Nevada State Plan for Electric Vehicle Infrastructure Deployment

NEVADA DOT
SAFE AND CONNECTED

July 2022

Executive Summary

The Bipartisan Infrastructure Law, formally enacted as the Infrastructure Investment and Jobs Act, dedicates $5 billion in formula funding for electric vehicle (EV) charging infrastructure, including $5.6 million for Nevada in fiscal year 2022. The Nevada Department of Transportation (NDOT) has led the development of this Nevada State Plan for Electric Vehicle Infrastructure Deployment to establish an interconnected network throughout Nevada. This plan is in partnership with stakeholders, using data to inform access and reliability.

NDOT's vision for this Plan is to provide a flexible framework that can be continually adapted to fit the needs of all Nevadans in an evolving EV landscape and provide the important partnership and structured guidance to continue the rapid expansion of EV infrastructure under the National Electric Vehicle Infrastructure (NEVI) program while prioritizing investment to optimize benefits for our communities. This Plan builds on the foundation established by previous state and private programs and investment in Nevada EV charging infrastructure. There are approximately 500[1] existing public and private charging locations built out across Nevada to date, according to the Alternative Fuel Corridor Data website. The Nevada Electric Highway program, led by the Governor's Office of Energy, set the foundation for state investment in EV charging, funding approximately 30 stations. Nevada Senate Bill 448,[2] signed in 2021, authorized an additional $100 million of initial investment in EV charging infrastructure as outlined in NV Energy's Economic Recovery Transportation Electrification Plan, with subsequent planning efforts underway. EV ownership is projected to increase from 2 to 7.4 percent by 2032. Nevada's strong history of partnerships across state agencies, local utilities, and private industry lays a foundation for collaborative EV infrastructure investment to optimize all available efforts and funding sources to accelerate the use of EVs and maximize the benefits of the expanding EV market.

Recognizing that the initial intent of this federal NEVI program is to build out the Alternative Fuel Corridors (AFCs), specifically focusing on designated corridors along the Interstate Highway System, Nevada has proposed a preliminary implementation plan for this initial phase using Fiscal Year 2022 (FY22) and FY23 funds to prioritize full build-out on all designated AFC interstates including Interstate (I-)11, I-15, I-80, I-580, I-215, and I-515.[3] This plan would ensure (1) installation of chargers every 50 miles along the interstate, unless a discretionary exception has been granted, (2) installation of at least four 150-kilowatt (kW) direct current fast chargers with Combined Charging System ports capable of simultaneously direct current charging four EVs, and (3) a minimum station power capability of 600 kW. After interstate build-out, NDOT will update this

1 https://afdc.energy.gov/stations/states

2 NV State Legislature. 2021. NV SB448. https://legiscan.com/NV/bill/SB448/2021.

3 NDOT nominated I-515 in Round 5 of AFC designations; however, no NEVI investment is proposed.

Plan for the next phase and beyond to further address designated AFC U.S. highways and state routes including State Route 28, U.S. Highway (US) 50, US 93, US 95, and US 395.

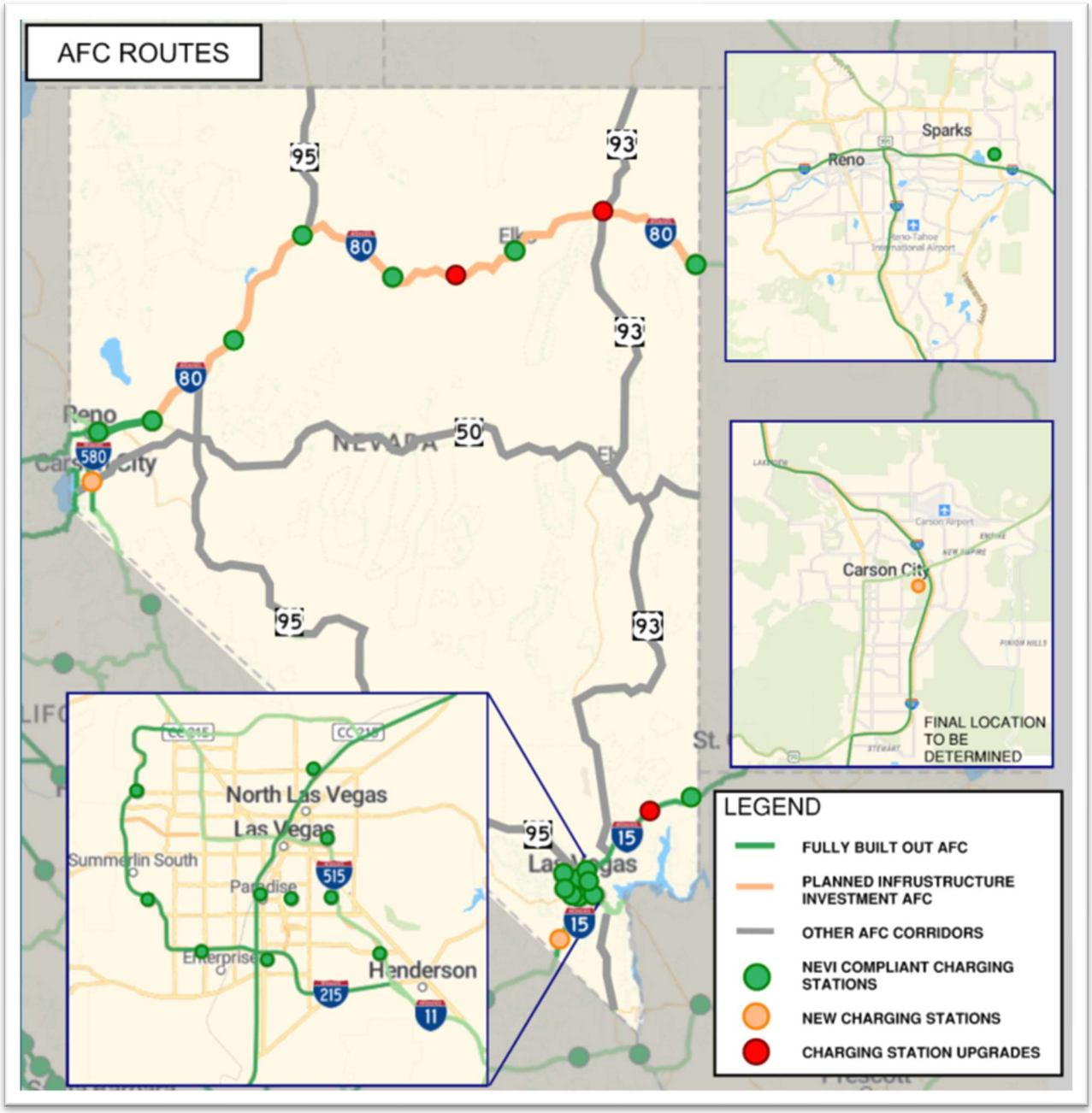

Figure 1. EV Charging along Alternative Fuel Corridors

Nevada's existing EV charging network along interstate designated AFCs has 17 stations that currently meet the NEVI program criteria (shown in green on Figure 1). This Plan proposes upgrades at three existing locations (shown in red on Figure 1), and two new stations (shown in orange on Figure 1). The precise locations of the new stations are not yet identified.

The EV landscape is different across each corridor, and Table 1 summarizes the proposed approach to achieve full build-out for each of the interstates. Given the rural nature along Nevada's interstates, NDOT is requesting four distance exceptions to the criteria for I-80.

Table 1. Approach to Full Build-out of Nevada's Interstate AFC

Interstate	Approach to Achieve Full Build-out
I-80	I-80 spans northern Nevada west to east. Existing stations in Reno and Fernley meet the distance and power requirements within the Reno-Sparks metropolitan area. A short distance exception is being requested between Fernley and Lovelock (55 miles) due to the need for significant utility investment. Another distance exception is proposed between Lovelock and Winnemucca (71 miles). The existing Rye Patch Level 2 charging station, approximately 23 miles northeast of Lovelock and 48 miles from Winnemucca, would again require significant utility investment. NDOT is requesting a third distance exception of 5 miles between Winnemucca and the Colt Inn Casino in Battle Mountain (55 miles) to optimize funds. Improvements along I-80 would include additional charging at the Carlin and Wells charging stations. These sites require an increase in the number of fast charging ports and the power supply. These upgrades are being coordinated with the rural utility and station owners. A final distance exception along I-80 is being requested from Wells to West Wendover (57 miles), near the Utah state line. This exception would allow NDOT to prioritize funding resources elsewhere. These upgrades and exceptions would accomplish full build-out along I-80.

Interstate	Approach to Achieve Full Build-out
I-15	Existing stations along I-15 within the Las Vegas metropolitan area meet the NEVI requirements. One upgrade between Las Vegas and Mesquite, near the Arizona border, is needed to meet the fully built-out designation for the current criteria. The current proposed upgrade is at Moapa to increase the number of fast charging ports and power supply. This upgrade is still being coordinated with the rural utility and station owner in Moapa. Additionally, there is a significant charging demand west of Las Vegas along I-15 toward the California border. Although this segment meets the current criteria within Nevada, the next charging station across the border is beyond the 50-mile limit. Thus, a new station is proposed in the areas of Jean and Primm, which aligns with local planning efforts and meets existing EV charging demand. NDOT is coordinating with NV Energy for this site as part of the Interstate Corridor Charging Program in the Economic Recovery Transportation Electrification Plan.
I-215	I-215 currently meets the NEVI requirements to be considered fully built out. There is an existing station at the outlet mall near the interchange of I-15 and I-215, and the interstate is 12 miles long. I-215 becomes CC-215 west of I-15, which is also fully built out from I-15 to US 95 with three stations along the corridor meeting the NEVI criteria.
I-515	NDOT nominated I-515 in Round 5 of AFC designations, but it was not officially designated at the time of this plan. This corridor supports the national EV charging network because it is important to travelers in Nevada, connecting traffic from Boulder City and Henderson to Downtown Las Vegas via a direct, high-speed route. This corridor currently meets the NEVI requirements to be considered fully built out, with three compliant stations along the 14-mile interstate corridor. No further investment along the I-515 corridor in charging infrastructure is proposed at this time.
I-11	I-11 currently meets the NEVI requirements to be considered fully built out. This corridor is 22 miles, and the charging station at Walmart in Henderson, Nevada, along I-515 is within 3 miles of the I-11/I-515 transition, providing a charging station along the 25-mile corridor (22 miles of I-11 plus 3 miles of I-515) that meets NEVI standards.

Interstate	Approach to Achieve Full Build-out
I-580	I-580 currently meets the NEVI requirements to be considered fully built out. The 38-mile corridor has a charging station within 2 miles of the I-580/I-80 interchange or within a contiguous 50-mile route of I-580. The station is located at the Target in Sparks within 1 mile of I-80. Additionally, because I-580 connects Carson City as well as the communities farther south along US 395, a new station is proposed in Carson City coordinating with NV Energy for implementation within the Urban Charging Depot Program as part of the Economic Recovery Transportation Electrification Plan. This aligns with local planning efforts, would support the I-580 interstate network, and would provide EV charging for the state routes connecting into California near Lake Tahoe.
Other State Routes: US 95, US 93, US 50, US 395, SR 28	Existing and proposed EV charging along these additional routes that are designated AFCs will be further evaluated in future-year plan updates because this plan has focused on interstate corridors.

Within the past few months, NDOT has concluded several stakeholder collaboration meetings as well as individual meetings with state legislators, charging infrastructure owners/operators, and electric utility providers. Specifically, NDOT is working alongside NV Energy to optimize the parallel investment efforts within NV Energy's service territory, including evaluating opportunities for contracting and information reporting. NDOT is also working alongside the Nevada Rural Electric Association, and individual rural providers where applicable, to understand power availability as well as economic models for each rural EV charging station. NDOT has learned of some unique challenges regarding ownership and operating models in the rural areas. This outreach is helping to define roles and responsibilities moving forward, both for the initial site selection and the ownership and maintenance requirements relating to operations, data collection, and reporting for NEVI as outlined in the Notice of Proposed Rule Making. More collaboration after this Plan submittal is required before these roles and responsibilities are fully defined.

The initial upgrades and proposed stations described previously are intended to achieve the full build-out designation along Nevada's interstates, while allowing future flexibility. Future iterations of this Plan are intended to lay out a strategy for expanding the EV charging network along the remaining AFCs, recognizing that much of the stakeholder feedback was aligned with other locations where EV charging infrastructure is needed. Nevada will continue to look for funding opportunities that support these needs, both within this NEVI formula program and through discretionary grant programs. Additionally, future iterations of this Plan will consider requests for modifications/exemptions to the AFC designations or requirements where new EV charging infrastructure is cost prohibitive and use would be low due to the rural nature and limited power availability.

Furthermore, NDOT and Nevada EV stakeholders are fully committed to ensuring equitable distribution of the EV benefit across the state. The initial focus on meeting criteria requirements means that these proposed upgrades do not directly fall within any transportation disadvantaged communities (DACs) as currently mapped, however, the benefits of the proposed improvements are anticipated to impact all users on the transportation network, including those living in the DACs adjacent to these improvements where air quality is improved, and additional jobs are created. Future considerations for measuring equity and quantifying those benefits will include direct and indirect investment within the DACs, indirect benefits to the DACs, and investment in workforce development. These strategies are further outlined in the plan section.

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Acronyms

°F	degree(s) Fahrenheit
ADA	Americans with Disabilities Act
AFC	Alternative Fuel Corridor
CBO	community-based organization
CEC	California Energy Commission
DAC	disadvantaged community
DBE	disadvantaged business enterprise
DCFC	direct current fast charger
DOT	U.S. Department of Transportation
ERTEP	Economic Recovery Transportation Electrification Plan
EV	electric vehicle
EVSE	electric vehicle supply equipment
FHWA	Federal Highway Administration
FY	fiscal year
GHG	greenhouse gas
I-	Interstate
Joint Office	Joint Office of Energy and Transportation
kW	kilowatt(s)
kWh	kilowatt-hour(s)
MW	megawatt(s)
MWh	megawatt-hour(s)
NACFE	North American Council for Freight Efficiency
NDEP	Nevada Division of Environmental Protection
NDOT	Nevada Department of Transportation
NEVI	National Electric Vehicle Infrastructure
NPRM	Notice of Proposed Rule Making
NREA	Nevada Rural Electric Association
NREL	National Renewable Energy Laboratory

OEM	original equipment manufacturer
REV West Plan	Regional Electric Vehicle Plan for the West
RFP	request for proposal
SB	Senate Bill
SOC	state of charge
SR	State Route
TBD	to be determined
UAW	United Auto Workers
US	U.S. Highway
Working Group	U.S. Electric Vehicle Working Group

Introduction

As part of the Infrastructure Investment and Jobs Act, and after approval of this Nevada State Plan for Electric Vehicle Infrastructure Deployment ("Plan") by the Secretary of Transportation, the Nevada Department of Transportation (NDOT) was authorized to receive approximately $5.6 million in fiscal year (FY) 2022 and $38 million over the next 5 years under the U.S. Department of Transportation (DOT) Federal Highway Administration (FHWA) National Electric Vehicle Infrastructure (NEVI) Formula Program to "deploy electric vehicle (EV) charging stations and to establish an interconnected network to facilitate data collection, access, and reliability."[4]

NDOT is pleased to present this Plan, which describes Nevada's strategy to use its apportioned NEVI funds in accordance with federal guidance.

Nevada has a history of working to strategically deploy electric vehicle (EV) charging infrastructure to establish an interconnected network and build out the transportation corridors within the state with EV infrastructure. NDOT is taking advantage of this mature market and resources within the state to include the priorities of the NEVI program to build out the interstate networks to updated standards. NDOT looks forward to this federal program supplementing the previous and ongoing statewide efforts to expand access to EV infrastructure for all people living, working, and traveling through Nevada. NDOT aligns with partner agencies in envisioning "a future where everyone can ride and drive electric."[5]

The content of this Plan follows the template laid out by the Joint Office of Energy and Transportation (Joint Office) and emphasizes the approach to deployment primarily in the first year of funding availability. Additionally, there are strategies offered for consideration in future years, with the intent to make this a live strategy that continues to evolve with the rollout of funding and guidance.

Dates of State Plan for Electric Vehicle Infrastructure Deployment Development and Adoption

Program funds are directed to designated Alternative Fuel Corridors (AFCs) to build out a convenient, reliable, affordable, and equitable public charging network. States should first prioritize investments along the Interstate Highway System.

