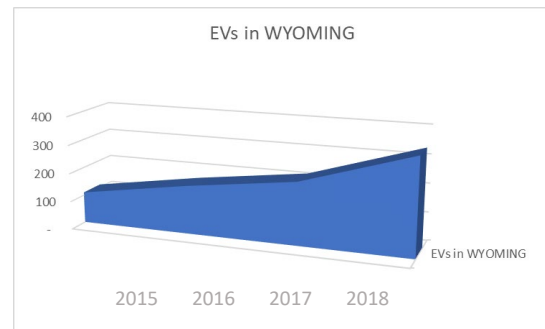
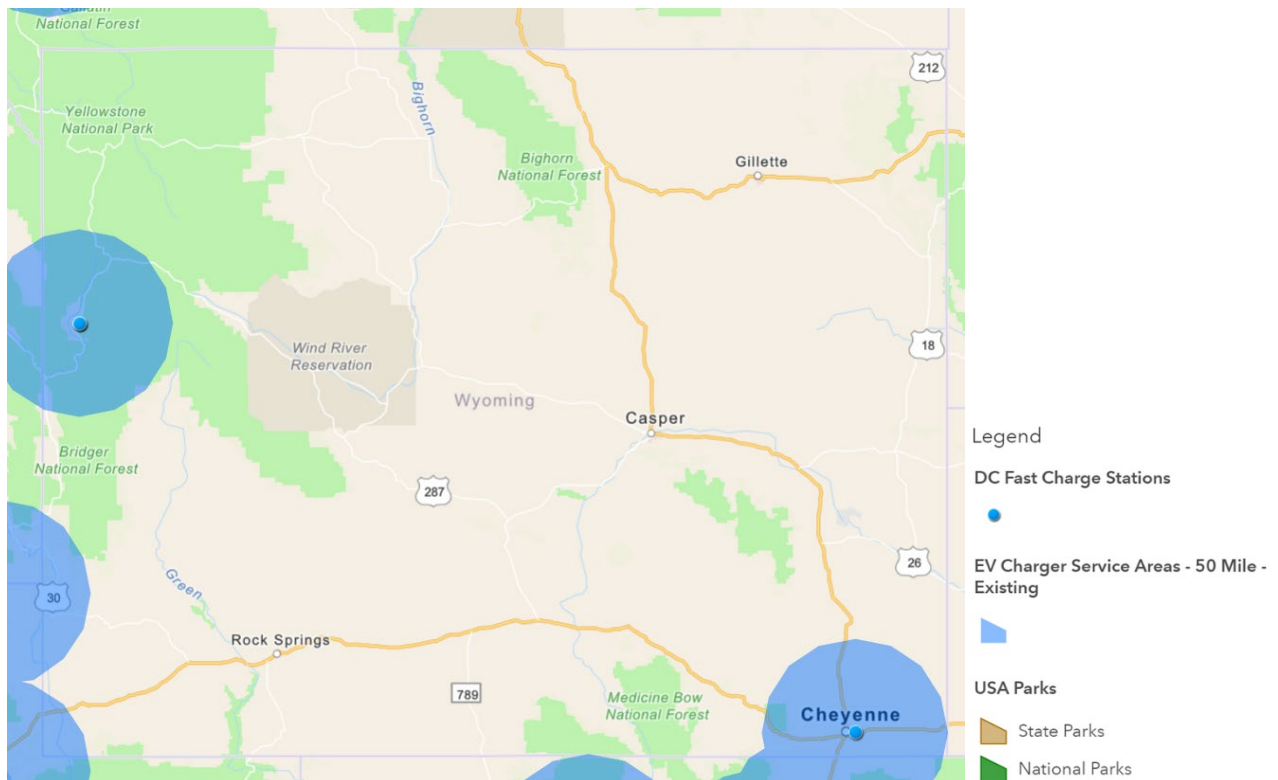


Figure 20: EV Registrations in Wyoming, 2015-2018

Wyoming currently has 65 Level 2 EV charging ports, 3 DCFC ports, and 2 unique DCFC station locations across the state.²⁶ As can be seen in the map below, the DCFC stations are located in Cheyenne and Jackson; the Jackson station is near Grand Teton National Park. There are a number of opportunities for DCFC station investment along interstates and highways across the state, as well as near the entrances to several national parks, including Yellowstone, Devil's Tower, Fort Laramie, Flaming Gorge, and Fossil Butte.

Figure 21: DCFC Stations in Wyoming



²⁵ Derived registration counts by the National Renewable Energy Laboratory

²⁶ U.S. DOE Alternative Fueling Station Locator. Retrieved October 10, 2020. <https://afdc.energy.gov/stations/>. Excludes Tesla stations.

Questionnaire Summary: Barriers and Actions to Support EV Adoption

A questionnaire administered to stakeholders in Wyoming and other intermountain states provided insights on perceived barriers to EV adoption, and gathered information on actions local stakeholders are taking to support EVs. While there were limited responses from local governments and parks representatives, electric service providers or related stakeholders provided helpful information. Range anxiety and the remote nature of the respondents' community were cited as the top barriers to EV adoption, while charging station revenue streams were identified as the top barrier to DCFC investment. Offering financial incentives to reduce the cost of charging stations was cited as the most helpful action local and state governments can take to encourage further investment in EVs and charging stations, followed closely by setting long-term EV adoption goals, and increasing public awareness and education. Along those lines, ride-and-drive events, and highway signage to indicate locations of public fast charging stations were identified as two actions that would be helpful for improving public awareness and perception of EVs.

Only one respondent offered rebates or incentives for EV purchases or the installation of EV chargers, and only one respondent offered EV-only rates, with no respondents offering reduced or no demand charges for EV charging. One respondent offers services related to preparing new sites to host charging, two respondents offer EV charging to employees, and two respondents sponsor or promote EV charging to customers and/or fleets. All respondents expressed interest in owning and operating EV chargers, with one noting that they will only be interested in owning and operating EV chargers when it is cost-effective.

Opportunities to Support EV Adoption in Wyoming

- Prioritize DCFC investment along major interstate corridors and gateway communities near national parks, including Yellowstone, Devil's Tower, Fort Laramie, Flaming Gorge, and Fossil Butte.
- Work with investor-owned utilities and electric cooperatives to host education/outreach events (e.g., ride-and-drives, loaner vehicles, etc.).

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