This Plan, produced in July 2022, is intended to outline the Year 1 strategy for deployment of the NEVI funds, focused on building infrastructure to allow Nevada's interstate corridors to be upgraded to "Corridor Ready." This Plan also outlines strategies that will be considered in plans for future-year development as a more flexible schedule would allow.

[4] https://afdc.energy.gov/laws/12744
[5] https://driveelectric.gov/

NDOT's intended roles include facilitating the NEVI program, which comprises identifying a deployment strategy, ensuring alignment with other statewide electrification efforts, and verifying that federal guidelines are met by working collaboratively with the end recipient of the federal funds.

State Agency Coordination

To develop a plan that integrates Nevada's range of EV experience and expertise, NDOT established a working group of a wide range of stakeholders. Within this group, there are two participant categories:

1. A core team of state agencies and quasi-agency representatives whose members have and will continue to serve as contributors to the Plan. Although not technically state agencies, the core team included the electric utilities as core partners in developing the NEVI Plan.
2. A technical advisory committee whose members will be advisers to the Plan

To date, the core working group has met four times to review and comment on the Plan. The group will continue to meet regularly through 2027. Participants include the following key contributors:

- Governor's Office Infrastructure Advisor
- Governor's Office of Energy
- Governor's Office of Economic Development
- Office of the Governor Senior Climate Advisor
- Nevada Department of Agriculture (Weights & Measures)
- Nevada Department of Conservation and Natural Resources
- Nevada Department of Tourism and Cultural Affairs
- Nevada Department of Business and Industry
- Nevada Department of Environmental Protection
- Nevada Office of Science, Innovation and Technology
- Nevada Department of Motor Vehicles
- Nevada Department of Administration
- Nevada State Parks
- Public Utilities Commission of Nevada
- NV Energy
- Nevada Rural Electric Association
- Washoe County Air Quality Management Division (Washoe County Health District)

- Clark County Department of Environment and Sustainability
- Federal Highway Administration – Nevada Division
- Regional Transportation Commission of Southern Nevada
- Regional Transportation Commission of Washoe County
- Tahoe Regional Planning Agency
- Carson Area Metropolitan Planning Organization

Most critical to NDOT's NEVI Plan is the feedback received from state agencies, including utilities, on programs that are already in place within Nevada, recognizing that Nevada state agencies first started promoting charging infrastructure build-out as far back as 2015. NDOT held meetings to discuss each of the Plan elements, particularly the NEVI specific requirements, and how they could be considered and incorporated in the other EV infrastructure initiatives that exist in Nevada. Currently, key EV infrastructure programs NDOT is considering and coordinating with in this planning effort include the following:

- The Nevada Governor's Office of Energy Nevada Electric Highway Program
- NV Energy's Programs including:
  - Economic Recovery Transportation Electrification Plan (ERTEP)
  - Electric Vehicle Infrastructure Demonstration Program (EVID)
  - Transportation Electrification Plan (TEP)
- Regional Electric Vehicle Plan for the West (REV West Plan)
- Tahoe-Truckee Plug-in Electric Vehicle Readiness Plan
- All-In Clark County Transportation Electrification Working Group (TEWG) 2022 All-In Clark County Regional Transportation Electrification Strategy (under development)

In line with NDOT's priority of building a plan that addresses all of Nevada's citizens, conversations were also held with elected officials in the state with the primary focus of understanding supplementary and original ways to engage specific stakeholders in Nevada, particularly in disadvantaged communities (DACs). NDOT met with Dr. House, a local community advocate. She provided insight into how planning for the build-out of EV infrastructure is an opportunity to recognize the digital divide in DACs and consider this in outreach efforts but also noted that broadband and fiber optics are key components of charging infrastructure and that ancillary benefits should also be considered. Dr. House discussed methods of scaling outreach and stakeholder engagement by partnering with those organizations that are already doing stakeholder engagement for other reasons. For instance, NDOT could partner with organizations that provide stakeholder engagement for energy efficiency programs. An innovative approach to outreach, Dr. House emphasized the importance of marketing material that targets a wide audience such as using activity books and project-based efforts that educate on the benefits of EVs.

Nevada state senator Spearman echoed the importance of multiplying and scaling outreach and stakeholder engagement, particularly through partnerships with nonprofit organizations. Spearman emphasized engaging organizations that provide for gradient discussions, noting that veterans' organizations have wide reach and resources for outreach on topics such as energy independence, a connected topic to vehicle electrification. Spearman noted the significance of educating government representatives on understanding the value of the vast array of gradient benefits and opportunities that come with the transition to EVs such as new avenues for entrepreneurs.

Public Engagement

NDOT realizes that to meet the outreach objectives, the team must communicate material decisions and key messages effectively. NDOT has taken advantage of existing transportation electrification efforts to gather public feedback that has informed the drafting of this Plan. Additionally, NDOT plans to develop additional means of communication in transportation electrification. As more engagement activities take place and as more is learned, NDOT expects the list of public stakeholders to expand.

To date, public and stakeholder input that has informed the Plan's development was derived from a mix of activities led by NDOT and its partners, described as follows.

Stakeholders Involved in Plan Development

Stakeholder input was gathered from the working group meetings noted previously in the State Agency Coordination section, a series of interviews, and particularly a comprehensive survey administered by REV West, a partnership of western states that calls for participating states to work cooperatively to establish policies that will support the development of EV charging stations along major transportation corridors that link the states together. Receiving over 20 responses, the survey requested feedback pertaining to company characteristics, company equipment, systems and policies, and guidance on state policy and plan development.

Interviews

Interviews with electric vehicle supply equipment (EVSE) providers, original equipment manufacturers (OEMs), and other service providers were held to better understand their ongoing efforts in the state of Nevada, and their interest and expertise in participating in the NEVI Plan implementation. Interviews were held with Electrify America, Siemens, Tesla, Shell Recharge Solutions (formerly Greenlots), and EVgo. Some common themes from these interviews are summarized as follows:

- A strong willingness to participate in the implementation of the NEVI Plan, including financial contributions to support the 20 percent matching requirement.

- Acknowledgment that some rural sites will be less profitable than urban sites. A range of suggestions were offered to encourage development of infrastructure in rural areas, such as the following:
  - Offer more funding in rural areas, and less funding in urban areas—or even use NEVI funds exclusively for rural areas.
  - Rank sites on a dollar per kilowatt (kW) basis based on estimated construction and operation and maintenance costs.
  - Engage with the rural electric utilities, which are often in a better position to build and operate rural sites recognizing additional funding may be needed for support the 20 percent match.
  - Implement complementary programs, such as line extension policies or rate payer support, which can provide more competitiveness in securing grants in rural communities.
- In areas with limited access to utility power supply, the cost of developing solar generation could be offset with a small solar system or a colocated larger solar facility that could service a small community to generate additional revenue.
- Desire that NEVI funds not be limited to upgrading existing sites, which could be more costly than investing in new sites.
- Recommend competitive procurement process that builds in flexibility. For instance, a process that allows companies to bid on one or more sites.
- Identify areas of greatest interest and award points in a scoring metric bidder evaluation process based on proximity to the areas of interest.
- Allow build at risk, in which applicants are allowed to start development and be reimbursed if awarded funding later.
- Screen applicants to ensure reputable, financially stable partners in infrastructure build-out.
- Buy America requirements: There are several suppliers that offer Buy America–certified EVSE products. Additionally, several suppliers are in the process of building U.S.-based manufacturing facilities. However, there is a risk that U.S. manufacturing will not keep pace with rapid deployment under the NEVI program.
- Data sharing: All are supportive in general and understand the need to share data. There are concerns over data privacy and data management. Most indicated that they would provide comments directly to the Joint Office and recognize that NDOT will follow local and federal program requirements. Additionally, NDOT will endeavor to define program data requirements well early in the procurement process and ensure that vendor costs for the required data are clearly understood in bid responses and evaluation process.

- Rent payments: There is some concern that property owners may start charging equipment operators rent for access to parking spaces. Many would like to see rent payments excluded from reimbursable NEVI expenses as this could increase the cost of stalls and increase the total cost of EV ownership.
- Workforce and workforce development: Several of the larger companies have extensive training programs and/or partner with community colleges.

REV West Survey

NDOT gathered additional insights from OEMs and EVSE providers through their participation in a survey conducted by REV West. Under the umbrella of the National Association of State Energy Officials, eight western states, including Nevada, formed REV West to "[create] best practices and procedures to enhance EV adoption, [coordinate] on EV charging station locations, [create] voluntary minimum standards, and [leverage] economies of scale."[6] The REV West survey was conducted to better understand OEMs' and EVSE providers' thoughts on NEVI funding. Key takeaways from the survey are noted as follows.

OEMs and EVSE providers supported a data-driven, flexible, and clearly defined scoring system that streamlines NEVI funding allocation to qualified candidates. OEMs and EVSE providers indicated support for the federal criteria to build EV charging stations every 50 miles along designated AFCs. Several respondents indicated that once the minimum 50-mile distribution has been achieved, states should focus on other network connections to support a "national backbone" for EV travel across the United States.

Respondents supported the minimum standard of four upgradable 150-kW chargers, especially in rural areas where EV adoption rates are likely to be low in the near term. Responses indicated the trajectory of the EV market toward more powerful charging equipment and a need for 350-kW–capable stations to minimize downstream upgrade costs. Several stakeholders expressed interest in prioritizing charging capacity over 150 kW to support more powerful vehicles, consumer confidence, and long-distance travel. The "Oregon Quad Pod" station design was highlighted as a model for future-proofing stations, which requires at least one 350-kW charger for each new charging station. Responses suggested that NEVI funding should avoid a prioritization process that facilitates overcrowding charging station access or enables an over-representation of service providers within geographic areas. Return on investment was considered a priority for stakeholders to ensure that investments into EVs balance cost against vehicle capacity and charging station requirements. Dedicated and ongoing grant funding was considered an important factor in developing EV infrastructure.

Supply chain issues, particularly the long lead times to acquire charging station transformers, were seen as a leading challenge to the EV industry today. A workforce gap was highlighted where skills are needed to install, report, maintain, and replace charging equipment, and handle the intricacies of different models and designs of charging stations from multiple manufacturers.

6 https://www.naseo.org/issues/transportation/rev-west

Other challenges and barriers that were reported include vandalism, internet network connectivity especially in underground locations, consumer range anxiety, complex permitting systems, and operational costs in areas with low utilization.

Stakeholders indicated that the key elements to expanding EV adoption include a common payment system, robust cybersecurity, appropriate station design to accommodate different vehicle types, and expansion of education and public engagement.

Stakeholder Involvement Moving Forward

Working group meetings and interviews will continue to ensure successful implementation of the FY22 Plan and development of the FY23 and forward Plans. Additional outreach efforts will at a minimum include Tribal governments, veterans, ride-share companies, gas station owners, public safety companies, credit unions, and car dealerships. Car dealerships could host community ride-and-drive events to educate the public on the various EVs (both used and new) and allow them to operate and learn about all of the positive features of driving electric. A focus on drivers in DAC areas will help drive program success by encouraging DAC drivers to purchase an EV when they are making future vehicle choices.

Public Outreach

Due to the short time to develop the NEVI plan, NDOT focused on stakeholder outreach for this initial effort, and gleaned key points from the previous outreach with the public completed by NV Energy, Nevada Governor's Office of Energy, and the local MPOs, with a focus on the most recent NV Energy outreach. Future public outreach will continue to be integrated with NV Energy's ongoing outreach and extend to the rural areas outside NV Energy's jurisdiction.

In 2021 the Governor of Nevada signed into law Senate Bill (SB) 448, which in part requires NV Energy, the largest public electric utility in the state, to file a plan to accelerate transportation electrification in Nevada and directs that the plan include an initial investment of $100 million. NV Energy recently conducted, and is still conducting, extensive outreach to develop their plan—the ERTEP. The input and opinions received are also applicable to the NEVI program and helpful in the development of this Plan.

Their outreach process identified locations where people expressed an interest in charging station access and their thoughts on the factors, considerations, and barriers to EV adoption. Information on the resources surrounding EVs and charging station programs were available online through NV Energy's website (https://www.nvenergy.com/cleanenergy/ertep). A public event was held in Las Vegas in summer 2022 to highlight EVs and discuss the current and near-future plans for public charging across the state.

Nevada residents and tourists suggested locations for charging station access through NV Energy's Charging Location Input Survey (https://www.nvenergy.com/cleanenergy/ertep/charging-location-input). This survey asked respondents for an address to indicate interest in enabling access to EV charging. The survey results indicated that grocery stores

and other locations were among the locations with the greatest interest in EV charging access. Outdoor recreation and government/public buildings were the next most popular sites, and residential and school buildings were the locations with the least interest in EV charging access (Table 2).

Table 2. NV Energy Survey Results Summary

Location Type	Count (as of 6/6/2022)	Percentage
Grocery stores	77	23
Other	68	20
Outdoor recreation	59	18
Government/Public building	33	10
Retail stores	27	8
Entertainment	25	8
Healthcare	15	5
Restaurants	14	4
School building	14	4
Residential	10	3
Total	**332**	**100**

Source: https://www.nvenergy.com/cleanenergy/ertep/charging-location-input

Interest in EV charging access was primarily found in the large population centers of Reno/Carson City and the Las Vegas metropolitan area. The public also indicated an interest in EV charging in suburban, rural, and recreational communities such as Yerington, Tonopah, Lake Las Vegas, and areas surrounding Mummy Mountain. Figure 2 displays the requests by location.

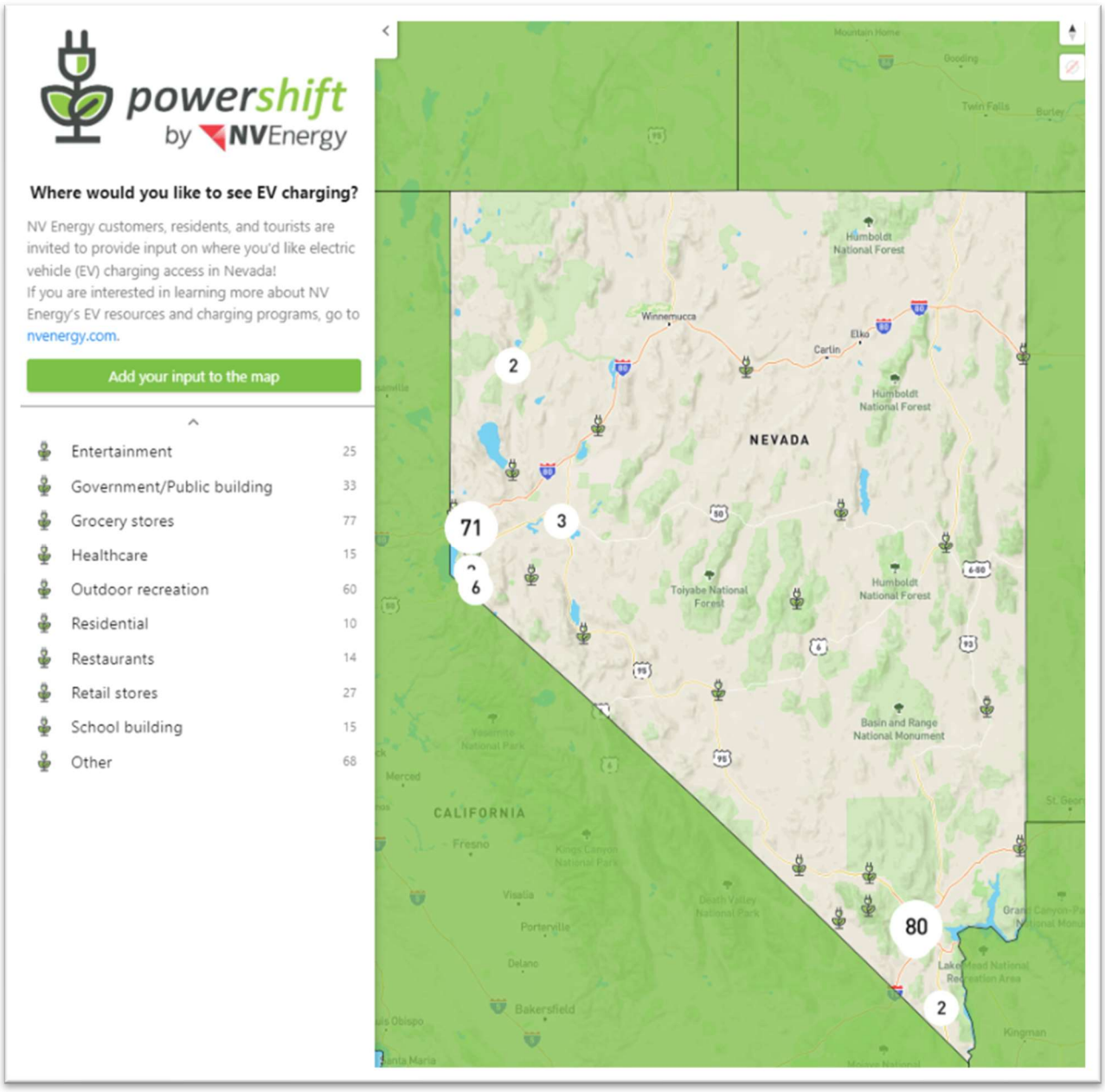

Figure 2. Charging Location Input Survey Results
Source: NV Energy

Public Outreach Moving Forward

NDOT will develop a website where their FY22 Plan will be made available to the public, and where information on the FY23 Plan development will be posted for review and comment. In addition, NDOT will develop a "presentation in a box"—materials for presenting to community and professional organizations as requested.

Plan Vision and Goals

Vision

NDOT's vision for this Plan is to provide a flexible framework that can be continually adapted to fit the needs of all Nevadans in an evolving EV landscape and provide the important partnership and structured guidance to continue the rapid expansion of EV infrastructure under the NEVI program while prioritizing investment to optimize benefits for our communities.

This Plan builds on the foundation established by previous state and private programs and investment in Nevada EV charging infrastructure. EV ownership is projected to increase from 2 to 7.4 percent by 2032. Nevada's strong history of partnerships across state agencies, local utilities, and private industry lays a foundation for collaborative EV infrastructure investment to optimize all available efforts and funding sources to accelerate the use of EVs and maximize the benefits of the expanding EV market, providing a safe, efficient, and connected transportation system.

Nevada is already a strong proponent of electrification and has been on the leading edge of EV policy and investment. NDOT intends to continue expanding EV infrastructure through this NEVI program. Regionally, Nevada is driving collaboration as a member and signatory of the REV West Plan to facilitate the build-out of an Intermountain West EV corridor. Nevada has progressively and increasingly prioritized investment in EV infrastructure. Highlights of this investment include the following:

- The Nevada governor declared a renaming of U.S. Highway (US) 95 to the Nevada Electric Highway in June 2015. A network of EV charging stations has been constructed along US 95 between Reno and Las Vegas.
- "In late 2015, Congress directed DOT to identify and establish alternative fueling corridors to support alternative fueling stations, including electric, hydrogen, propane and natural gas fueling infrastructure at strategic locations along major national highways."[7] The FHWA designation process began. In Round 1, Nevada designated Interstate (I-)80, I-15, US 50, and US 95 to be identified as EV corridors.
- Nevada added I-580, I-11, I-215/State Route (SR) 215, SR 28, US 395, and US 93 to its list of EV corridors in the next four rounds of open nominations.
- NV Energy's ERTEP has committed to an initial investment of nearly $100 million to expand EV charging infrastructure from 2022 through 2024.
- Tesla's Gigafactory is located in Storey County, Nevada, supplying batteries and other EV components.

[7] https://www.natso.com/topics/fhwa-call-for-next-round-of-alternative-fuel-corridor-nominations

In addition to these significant investments, many interconnected organizations within Nevada are developing EV guidance, plans, and programs. This NEVI Plan will continue in the vein of bold action that reduces barriers to EV adoption by working with these stakeholders to avoid duplicating efforts and instead complement these existing programs to fill the gaps and provide state-level strategic leadership for all of Nevada.

Development of an interconnected EV network will serve as a catalyst for progress on Nevada's already identified priority policies including achieving climate goals, promoting equity, and diversifying the economy.

Transitioning vehicles from gas powered to electric will allow Nevada to boost the impact of benefits from its clean energy generation. The report *Nevada Statewide Greenhouse Gas Emissions Inventory and Projections, 1990-2041*[8] identifies the transportation sector as the leading contributor to greenhouse gas (GHG) emissions in Nevada since in 2015. At the same time, the energy generation sector has been on a path to becoming a leading producer of clean energy. Vehicles powered by Nevada's increasingly clean electricity will decarbonize transportation and amplify the GHG reductions of each sector individually to contribute to achieving Nevada's ambitious climate goals. NDOT has coordinated with Nevada's energy providers to look for ways to optimize use of clean energy in the EV space.

Widespread EV adoption has the capacity to support and accelerate a diversified economy that incorporates new skills in the construction, operation, and maintenance of EV infrastructure, jobs required to meet the increased electricity generation need, and a diverse array of jobs associated with the changing vehicle needs and movement patterns. Developing an interconnected EV network will accelerate Nevada's already identified priority policies.

Equity consideration will be an integral part of this Plan and will ensure that the funds used to build EV infrastructure in Nevada are consistently moving Nevada closer to a vision of a state where everyone can prosper and share in the benefits of investment. The equity section in this plan outlines near-term and long-term goals and evaluation metrics to ensure accountability in this area.

Goals

The goal of this NEVI Plan at the highest level is to take meaningful steps toward realizing an interconnected EV network that meets the needs of existing users while anticipating and inducing increased future demand. The more specific, actionable goals of this Plan are anticipated to build and evolve throughout the next 5 years. Initial years will be focused on establishing a baseline and defining a strategic approach alongside immediate infrastructure improvements with additional goals and metrics proposed in future years. Continual refinement of this strategy alongside NDOT's key partners, including the Governor's Office of Energy, will ensure that success is coordinated and optimized over the full 5 years of this program.

[8] https://ndep.nv.gov/uploads/air-pollutants-docs/ghg_report_2021.pdf

The primary goals of this Plan, in this first year, are two-fold:

- To define the methodology for ensuring that NEVI funds in Nevada are deployed strategically alongside other Nevada EV investments to maximize the benefit to communities and the traveling public
- To apply this framework to bring the existing interstates proposed as AFCs up to meeting the full build-out standards under the current NEVI requirements

The first goal, to define our unique methodology, will be ongoing throughout Year 1 as we continue stakeholder engagement, synthesize available data, and move through the experience of implementing initial stations. The second goal, to fully build out all interstates designated as AFCs in Nevada, is an important step for this first year and a measurable outcome we will target. Metrics and more details regarding tracking against these goals are discussed in more detail in the Program Evaluation section of this Plan.

Contracting

NDOT's primary consideration in the contracting consideration of NEVI is to leverage existing programs across the state that have been or are currently successful. The federal contracting requirements are an added layer beyond the state-funded procurements enacted to date, and NDOT will work with the existing programs to administer the federal requirements to facilitate the federal funding.

On the Nevada Electric Highway, the Nevada Governor's Office of Energy provided a subgrant process to electric service providers, and they either owned the sites or executed third-party host site agreements. Subgrantees selected sites based on general guidance provided. This type of contracting mechanism is the most beneficial to ensure that the utility company is well coordinated with the station owners and operators from a technical and financial perspective. For the future build-out of new stations with generic locations defined, NDOT plans to work through a similar system. NDOT is evaluating ways to contract with NV Energy and the rural power providers to allow funds to flow through their existing programs, allowing them to manage the contractors and construction. NDOT would maintain oversight through a partnership to ensure that NEVI technical and federal funding requirements are met.

The approach for Year 1 is similar, but the difference is that there are three specific site locations that help meet the Corridor Ready requirements of NEVI. The Year 1 contracting approach is to work with existing site owners where upgrades are proposed and NV Energy where the new sites are proposed in alignment with their plans. NV Energy is currently procuring additional upgrades to grid capacity through renewable energy and intends to follow on with procuring additional EV charging infrastructure. NV Energy has already developed goals and criteria required for their deployments that are in alignment with the NEVI standards.

Similar to the NV Energy collaboration, the proposed upgrade sites are being coordinated with the rural utilities. Specifically, the Carlin and Wells proposed upgrade stations on I-80 are

outside a grocery store and in a municipal district, respectively, but owned and operated by the rural utility, Wells Rural Electric Company. Similarly, the Moapa upgrade station along I-15 is operated by the local gas station, in partnership with the Overton Power District. Shell, formerly Greenlots, currently provides remote operations support at the three locations. Additional investment in these locations could be directed at the utility for capital improvements to existing facilities and to support operations, maintenance, and reporting requirements. Alternatively, a separate procurement could solicit feedback from industry on willing partners who would engage and partner, with some capital funding coming from NEVI, in return for ownership of the stations. The rural utility providers are currently discussing the benefits and drawbacks, with a key consideration being the long-term operations and maintenance as well as the reporting requirements that come with the NEVI funds. The private match for these upgrades is still being coordinated with consideration for using state funds, the private sector funding, or rural public utility funds.

The first-year contracting is intended to support local utility efforts that were already underway or support existing stations to bring them up to current requirements supporting full build-out of the AFCs. This leverages existing ownership models to facilitate operations and maintenance. Future-year contracting options are still being evaluated.

Future Contracting Considerations

NDOT is considering competitive grants or request for proposal (RFP) solicitations in future years to implement NEVI funding. The NDOT solicitations are currently intended to align with NV Energy's solicitations that are ongoing and meet their current requirements to ensure consistency across the procurements while still addressing the NEVI program requirements.

NDOT's procurements to engage private investment would be different from the utility procurement. Investment supported with NEVI funds must be economically viable for the private sector, and the income generated must offset private investments. This economic model becomes more challenging in the more rural environments, where NDOT is considering offsetting operation and maintenance cost as additional support in the initial 5 years.

The remaining AFCs pose a challenge for meeting the "Fully Built Out" designation primarily because the power supply along US 95, US 93, US 395, and US 50 (next state priorities) is limited due to their remoteness. Under the current guidance, NDOT has requested and will continue to request the opportunity to eliminate some of these corridors. An allowance will ensure flexibility in meeting full build-out along networks where appropriate, and then opening spending of NEVI funds in areas that would be better suited for the EV charging public. NDOT currently intends to fully build out US 50 and US 95 with upgrades to existing stations, new construction, and exception reports starting in Year 2.

Some suggestions heard from the OEMs and other stakeholders to address concerns for remote locations include bundling procurements to allow economies of scale during solicitation and ensuring that the sales effort provides sufficient return on investment. Specifically, bundling investments in specific geographies or bundling investments of similar types is preferred.

The OEMs also noted that many of them have deployment plans to expand their networks within the state of Nevada, including Electrify America and Tesla. Ensuring that this Plan is coordinated and leverages private investment across Nevada is key to optimizing the federal and private investment.

Metropolitan planning organizations within Nevada also have a keen interest in EV charging for their specific areas, and some have their own development plans. The *Tahoe-Truckee Plug-in Electric Vehicle Readiness Plan* was developed in 2017, and a planning effort is underway in Clark County related to transportation electrification. As the NEVI formula funding becomes more flexible as the designated AFCs are fully built out, or as the NEVI discretionary grant funding becomes available, NDOT will partner with local stakeholders to define the current needs and identify plans for investment that align with the broader build-out of Nevada EV charging infrastructure.

Existing and Future Conditions Analysis

State Geography

Nevada borders the states Oregon, Idaho, California, Arizona, and Utah. Nevada is the most arid state in the country, largely a semi-arid desert plateau. The state is 492 miles long and 322 miles wide, with some mountain ranges reaching above 13,000 feet. The average elevation is approximately 5,000 feet across the northern and central region but sinks to 2,000 to 3,000 feet in the southern region. Nevada has 172 mountain summits with 2,000 feet of prominence and ranks second in the nation by number of mountains behind Alaska. There are four geographic features—sandy deserts, rugged snow-covered mountains, forest mountain slopes, and grassy valleys—all of which provide for geographically different needs in NDOT's NEVI Plan.

Climate

The southern third of the state is within the Mojave Desert and is characterized by scorching summer days (average daily temperature 106 degrees Fahrenheit [°F]) and mild winters (average daily temperature 56°F). The northern and central regions experience milder summers (average daily temperature 89°F) and cold winters (average daily temperature 45°F). Nevada is the driest state in the nation, with most areas receiving scarce precipitation during the year. Most of the rain that falls in the state falls on the east and northeast slopes of the Sierra Nevada mountain range along the border with California. In the southeast, annual precipitation is usually less than 4 inches. The northeast has only 8 inches of precipitation, whereas northwestern mountains' precipitation can reach 24 inches annually.

Based on the Federal Emergency Management Agency National Risk Index, extreme weather risks are relatively high in Clark County (which includes Las Vegas), which has relatively high possibility for earthquakes, heat waves, riverine flooding, and wildfires. Extreme weather risks are also relatively high in Washoe County (which includes Reno), which has relatively high possibility for earthquakes, riverine flooding, and wildfires. Other parts of the state have relatively moderate or low risk of those extreme weather events. Climate change is expected to increase the likelihood of heat waves and wildfires.

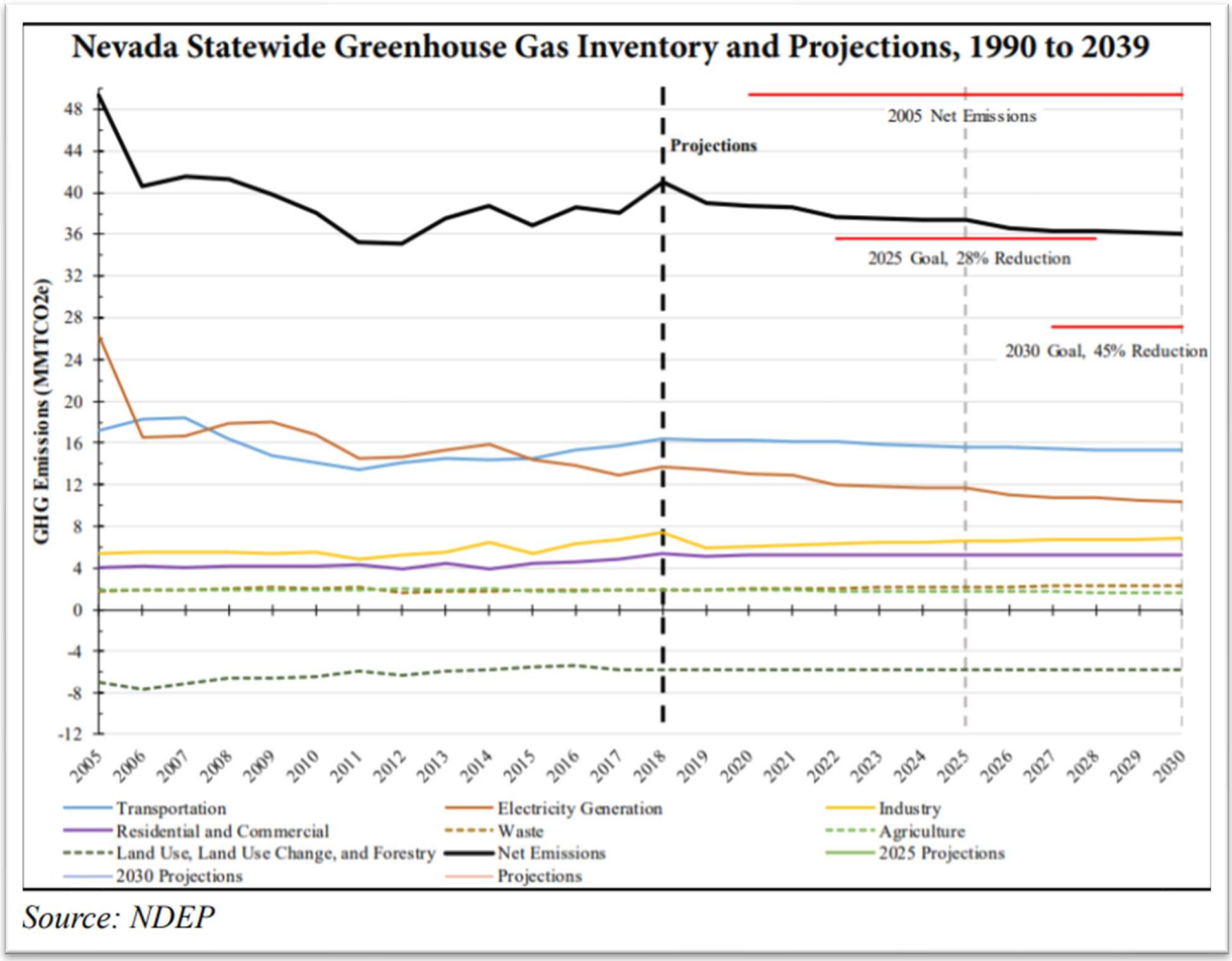

Figure 3. National Electric Highway Report
Source: NDEP

Governor Sisolak has prioritized fighting climate change through joining the U.S. Climate Alliance, passing SB254, executing an Executive Order 2019-22, completing a GHG inventory, and most recently passing SB448 supporting clean energy and, in turn, EV infrastructure reducing GHGs in the transportation sector. This support for fighting climate change is critical when reviewing data on GHG projections. The *Nevada Electric Highway* report shows the GHG emissions by industry in Nevada, demonstrating the importance of prioritizing transportation (Figure 3).

Land Use Patterns

Most of the population of Nevada is divided between two metropolitan areas: Reno and Las Vegas. These areas account for 89 percent of the total population, with Las Vegas containing 75 percent as well as three of the four largest incorporated cities. The remainder of the population is considered frontier and remote, divided among small rural towns. Figure 4 shows Nevada's population density per the 2010 census.

About 85 percent of the land in Nevada is federally managed, with the majority through the Bureau of Land Management. The top three land uses in Nevada are livestock grazing and rangeland (85 percent), irrigated cropland (9 percent), and urbanized (6 percent). These are key considerations in building out Nevada's most rural corridors.

The federal ownership of much of Nevada means access to power and communication infrastructure, both critical to EV charging, is limited in these areas.

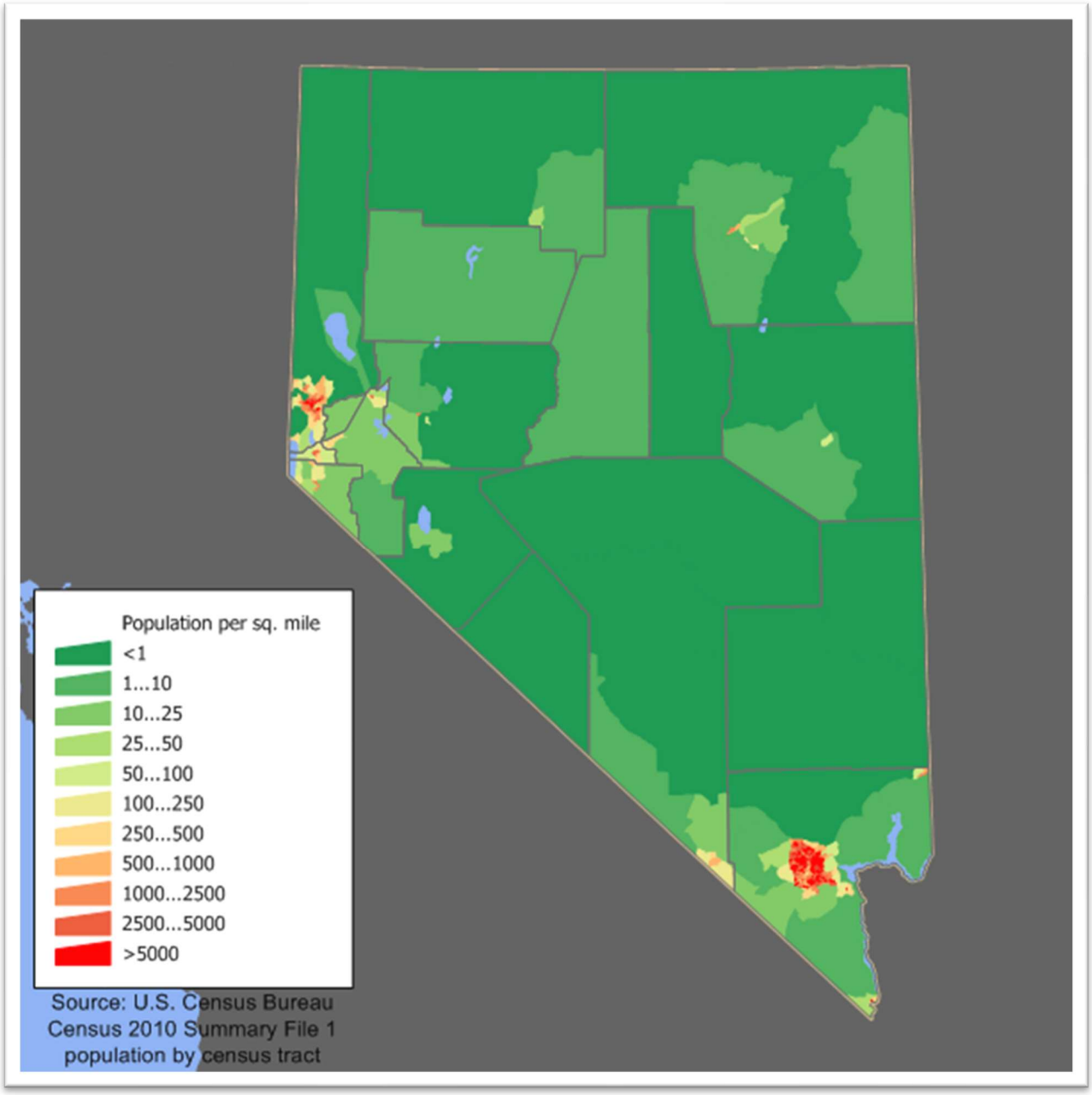

Figure 4. Nevada Land Use
U.S. Census Bureau

State Travel Patterns

Most of the travel patterns consist of commuting patterns for working individuals. These data are commonly referred to as "journey to work" data, which describe where drivers start their commute from their place of residence to their place of employment. These data include both in-state and out-of-state commuters, which is common among all states in the United States. Most of the state of Nevada is somewhat isolated, geographically. From data taken in 2000, about 1.6 percent of commuters traveled from out of state. About 15,000 commuted across state borders, and 33,000 "incommuters" traveled into Nevada from other states for work. Because the state's major cities, Reno and Las Vegas, are close to the state borders, there is a rise in the number of incommuters who live in surrounding states.

Interstate 15 (I-15) passes through southern Nevada, serving Las Vegas and surrounding communities, and connecting California with Arizona and Utah. I-215 and I-515 also serve the Las Vegas metropolitan area as spur interstates. I-80 crosses through the northern part of Nevada, roughly following the path of the Humboldt River from Utah in the east and the Truckee River westward through Reno into California. It has a spur route, I-580 which connects down to Carson City and Lake Tahoe. Nevada also is served by several U.S. highways: US 6 and US 50, running east-west through the northern part of the state; US 93 and US 95 running north-south through the state; and US 395 running north-south on the western edge of the state. There are also 189 Nevada state routes. Nevada is one of a few states in the U.S. that do not have a continuous interstate highway linking its two major population centers – the road connection between the Las Vegas and Reno areas is a combination of several different Interstate and U.S. highways. A future expansion of these routes to complete an Interstate 11 is intended to connect these population centers in the future.

See the data analysis section for further information on travel patterns.

Access to EV charging has been focused in the urban areas where there is more dense population, shorter trips focused on typical commuting patterns, and existing utility infrastructure to support charging. The state's rural travel patterns are unique in that there is often a single roadway connecting the rural cities or towns with limited infrastructure or population along these rural segments of road. This low-density development makes building and operating EV charging infrastructure most viable in the rural towns where there are other destinations.

Public Transportation Needs

In Nevada, public transit consists of mainly urban, small urban, and rural transportation providers. Larger organizations, such as the metropolitan planning organizations, provide transit to large and small urbanized areas, whereas smaller local public entities or human service organizations provide public transit to rural areas.

The NDOT Multimodal Planning Transit Office provides program administration funding assistance for rural public transit agencies. It is responsible for the state administration of the transit program subrecipient oversight, and the approval of pass-through funding from the Federal Transit Administration. The State of Nevada uses an approved State Management Plan, which outlines the responsibilities from the state and all program subrecipients.

Freight and Other Supply Chain Needs

Adoption of EV Trucks

Zero-emission trucks are expected to experience rapid growth in the coming years, which will require diligent planning to locate and build the infrastructure needed to support these vehicles. Nevada established aggressive GHG emissions-reduction targets with the passage of SB254 in 2019: 28 percent by 2025, 45 percent by 2030, and net-zero (near-zero) by 2050. The state has established policies and programs needed to achieve these targets, including adopting low- and zero-emissions vehicle standards and implementing a clean truck program.

California is Nevada's largest trading partner, and the bulk of goods crossing the border come by truck. In June 2020, the California Air Resources Board adopted the Advanced Clean Trucks rule, which sets sales requirements for zero-emission heavy-duty trucks. Starting in 2024, 5 percent of Class 7 to 8 truck sales must be zero-emission, with the sales percentage increasing to 40 percent by 2035.[9] Additionally, the California Energy Commission (CEC) has engaged in concurrent analyses projecting the potential growth trajectories for zero-emission trucks in California. According to the CEC analysis, in order to meet the state's climate and air quality goals under Executive Order N-79-20, California could have as many as 180,000 zero-emission medium-duty and heavy-duty trucks on the roadways by 2030.[10]

Although developments in zero-emission truck technology are progressing rapidly, there are currently few electric heavy-duty trucks in operation. According to the North American Council for Freight Efficiency (NACFE), there were less than 100 battery-electric trucks and less than 50 fuel-electric Class 7/8 trucks among Class 7/8 vehicles on the roadway as of 2019. However, many automakers are in competition for the future of the electric truck market. In 2018, German automaker Daimler developed the Freightliner eCascadia, an all-electric 18-wheeler with a 250-mile range.[11] Volvo has a zero-emission truck, the VNR Electric, on the market with a 150-mile range, and is currently partnering with Daimler on a hydrogen fuel-cell truck model. Tesla, a known leader within the light-duty EV market, is currently in production for two different Tesla semitrucks, one with a 300-mile range and another with a 500- to 600-mile range. Finally,

9 https://ww2.arb.ca.gov/sites/default/files/barcu/regact/2019/act2019/fro2.pdf

10 California Energy Commission. 2021. *Assembly Bill 2127 Electric Vehicle Charging Infrastructure Assessment: Analyzing Charging Needs to Support Zero-Emission Vehicles in 2030*.

11 https://www.greenbiz.com/article/keep-your-eyes-these-9-electric-truck-and-van-companies-2021.

U.S.-based Nikola Motor is currently developing two different semitrucks with electric or hydrogen fuel-cell electric technologies, with ranges between 500 and 700 miles.

EV Truck Charging Considerations

To support EVs, there are three levels of EVSE: Level 1, Level 2, and direct current fast chargers (DCFCs), as shown in Table 3. Level 1 and Level 2 chargers can provide power of up to 20 kW, making these types of chargers more suitable for light-duty EVs as well as some medium-duty EVs. DCFCs, alternatively, are classified as providing a wide range of power, anywhere from 50 kW to 1 megawatt (MW), making them suitable for rapid charging of light-duty vehicles as well as charging of heavy-duty vehicles with larger batteries.[12] As such, DCFCs are the focus within the electric truck sector.

Table 3. Characteristics of Electric Vehicle Supply Equipment

Type of Charger	Voltage (V)	Power (kW)	Typical Charging Time[1]
Level 1	120	1.9	~1 mile of range per hour
Level 2	208–240	7.2–19.2	4–8 miles of range per hour
DCFC	480	72–350	30–150 miles of range per hour

Source: North American Council for Freight Efficiency. 2019. Amping Up: Charging Infrastructure for Electric Trucks.

[1] Charging time calculation based on a Freightliner eCascadia, with a 550-kilowatt-hour (kWh) battery and 250-mile range.

Nevertheless, electric charging remains at a disadvantage for fueling times when compared to other conventional and alternative fuel sources. According to analysis presented by NACFE, a 350-mile shift would require 5 minutes of fueling time for a diesel truck, 15 minutes for a compressed-hydrogen truck, and 2 hours for a battery-electric truck using a 500-kW fast charger.[13] Notably, although charging times could be faster under potential 1-MW chargers, the latest CEC analysis uses a 350-kW charger as the highest charging capacity, indicating a charge time of close to 3 hours.[14] Therefore, hydrogen fuel-cell technology currently presents a viable zero-emission substitute if there is a need to retain fast refueling times. Alternatively, in situations in which trucks have long rest periods, electric charging can take advantage of these rest periods to fuel the vehicles.

[12] North American Council for Freight Efficiency. 2019. *Amping Up: Charging Infrastructure for Electric Trucks*.

[13] https://nacfe.org/wp-content/uploads/edd/2019/12/Viable-Class-7-8-Alternative-Vehicles-Final-12-10-.pdf

[14] The NACFE analysis assumes an electric truck needs 1,000 kWh (1 MWh) to drive 350 miles. The number of hours needed to charge the truck is equivalent to the total energy needed (kWh), divided by the power output of the charge (kW).

Charging Infrastructure and Space Requirements

To understand the costs and energy requirements for electric truck charging infrastructure at a truck parking facility, this section analyzes a hypothetical example of a truck parking facility that will accommodate 20 heavy-duty electric trucks. This analysis will use the Freightliner eCascadia Class 8 truck, which features a 550-kilowatt-hour (kWh) battery with a range of 250 miles, as a typical electric truck that would be served by EVSE located at truck parking areas.[15] It is assumed that each truck will not operate below a state of charge (SOC) of 10 percent,[16] and will not charge beyond an 80 percent SOC,[17] which is recommended in order to maximize system efficiency, implying 385 kWh of energy needed per truck. Finally, if the parking area is intended to charge 20 trucks overnight, the parking area will need to supply around 7,700 kWh of energy (7.7 megawatt-hours [MWh]) to charge all trucks to an 80 percent SOC. This is equivalent to the amount of daily electricity used by about 260 houses in the United States.[18]

Considerations for Onsite Solar Generation

Onsite solar generation provides an opportunity for additional energy production at parking areas, with the ability to lessen demands on the grid. There are a handful of projects testing the deployment of solar panels to support EVSE for zero-emission trucks.[19] The first solar-powered truck stop in the United States for heavy-duty electric trucks is expected to open late October 2022 in Bakersfield, California.[20] The 25-MW, solar-powered, electric-only, 110-acre truck stop will feature a solar micro-grid with battery storage and grid energy from Pacific Gas and Electric, and over time will grow to support more than 40 charging bays.[21]

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15 This is one of the few long-haul electric trucks on the market and was used as an illustrative long-haul truck in the NACFE study titled *Amping Up: Charging Infrastructure for Electric Trucks*.

16 Sourced from HDR (2020). *West Coast Clean Transit Corridor Initiative.* Final Report. The report notes that continued deep discharge of below 10 to 25 percent can degrade the battery cells. The report used a 25 percent lower bound, but this report will use 10 percent to be conservative and show the maximum possible energy needed at a site.

17 HDR report uses 80 percent SOC as an upper bound, and other studies have corroborated that it is not optimal to charge beyond 80 percent of capacity (https://www.sciencedirect.com/science/article/pii/S2352484719310911).

18 Assuming the average home in the United States consumes about 29 kWh of electricity daily, per https://www.eia.gov/tools/faqs/faq.php?id=97&t=3.

19 North American Council for Freight Efficiency. 2019. *Amping Up: Charging Infrastructure for Electric Trucks*.

20 https://www.truckinginfo.com/10150943/solar-powered-truckstop-for-electric-truck-charging-to-break-ground-this-fall

21 https://www.truckinginfo.com/10143043/wattev-to-build-first-u-s-megawatt-electric-truck-stop

The National Renewable Energy Laboratory (NREL) offers a public tool called the PVWatts Calculator[22] that estimates the energy production of various solar array sizes depending on the climate conditions related to geographic location. According to NREL estimates, a 1-MW solar array located in Oakland, California, is predicted to produce around 1,500 MWh of power across the entire year, or roughly 4.25 MWh daily. If 20 trucks require nightly energy of 7.7 MWh, then a truck parking area would require a solar array size of at least 1.8 MW[23] to produce sufficient electricity.

In order to accommodate a solar array setup, space is required for not only the solar panels but also other related infrastructure. A survey analysis by NREL analyzed the direct land-use space needed for solar generation, including land occupied by the solar arrays, access roads, substations, service buildings, and other infrastructure. According to the survey, small fixed solar arrays (<20 MW) require roughly 5.5 acres of land per MW of power output.[24] Because 20 trucks would require a minimum solar array size of 1.8 MW, this would imply that roughly 10 acres of land would be required for the solar array infrastructure.

The onsite solar generation and supporting infrastructure costs, land area, and projected growth are some considerations that need to be balanced against other energy supply solutions such as grid energy.

Nevada's Utility Infrastructure and Grid Capacity

Nevada's main utility provider in the urban areas is NV Energy, but the rural areas are served by a multitude of providers, as shown on Figure 5. The Nevada Rural Electric Association helps facilitate collaboration among these providers, but rural installations in Nevada will need to be coordinated with multiple public utilities.

The Nevada Legislature has established an array of regulations to encourage the development of renewable energy. There are programs that offer rebates to customers for installing solar and wind systems on residential property, at small businesses, on public buildings, or at schools, and waterpower systems for use in agricultural settings and on Tribal lands. Rate payers fund these four programs through the Renewable Energy Program charge on monthly bills. Additionally, the state Renewable Portfolio Standard sets the percentage of renewable energy sold each year to 50% by 2030.[25]

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22 PVWatts Calculator (nrel.gov)

23 Solar arrays come in various sizes, and array area is mostly proportional to the power output. A 1-MW solar array is used to illustrate size and power generation.

24 https://www.nrel.gov/docs/fy13osti/56290.pdf

25 https://www.leg.state.nv.us/Nrs/NRS-704.html#NRS704Sec7801

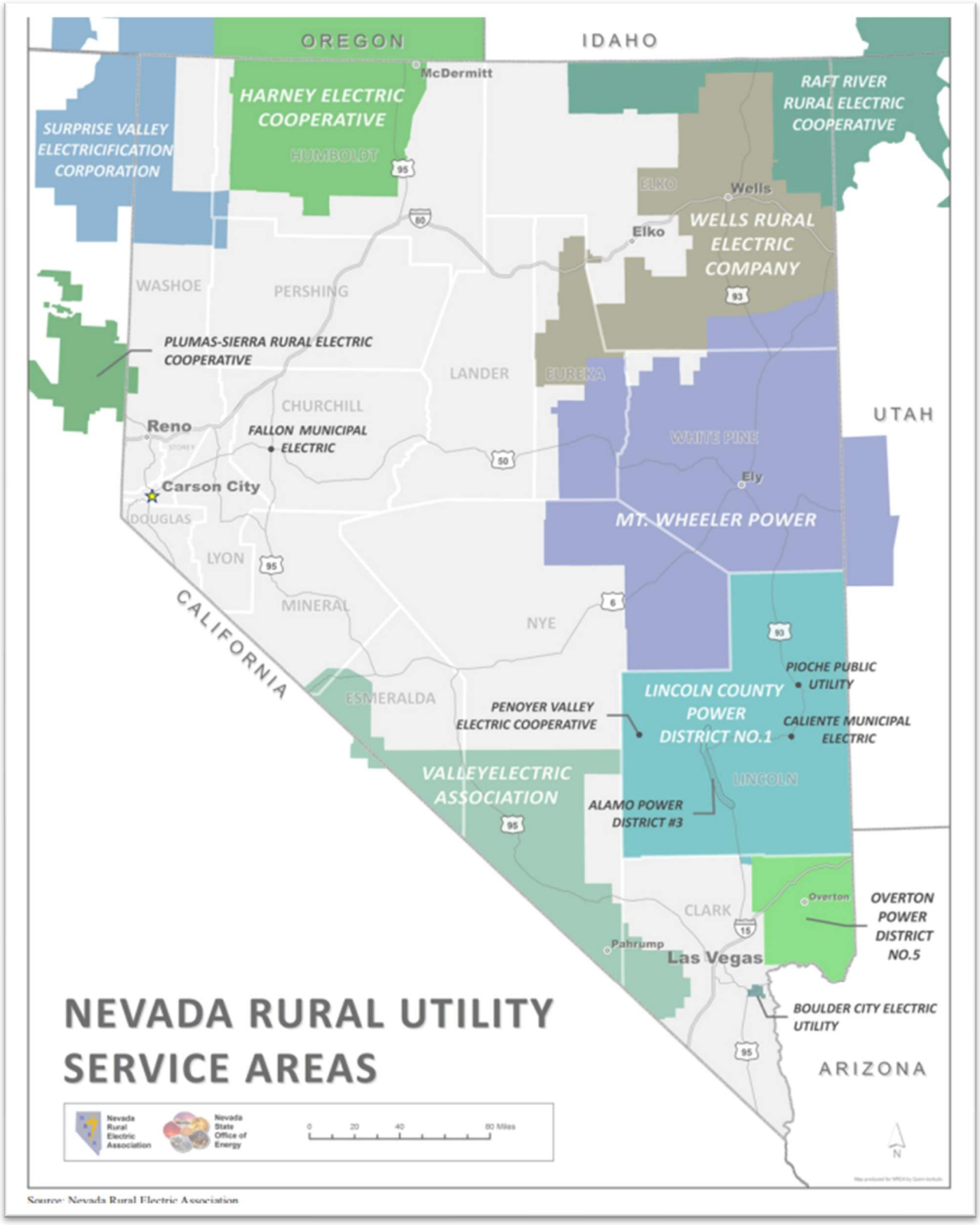

Figure 5. Nevada Rural Electricity Providers
Source: Nevada Rural Electric Association

Generally, the state has a high penetration of renewable energy with the predominant supply from solar. NV Energy, the largest supplier of electricity in Nevada, recently filed its Integrated Resource Plan with regulators "that lays out a strategy to advance Nevada's (US) sustainability goals while maintaining safe and reliable service during extreme temperatures and ensuring low, stable rates for customers."[26] NV Energy is proposing two new large-scale solar systems along with grid-tied battery energy storage systems in northern Nevada. The Plan addresses peak demand that could be exacerbated by the addition of EVs, with new energy efficiency and demand response options. Serving the entire state of Nevada, NV Energy is also constructing two new high-voltage transmission lines, one spanning approximately 350 miles from Las Vegas to Yerington and one spanning 235 miles from Ely to Yerington, providing potential power supply options in Nevada's most rural communities in the future.

Electric Vehicle Environment

According to the Alternative Fuels Data Center from the U.S. Department of Energy, there are currently about 1,480 public EVSE ports and about 87 private ports for EVs to be charged. As of June 2021, there were about 11,040 EVs registered in Nevada. California has the highest registration of EVs in the country at 425,300, which makes up of about 42 percent of EVs in the country (Figure 6). This is important to note because California is one of the states that borders Nevada.

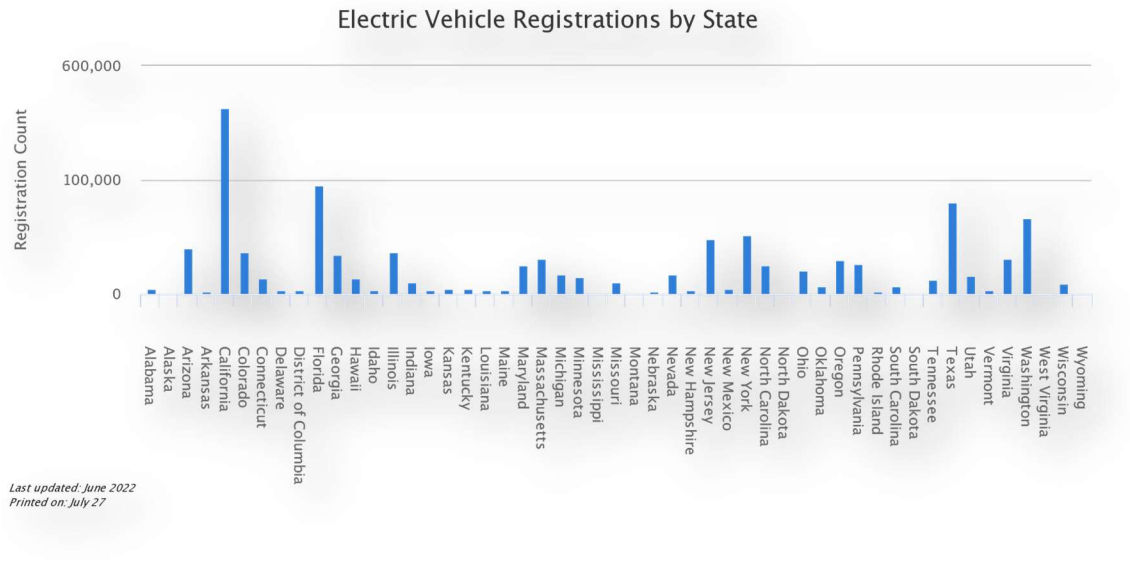

Figure 6. EV Registrations by State[27]
Source: Alternative Fuels Data Center

[26] https://www.energyglobal.com/special-reports/07062021/nv-energy-sets-out-clean-energy-plans-for-nevada/#:~:text=On%201%20June%2C%20NV%20Energy,low%2C%20stable%20rates%20for%20customers

[27] https://afdc.energy.gov/data/10962

Additionally, NV Energy has performed extensive outreach, as described previously, and used that data to forecast battery-electric vehicle adoption. Figure 7 indicates an anticipated market share between 5.6 and 8.4 percent by 2032, a significant increase from 2 percent today.

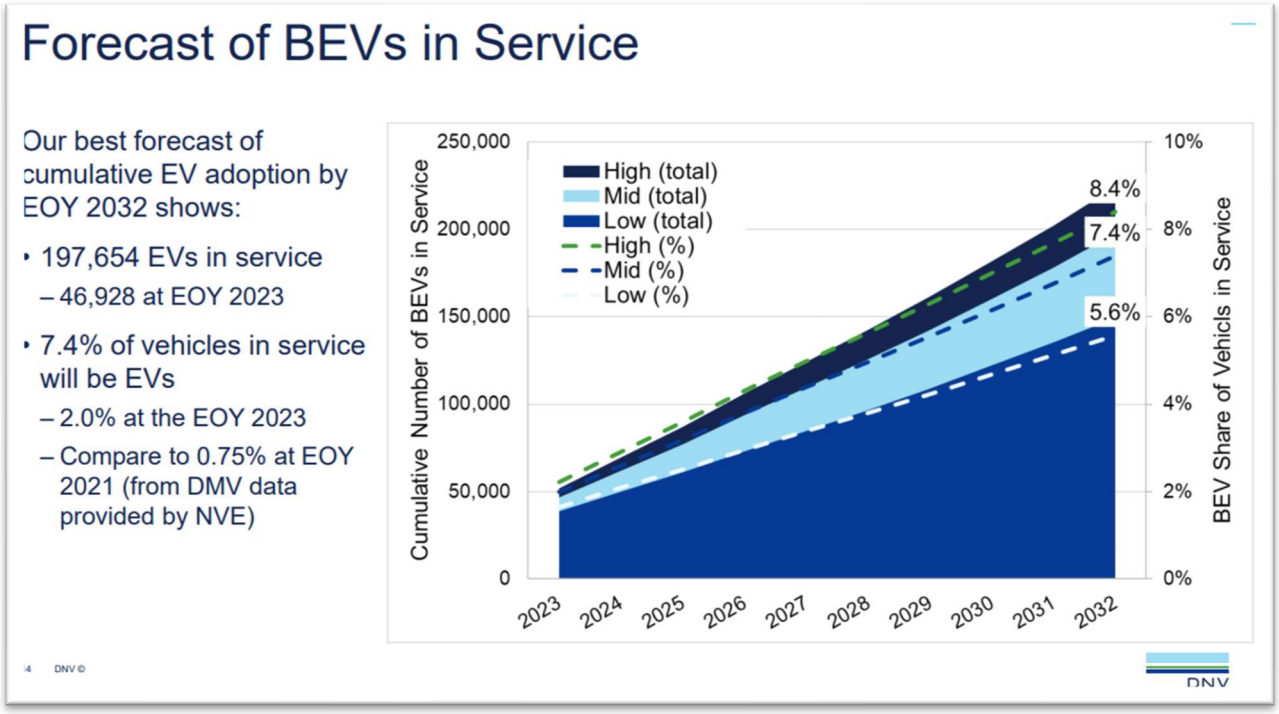

Figure 7. NV Energy Residential EV Adoption Forecast

For the state of Nevada, the total energy consumption is usually evenly distributed among residential, commercial, and industrial sectors. The average price of electric retail is ranked as one of the lowest in the country. Typically, in the residential sector, more than one in three households use electricity for heating and most use air conditioning. The residential use increased significantly in 2020 and 2021 due to the COVID-19 pandemic and workers needing to stay home. The transportation sector uses a small amount of electricity but is expected to increase as the state continues to improve the EV infrastructure.[28]

Nevada Transportation Data Analysis

The preparation of this Plan included analysis of StreetLight[29] data to inform decisions on travel patterns, traffic volumes, trip purposes, and traveler demographics. Although the preliminary recommendations for Year 1 are focused on ensuring interstates are Corridor Ready, these data helped validate the proposed improvements as well as inform preliminary assumptions about investment priorities for Years 2 to 5.

28 https://www.eia.gov/state/print.php?sid=NV
29 https://www.streetlightdata.com/

The data were developed for zones along interstates and select U.S. routes in Nevada. The 2021 data for the major urban areas were aggregated into a single zone for this analysis because the purpose was not to identify urban charging locations within Las Vegas or Reno/Sparks. The data provided are broken out by trip ends, or vehicles that stop within the zone, as well as pass-through trips, or vehicles that travel through the zone but do not stop. The majority of the data are focused on interstates, but other pass-through data on crossroads are also captured. The data are filtered to reflect the entire day average and the entire week (including weekdays and weekends).

Volumes

Figure 8 portrays the total trip ends (stopping volume) in green and pass-through volume for each zone in pink. Given that the majority of the zones are along interstates or rural corridors, the pass-through volume is relatively higher than the stopping volume.

As anticipated, the trip ends are greater in the urban areas, and the total volumes are greater along the interstates, with the highest concentration around the urban areas, and the interstates have higher volumes than along US 95 or US 93.

By diving into the data further, the results found will be comparable for proposed stations along the interstates and will reflect the total trip ends and total pass-through volumes.

Total Trip Length

Figure 9 indicates the average total trip length in miles, trip ends (stopping traffic in each zone) in green, and pass-through traffic in pink. The zones that were analyzed within the urban areas had shorter trip lengths for stopping and pass-through vehicles, as anticipated. The trip lengths across the rural zones are consistently long, reflecting the greater travel distances to reach destinations across rural Nevada.

The data indicate that the zones with lower average trip end length have more local activity along the interstates. For rural interstate interchanges with more destinations, the average trip lengths are generally shorter, and vice versa.

There are several areas where the pink circle (pass-through trip lengths) is larger than the green circle (stopping trip lengths). This indicates that even though the locals are stopping within that zone, there are still significant traffic volumes moving through those zones without stopping.

As stated previously, these data did not drive decisions for ensuring the interstates are corridor ready because the distance criteria overrode the transportation data, but this information will be key in driving future decisions on general site selection and prioritizing future EV charging.

Trip Purpose

Another piece of the data analysis was the purpose of the trip. Figure 10 shows the trip purposes for trip ends in each zone. The options were home-based work trips, home-based other trips, and non–home-based trips. These data indicate where EV charging would best suit

workplaces versus destinations. As anticipated, the Carson area has a high volume of home-based work trips, which would suggest that charging should be at or near workplaces rather than at destinations. Alternatively, along I-15 there are significant home-based other trips, indicating destination travel into those zones from Las Vegas.

Dwell Times

The dwell time analysis is an important one for EV charging. Figure 11 indicates the length of stop times for those vehicles stopping. Many of the shorter dwell times are along the interstates in rural Nevada.

Many of the rural stations along I-80 and I-15 indicate lower median dwell times, and thus reinforce the need for fast charging in the rural areas because there are fewer destinations providing other reasons to stop for longer. On the contrary, there are locations near Carson City and outside Las Vegas with higher dwell times, likely because there is limited local traffic and there are more destinations.

Many of the locations with the higher dwell times have such limited land use, such as one restaurant, which means that the median dwell times are going to be longer than stations with just a gas station, or with several shops that serve trip chaining (for example, gas and then food).

Although it may seem that the larger the dwell times the better suited for EV charging, there is additional analysis to understand the total volumes stopping and the land uses at each zone. Many of the zones with shorter dwell times serve more volume or have better destinations for stopping.

All of the data will be considered together to prioritize future EV needs across the state.

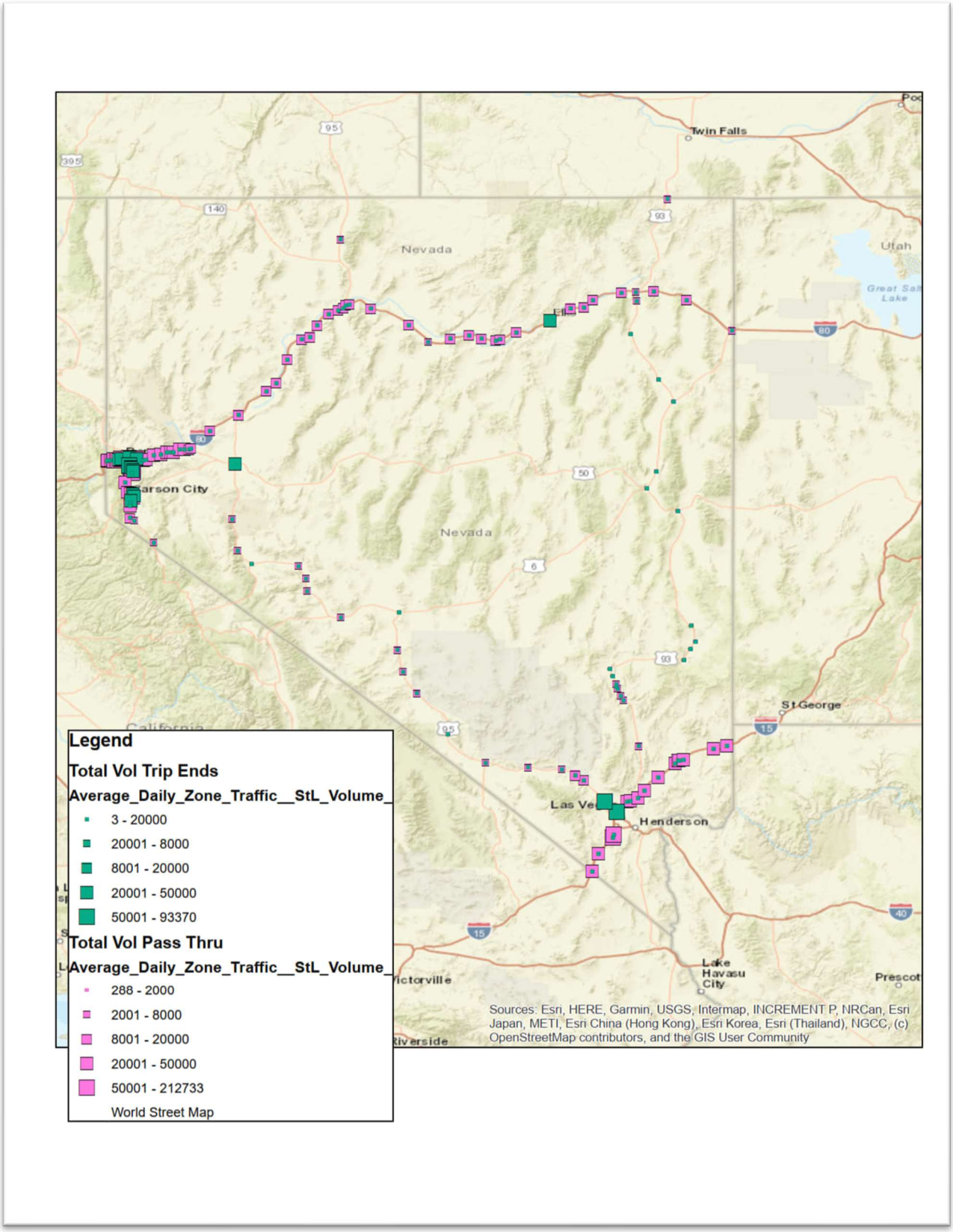

Figure 8. StreetLight Volume

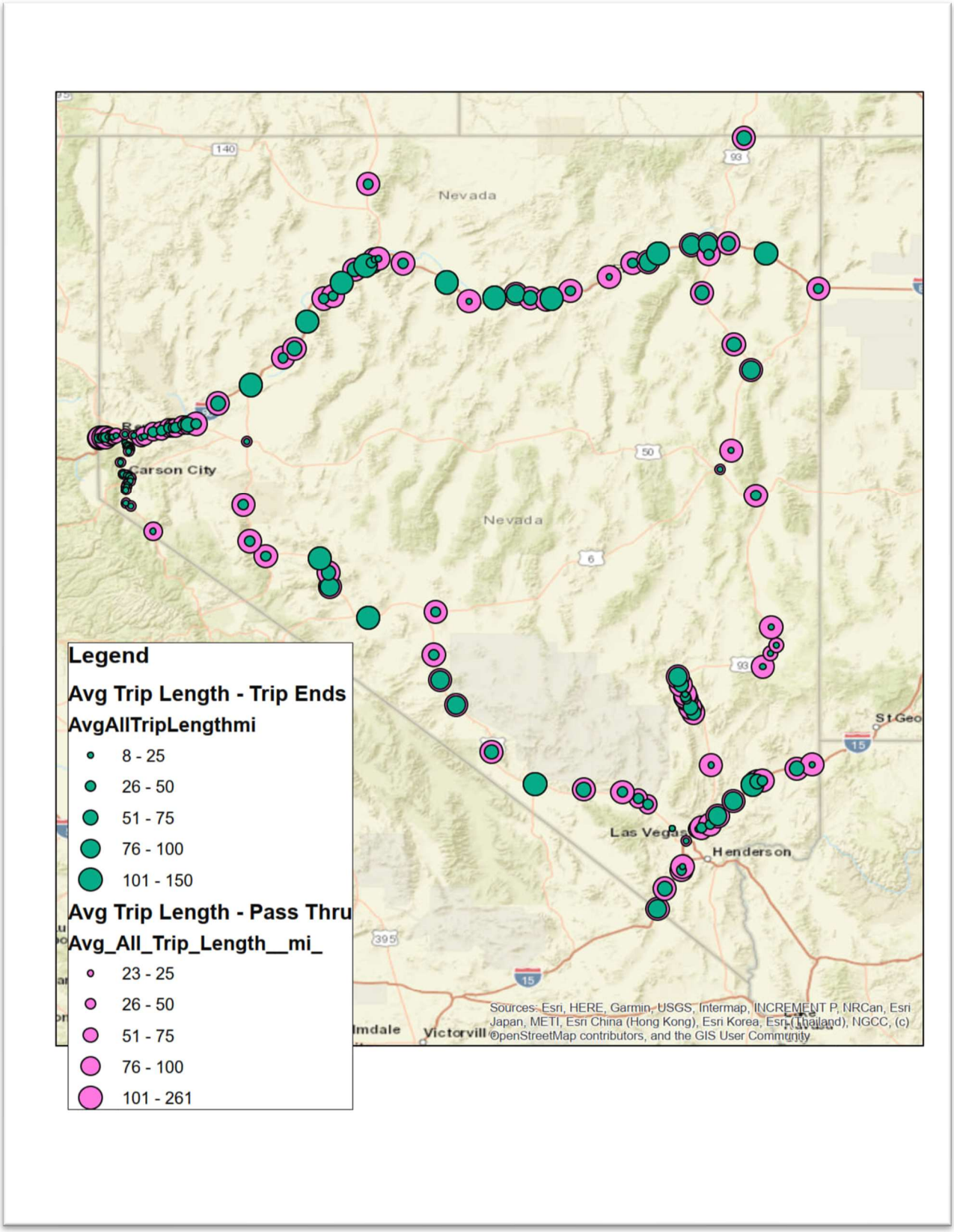

Figure 9. StreetLight Trip Lengths

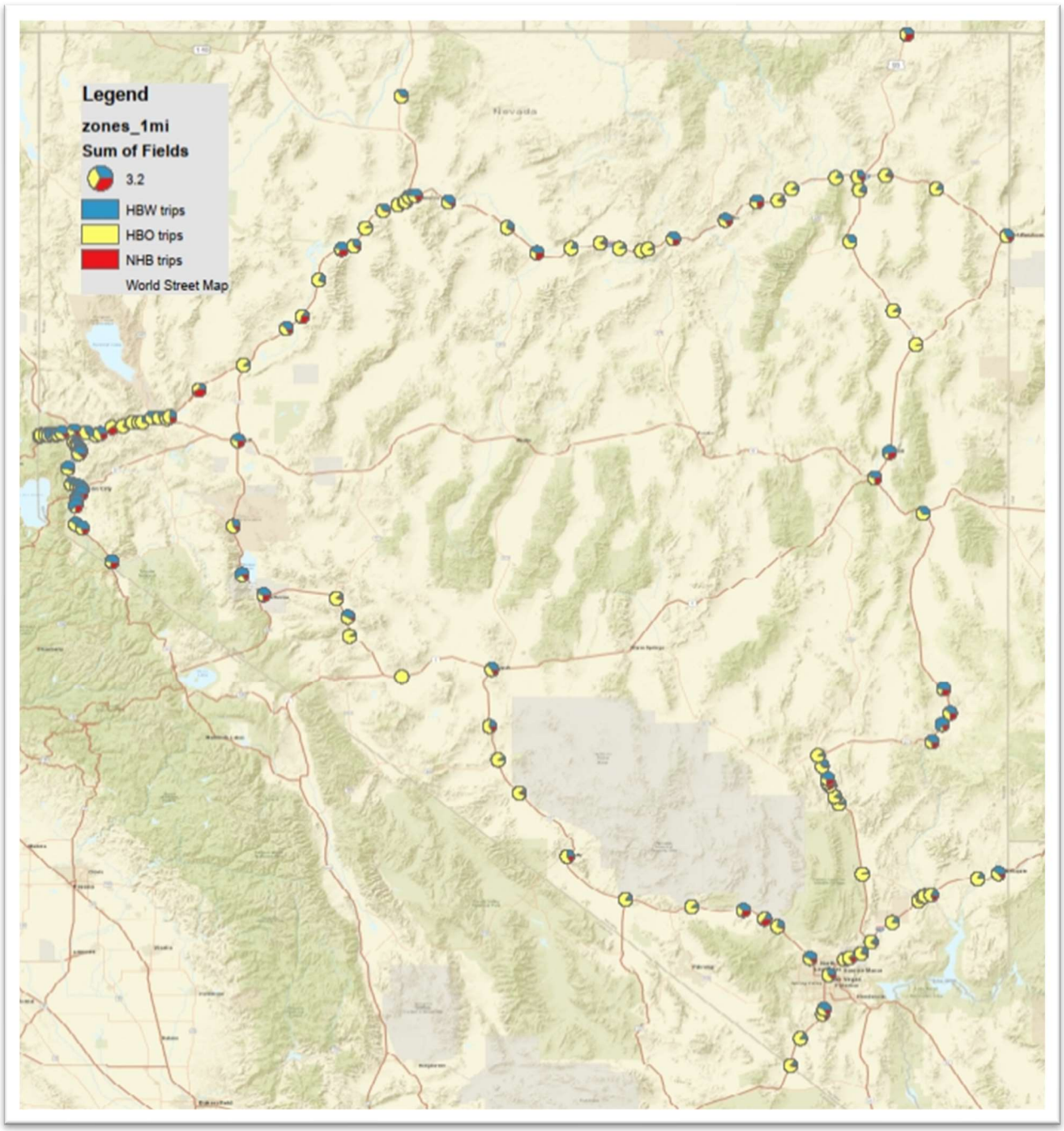

Figure 10. StreetLight Trip Purposes

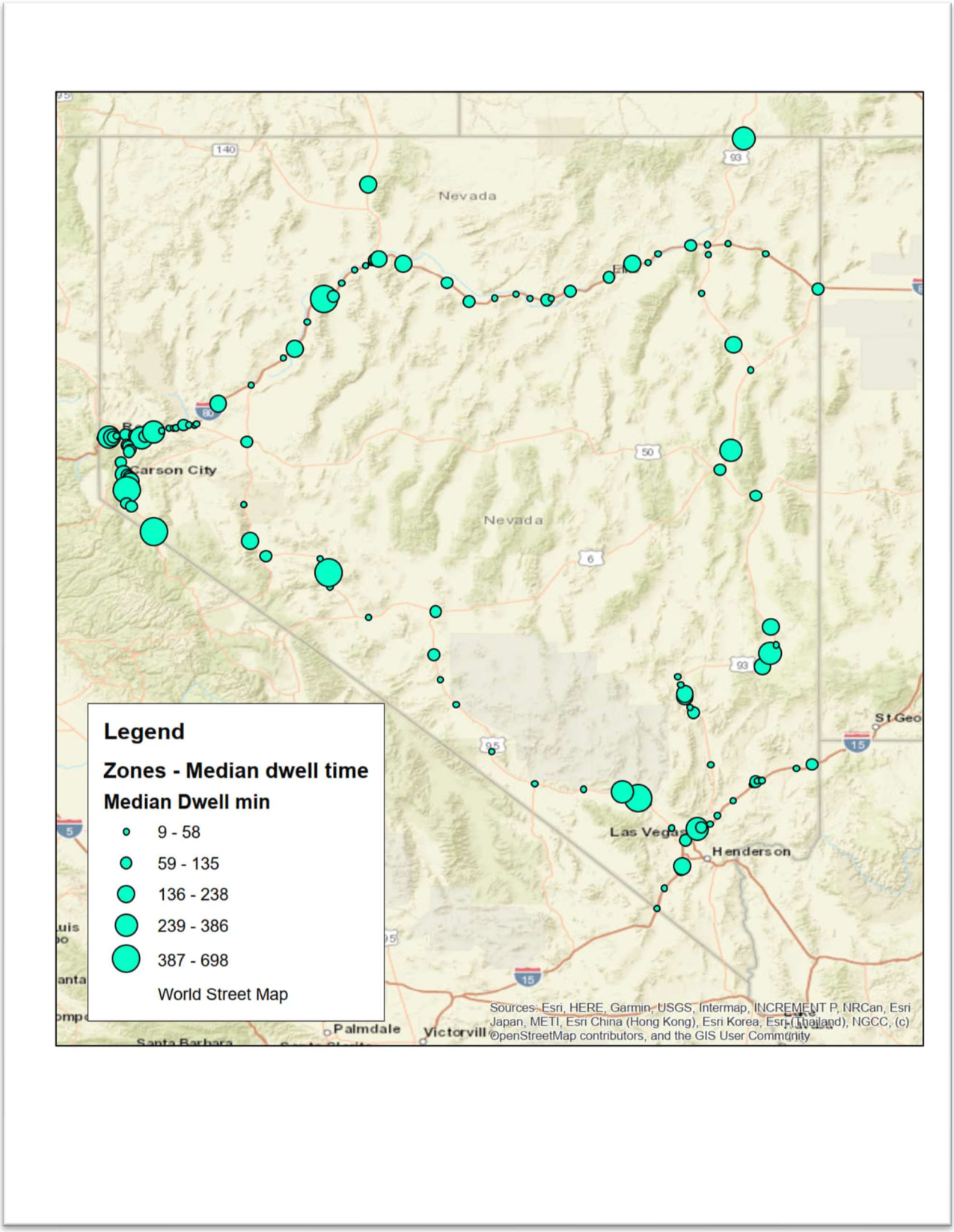

Figure 11. StreetLight Dwell Times

Alternative Fuel Corridor Networks

Nevada has designated all interstates as well as several state and U.S. highways as AFCs in previous rounds of nomination, with no new additions in Round 6. Given the most recent NEVI guidance, NDOT is focusing NEVI efforts to ensure that all interstates are designated as Corridor Ready.

The remaining corridors pose a challenge for meeting fully built out designations on US 95, US 50, and US 93 (the next set of state priorities for corridors). These have limited development and challenging power availability given the remote locations outside the populated areas. NDOT has requested eliminating the full US 93 corridor as a designated AFC under the current guidance due to the lack of population, minimal traffic, and limited access to affordable power. This ensures flexibility in meeting the Fully Built Out requirements for the priority corridors followed by spending of NEVI funds in areas that would better serve Nevada. NDOT still intends to complete the Fully Built Out designation on US 50 and US 95 with upgrades to existing stations, new construction, and exception reports.

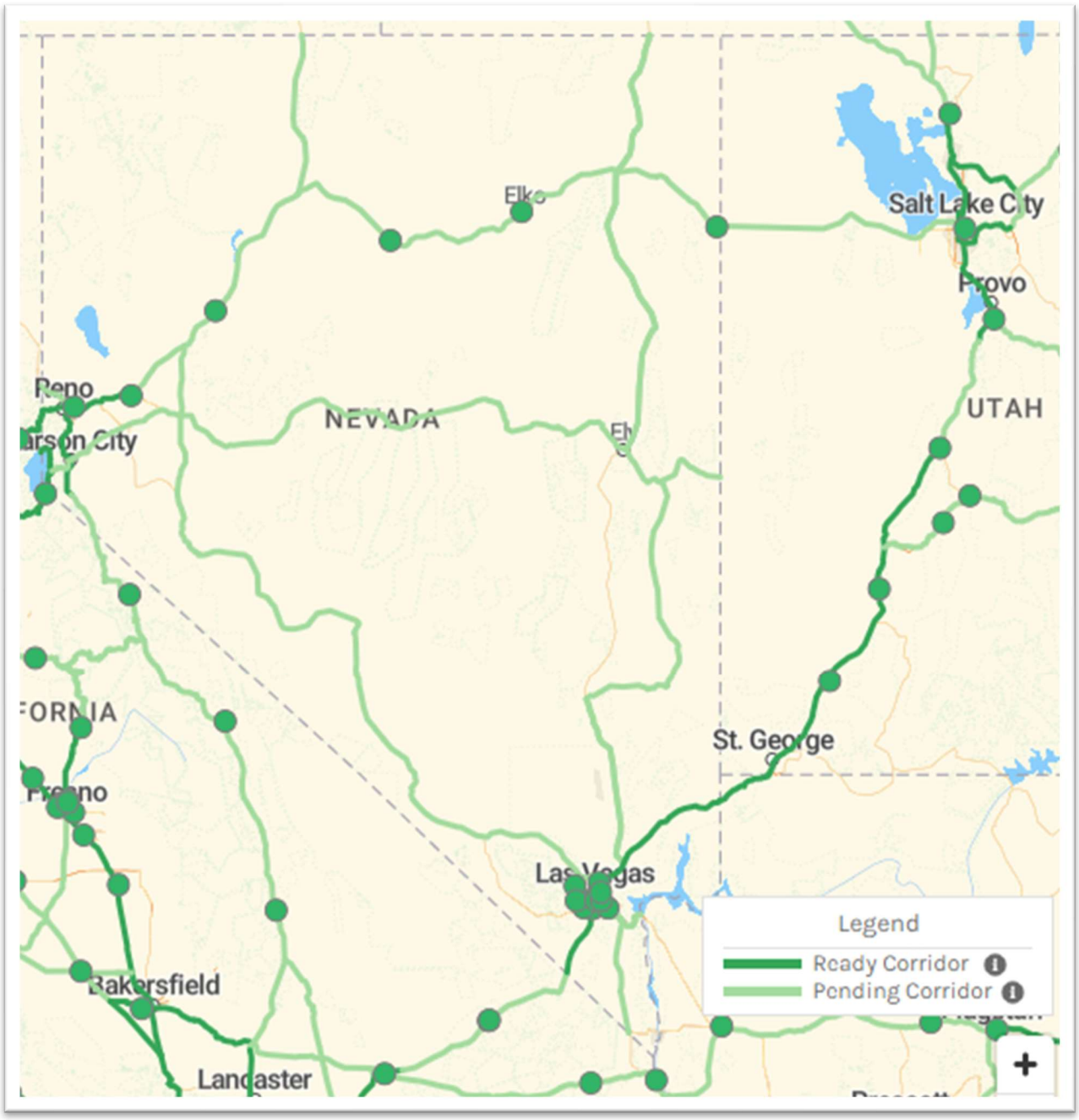

Figure 12. Current Alternative Fuel Corridor Status
Source: Alternative Fuels Data Center website

The U.S. Department of Energy website contains an Alternative Fueling Station Locator map that shows the various interstates and routes in the state of Nevada. Figure 12 shows the existing corridor readiness based on whether the stations along these routes meet the NEVI criteria. The interstates that are considered corridor ready from the website are I-15, I-580, I-215, and part of I-80. The interstates that are pending corridor readiness from the website are the eastern portion of I-80, I-515, I-11, US 95, US 93, US 50, and US 395.

After reviewing the map provided on the website and the data collected, there are a few discrepancies when it comes to the consideration of corridor readiness.

The eastern portion of I-15 was considered corridor ready through previous rounds of AFC designations but does not meet the current NEVI requirements for 50-mile spacing with adequate stations. We are proposing upgrades to maintain the Corridor Ready designation.

Both I-515 and I-11 are not considered to be corridor ready in the map due to the distances between stations along the routes not being within 50 miles from each other. However, when considering the adjacent interstates and the sum total of vehicle miles traveled to access compliant charging stations, the 50-mile requirements are met. This methodology was communicated with the Joint Office, which suggested that these interstates can be considered as corridor ready.

Lastly, there is a portion of I-80 that is not currently considered to be corridor ready by the FHWA. However, per conversation with Electrify America, the Winnemucca station does meet NEVI requirements and should be considered fully built out.

Existing Locations of Charging Infrastructure Along AFCs

Existing charging stations have been deployed since 2015 in Nevada. The following section focuses on the 16 charging stations that meet current NEVI requirements according to the AFC data, with acknowledgment that there are almost 500 additional charging locations available in Nevada. Three of these sites are proposed for upgrades in Year 1. See the subsequent deployment section.

Through our discussions with operators, we learned that all Electrify America stations meet current NEVI requirements. However, for one instance of the data, specifically at the Electrify America Winnemucca station (121745), the FHWA data incorrectly indicated that the site did not have enough chargers. As explained by Electrify America, this could have occurred because a charger was down and not accurately represented. NDOT will work with Electrify America and FHWA to update the system, and this Plan presumes that the station does meet NEVI requirements.

Table 4 indicates the existing chargers that meet NEVI requirements.

Table 4. Existing Electric Vehicle Charging Stations*

State EV Charging Location Unique ID**	Charger Level (DCFC, L2)	Route	Location	Number of EV Connectors	EV Network (if known)
I-80 Existing Stations					
170370	DCFC	I-80 – MP 18	Sparks	4	Electrify America
136698	DCFC	I-80 – MP 49	Fernley	4	Electrify America
199184	DCFC	I-80 – MP 106	Lovelock	4	Electrify America
121745	DCFC	I-80 – MP 177	Winnemucca	4 (*modification from data)	Electrify America
170357	DCFC	I-80 – MP 231	Battle Mountain	4	Electrify America
191731	Level 2	I-80 – MP 281	Carlin	1	Greenlots
121746	DCFC	I-80 – MP 301	Elko	4	Electrify America
204719	Level 2	I-80 – MP 352	Wells	3	Greenlots
187647	DCFC	I-80 – MP 409	West Wendover	4	Electrify America
I-15 Existing Stations					
121805	DCFC	I-15 – MP34	Las Vegas	6	Electrify America
192704	DCFC	I-15 – MP 39	Las Vegas	6	Electrify America
188080	DCFC	I-15 – MP 49	Las Vegas	4	Electrify America
149587	Level 2	I-15 – MP 91	Moapa	2	Greenlots
165281	DCFC	I-15 – MP 121	Mesquite	4	Electrify America

State EV Charging Location Unique ID**	Charger Level (DCFC, L2)	Route	Location	Number of EV Connectors	EV Network (if known)
I-515 Existing Stations					
199442	DCFC	I-515	Henderson	4	Electrify America
201631	DCFC	I-515	Las Vegas	4	Electrify America
I-215 Existing Stations					
121805	DCFC	I-215	Las Vegas	6	Electrify America
I-11 Existing Stations					
199442	DCFC	I-11	Henderson	4	Electrify America

*Stations identified as of 5/25/22.

**Defined by the State—this should match the unique ID in the State's applicable GIS databases.

Figure 13 indicates where additional chargers are located across Nevada.

Known Risks and Challenges

Nevada fully supports the NEVI requirements, but there are several challenges unique to Nevada.

Nevada is primarily considered frontier and remote, with two main urbanized areas. The urban areas have built out EV charging to meet the highest demands, and many of the interstates traverse rural areas with low population counts. Thus, many rural interchanges along the interstate have limited staff, limited power supply, and limited land use conducive to visitors. Though rural EV charging stations have been implemented throughout Nevada, where economically and technically feasible, upgrades or additional stations may prove challenging, particularly as we try to meet a 50-mile separation requirement. This challenge informs our current-year exceptions along the interstate, and will be exacerbated as we move away from the interstates into more rural corridors.

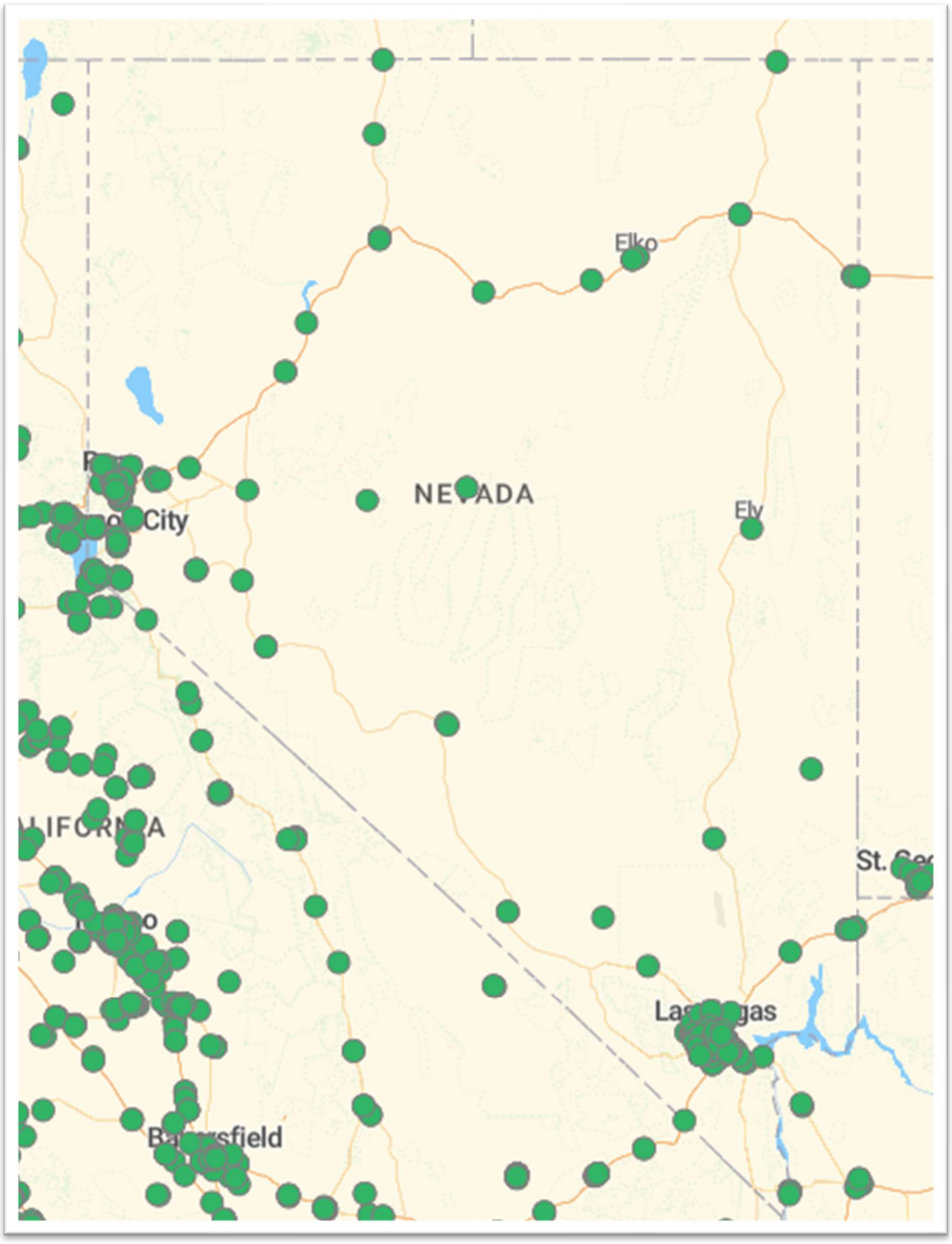

Figure 13. Map of Existing Level 2 Stations
Source: Alternative Fuels Data Center website

Buy America is a requirement that was not in place with the implementation of these previous charging stations, but the new requirements could pose additional cost and material availability challenges, particularly as states across the country are all competing for the same infrastructure. Recognizing that many OEMs have incorporated Buy America considerations in their own procurement strategy, and many are currently constructing manufacturing in the United States to supplement the future supply chain, NDOT will follow all Buy America requirements, or submit for waivers as appropriate, when procuring station and infrastructure components.

The current economic conditions are volatile, making cost estimating challenging and risky. With inflation, supply chain challenges, and the emerging industry of EV infrastructure, costs are difficult to predict over the next 5 years.

The Notice of Proposed Rule Making (NPRM) also laid out several challenging areas, specifically in payment requirements, data reporting, and reliability requirements that have been echoed to the NDOT NEVI team through our outreach. NDOT will continue to consider the guidance outlined in SB448 as well as the specific needs of each location to be built out in Nevada. Additionally, NDOT will continue to monitor the proposed rules and updates to the NEVI Formula Program by the FHWA.

EV Charging Infrastructure Deployment

NDOT's implementation strategy aims to optimize available NEVI funding while leveraging existing work being completed by NV Energy, under the ERTEP required by Nevada SB448 (2021), to accelerate transportation electrification and design to provide the greatest economic recovery benefits and opportunities for the creation of new jobs across Nevada. NDOT proposes to upgrade existing infrastructure along designated corridors in Year 1 to achieve fully built-out status and certification. The implementation for Years 2 to 5 will continue to be developed in the coming months and years.

Nevada has considered deployment strategies that involve their long-term involvement such as NDOT ownership to include operations and maintenance. NDOT is not currently moving forward with this option. Instead, NDOT will administer the NEVI program and will use private entities for operations and maintenance of the charging infrastructure built out under this NEVI program.

Funding Sources

Funding under the NEVI program will provide up to 80 percent of the costs of charging infrastructure. Costs to be considered include grid-side electrical infrastructure that is needed to connect to the site meter, electrical panels, switchgear and transformers, the charging infrastructure, or the EVSE. NDOT is considering some sites that could use supplemental battery energy storage and solar to accommodate power and energy needs. Additional considerations include land costs; operations and maintenance costs; and overall program design, execution, and operations.

As discussed, the existing investment in EV charging through NV Energy is a program investing approximately $100 million in Nevada, and NDOT intends to leverage ERTEP program funding as a private match for the new proposed federal NEVI stations within the NV Energy territory. The details of this procurement strategy are still being coordinated. NV Energy intends to own and operate some stations, but other stations would have a customer ownership model or a private owner/operator model. Because these efforts are advancing at the same time, the final procurement details will be included in the next update to the Plan.

In Year 1 NDOT intends to leverage private investment in the rural areas where upgrades are proposed. During outreach, it was stated that the rural electric providers have tight margins already and do not have the capital to bring the nonfederal match to this program. However, there are several current owner/operators who intend to expand their reach who may benefit from a public-private partnership.

NDOT prefers that the private match come from the beneficiaries of these stations rather than other NDOT-led state funds. The sources for the private match for the rural upgrade stations in Year 1 are also challenging because the proposed approach is to upgrade the existing stations in these small towns to be fully built out, but the stations are owned and/or serviced by the rural electric providers. Private match funds are still being evaluated for these sites.

In future years, the private match is anticipated to be provided by the station owners who would generate the revenue at these new stations, where site selection influences the rate of return and better justifies the initial investment. This funding match requirement would be part of future procurements.

Discretionary grants are also of interest to expanding Nevada's EV charging infrastructure beyond the NEVI AFCs. This is particularly important in areas where there are different modes of transportation that are electric, public fleets that are electric, or other community considerations that influence electric charging demands. NDOT fully supports these other planned EV charging needs that flow beyond this first year of NEVI funding and hopes that future-year flexibility will be realized in the formula program after the initial build-out as well as the discretionary grant program.

Some of the NEVI funding will be spent on managing the program within NDOT, including monitoring and reporting on investments for the federal requirements. That amount is yet to be determined. NDOT is also considering the economic models in the rural areas where operations and maintenance costs for additional infrastructure may exceed the current budgets.

The current available funding sources are outlined in a Funding Matrix included as Appendix A. Many of the state funding sources are focused on addressing transportation needs across the state, so Nevada's focus is on the NEVI funds, the SB448 funds, and the private match funds.

2022 Infrastructure Deployments/Upgrades

The Nevada strategy for 2022 deployments has been coordinated with multiple stakeholders, and although the needs are great across the state, the initial round of deployment is focused on getting all Nevada interstates up to Corridor Ready.

These proposed improvements are being coordinated with potential partners to evaluate the cost share and best procurement approach. NDOT does not have interest in ownership at this time, so it is anticipated that ownership would be private companies or the public utility.

The three upgrades are being coordinated with the rural electric providers, shown in red on Figure 14. We have been in touch with the Nevada Rural Electric Association to understand power availability and ensure technical feasibility of these upgrades. We have reached out to the owner/operators of the upgrade stations and intend to continue that collaboration to determine the cost share options and long-term economic models of these upgrades. Although neither of these are final at this time (June 2022), we intend to continue this collaboration to ensure that these upgrades accomplish the goal of meeting the NEVI requirements for Corridor Ready or can be documented as exceptions. The stations are located west of Elko on I-80 in Carlin, at the intersection of I-80 and US 93 in Wells, and east of Las Vegas on I-15 in Moapa.

The two proposed new stations (shown in blue on Figure 14) are being coordinated with NV Energy. Although neither proposed station is considered necessary to meet Corridor Ready based on the NEVI AFC definitions, these stations have been identified as needed by NV Energy in the ERTEP to improve the reliability along the interstates.

The proposed station in Carson City meets an identified need in the NV Energy ERTEP, and it also services I-580, which currently meets the criteria only because of a station along the adjacent route on I-80. A new station would serve the long-term viability of EV fast charging within the Carson City metropolitan area and other travelers coming from farther south on US 395 or from California.

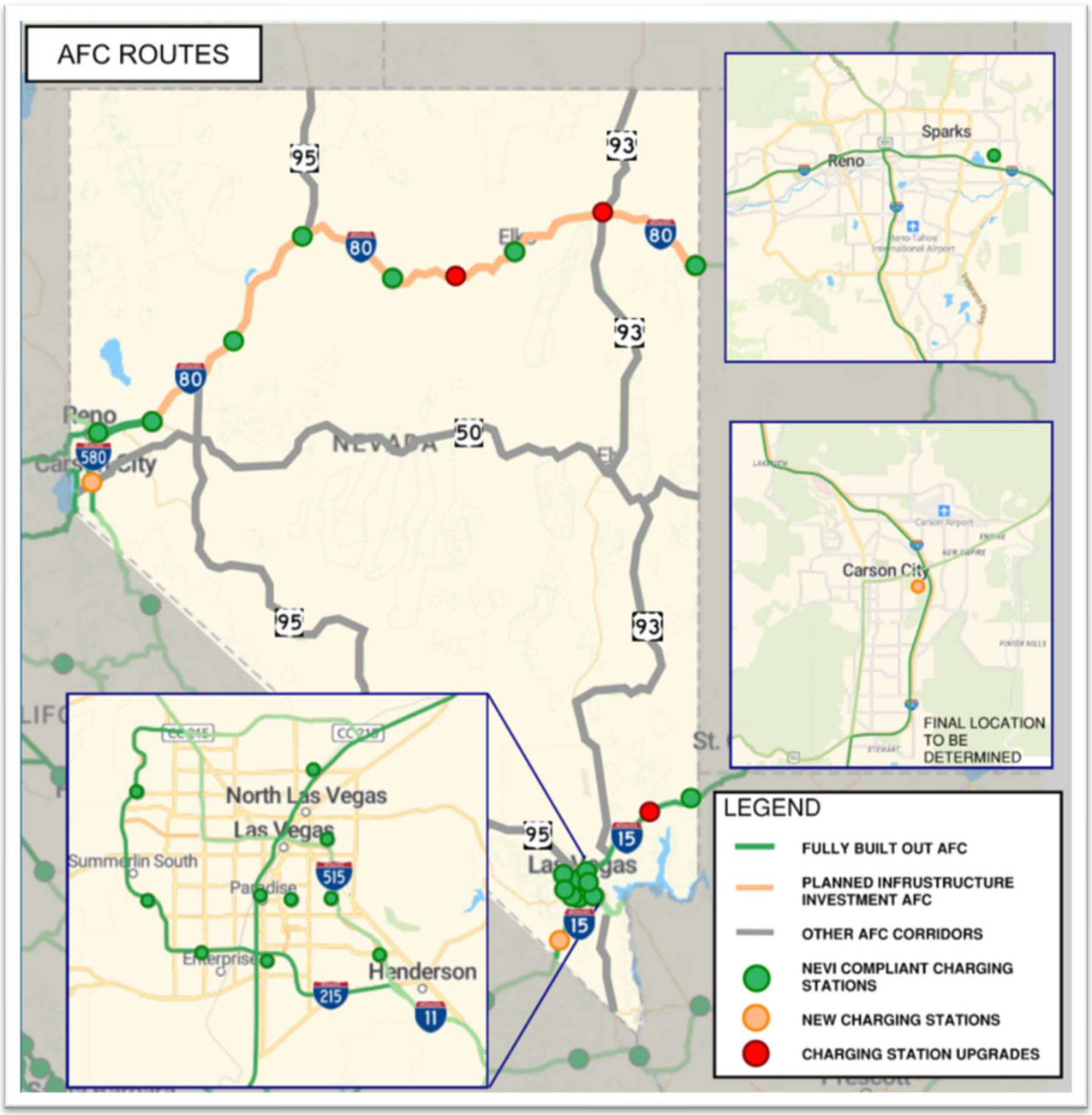

Figure 14. Proposed Upgraded and New Charging Stations
Source: Alternative Fuels Data Center website

The proposed station in either Jean or Primm meets an identified need in the NV Energy ERTEP, and it also services a section of I-15 that has a greater than 50-mile gap over the California border. This section of interstate experiences heavy weekend traffic between Southern California and Las Vegas, and current stations have long queues.

Costs for these proposed upgrades (Table 5) are still being coordinated with the appropriate utility agencies to determine what energy upgrades may be needed to facilitate these new or upgraded sites. For purposes of these cost estimates, new site costs were based on NV Energy's interstate charging site profile estimate. New sites are anticipated to average $1.7 million based on eight ports minimum, with four DCFCs with a minimum of 150 kW, two Level 2 chargers, and two DCFCs with a minimum of 350 kW. Although that exceeds NEVI standards, the new sites are proposed to have conservative cost estimates due to the variability in scope.

Table 5. Proposed Electric Vehicle Charging Upgrades in FY23

State EV Charging Location Unique ID*	Route (note AFC)	Location	Mile Post	Anticipated EV Network (if known)	Utility Territories	Anticipated Station Ownership** (if known)	FY22 Funding Amount	FY23–FY26 Funding Amount (Optional)
I-80 Proposed Stations								
191731	I-80	Carlin	281	Greenlots	NREA – Wells Rural Electric	P – existing	TBD on depending on proposed upgrade	None anticipated
204719	I-80	Wells	352	Greenlots	NREA – Wells Rural Electric	P - existing	TBD depending on proposed upgrade	None anticipated
I-15 Proposed Stations								
NV Energy Station 1 - Table 7	I-15	Primm or Jean	12	*NV Energy/ NEVI Proposed Station*	NV Energy	T/P – as determined during site planning for new station	Estimate $1.7M	None anticipated
149587	I-15	Moapa	91	Greenlots	NREA – Overton Power District No. 5	P - existing	TBD depending on proposed upgrade	TBD

State EV Charging Location Unique ID*	Route (note AFC)	Location	Mile Post	Anticipated EV Network (if known)	Utility Territories	Anticipated Station Ownership** (if known)	FY22 Funding Amount	FY23–FY26 Funding Amount (Optional)
I-580 Proposed Stations								
NV Energy Station 1 - Table 7	I-580	Carson City	TBD	*NV Energy/ NEVI Proposed Station*	NV Energy	T/P – as determined during site planning for new station	Estimate $1.7M	None anticipated
I-215 Proposed Stations								

*Note: NV Energy proposed station locations are generic and subject to change.

**Federal Government Owned (FG), Jointly Owned (J), Local/Municipal Government Owned (LG), Privately Owned (P), State/Provincial Government Owned (SG), or Utility Owned (T)

NREA = Nevada Rural Electric Association

TBD = to be determined

Upgrades of Corridor Pending Designations to Corridor Ready Designations

Based on the proposed implementation outlined previously, Nevada anticipates all interstates will be corridor ready after this initial round of improvements (Figure 15). The I-80 corridor would be completed with a few distance exceptions due to existing land use and limited power availability. I-15 would be brought up to the current standards, and an additional station would serve the Nevada-California border gap. The remaining interstates around Reno and Las Vegas are currently meeting NEVI requirements for the Corridor Ready designation, but additional deployments from NV Energy and other private entities will continue that urban build-out along the spur interstates.

Increases of Capacity/Redundancy along Existing AFC

NDOT is continuing to collaborate with the Nevada utility providers, both NV Energy in most of the state and the rural utility providers through the Nevada Rural Electric Association. Power availability is a limiting factor, particularly along the rural AFCs.

Nevada is focusing on additional energy transmission and generation, particularly using renewable energy, throughout the entire state.

Electric Vehicle Freight Considerations

Since 2018, Nevada has committed more than $16 million from the Volkswagen settlement to help agencies replace diesel-powered vehicles with low- and zero-emission alternatives. This is a Heavy-Duty Vehicle Emissions Reduction grant administered through Nevada Division of Environmental Protection (NDEP).

In April 2022, Governor Sisolak signed a memorandum of understanding committing to collaboratively advance and accelerate the market for electric medium- and heavy-duty vehicles. The joint effort among 16 other states and District of Columbia and Quebec is working toward the goal that all new medium- and heavy-duty vehicles will be zero-emission vehicles by 2050, with an interim target of 30 percent by 2030. This support from the state leadership exemplifies Nevada's commitment to electrification.

Public Transportation Considerations

Public transportation in Nevada is focused on the urban communities, but there is also a desire by local government and public stakeholders to electrify their fleets. NV Energy has a program to incentivize fleet charging stations as well (https://www.nvenergy.com/cleanenergy/electric-vehicles/fleet).

Outside of buses, Nevadans want to see electrification of multiple modes, including micro-mobility and other public offerings in urban areas. Charging for these other modes is also critical and requires planning.

Additionally, NV Energy has a portion of their current program committed to electrifying school buses through an incentive program benefiting some of the most vulnerable populations in the most exposed areas. They offer rebates of up to 75 percent of expected costs for the purchase of electric school buses and EVs.

FY23–26 Infrastructure Deployments

Future deployments will continue to evolve under future NEVI plans, building on lessons learned from the initial build-out strategy.

Future deployments will continue to be aligned with NV Energy's deployment plans, as well as the private investments planned for Nevada.

Additionally, future infrastructure deployments will be collaborated with all stakeholders eligible for the federal Discretionary Grant Program for Charging and Fueling Infrastructure. Many of the plans for partner agencies are focused beyond interstate corridors to serve the most critical needs within their communities, whether these are at community destinations, workplaces, residential homes, or public fleet storage facilities. The stakeholders participating in this Plan are undergoing or have undergone planning efforts for EV infrastructure and hope to advance some of their plans through future federal discretionary grant funding, complementing the NEVI formula fund build-out.

NDOT is prioritizing build-out along corridors that have more traffic volume, have population centers to support the infrastructure operations and maintenance, are located in DACs that have economic viability for EV charging, and are located in areas where other private or state funding may not have as high a return on investment. Specifically, we anticipate the next phase of build-out to initially focus on US 95 and US 50, where the private investment may not be as focused.

Although the deployment strategy is more focused on rural areas, there is a recognition that the demand and the need is still apparent in urban areas and along urban corridors. NDOT fully supports investing in those areas where private investment is not already underway, while also balancing the rural needs.

Some criteria we are considering for a future data-driven prioritization of EV infrastructure include the following:

- Distance from other compliant charging stations (that is, complete corridors for compliance with the FHWA AFC EV distance requirements of 50 miles between stations; also reaffirmed in 2015 in the Governor's Nevada Electric Highway)
- AADT (More vehicles requires more charging capacity.)
- Area with environmental justice concerns—useful perhaps for double-checking or assisting with prioritization but should not define need
- Proximity to regional destinations
- Indoor waiting during fast charging at locations such as coffee shops, restaurants, convenience stores, and truck stops
- Proximity to desirable amenities such as restrooms, food, shopping, and hotels
- Avoidance of floodplains
- Avoidance of historic and archaeological sites
- Rest areas
- If government funded, avoidance of locations where commercial charging network providers will seek to install EVSE at high-usage locations that are likely to prove profitable (for example, big-box stores)
- EV charging gaps in city-level trips (for example, electric delivery vehicles)
- Detailed site development issues for prioritizing need, but not necessarily defining need
- Criteria listed in Appendix: Minimum Requirements, in the *Nevada Electric Highway* report[30]
- Potential to add staff to assist persons with disabilities who cannot lift the cable and connector

[30] https://energy.nv.gov/uploadedFiles/energynvgov/content/Pages/neh_report_final.pdf

- Angled or perpendicular parking (Parallel parking is a safety hazard.)
- Distance to electrical panels (cost issue)
- Ability to avoid trip hazards for pedestrians
- Ability to provide lighting at night, good visibility, and other ways to ensure user safety
- Potential for solar access and/or proximity to renewable energy supply
- Wireless network availability

State, Regional, and Local Policy

Nevada has a long history in policy framework supporting clean energy and specifically the transition to transportation electrification. Nevada passed SB358, which requires the state to generate 50 percent of its electricity from renewable resources by 2030 and aim for 100 percent carbon-free resources by 2050.

Starting in 2015, the Governor's Office of Energy began a partnership with NV Energy and Valley Electric Association to expand Nevada's EV charging infrastructure along US 95, creating the Nevada Electric Highway. The initial build-out included five stations along US 95. In 2018 the program was expanded to I-80, I-15, US 93, and US 50 using Volkswagen settlement funds. Stations built early in the program included two Level 2 chargers and one DCFC and provided free charging for the first 5 years of operation. Subsequent stations similarly required a minimum of two chargers but offered the option to be DCFC. Additionally, private investment in EVs, notably by Electrify America, continued across the state.

The Governor's Office of Energy also completed the *Electrifying Nevada's 21st Century Transportation System* report in January 2019, laying out an action plan and road map for transportation electrification in Nevada including policy recommendations.

In 2021, SB448 was passed. The bill focuses on clean energy in Nevada, but one component includes almost a $100 million investment in the build-out of EV infrastructure. The public utilities were tasked with developing plans and submitting them to the Public Utilities Commission by September 2021. Components of this bill aligned with federal requirements, such as 40 percent benefiting traditionally underserved communities. NDOT has reviewed the ERTEP, and coordinated with NV Energy on NEVI planning. NDOT will continue to coordinate with NV Energy throughout the planning and implementation of the NEVI program.

The regional EV landscape includes the REV West memorandum of understanding, signed in 2017, outlining a regional framework for an intermountain west EV corridor network. The entities include Arizona, Colorado, Idaho, Montana, Nevada, New Mexico, Utah, and Wyoming. The REV West collaboration has continued through the development of this Plan, including soliciting feedback from operators in this region.

Implementation

Strategies for EVSE Operations & Maintenance

NDOT understands the considerations under review in the NPRM. Many of those requirements would impact the strategies for operations and maintenance.

Specifically, there are differences between the NPRM and the state requirements outlined in the NV Energy ERTEP:

1. The data reporting requirements of NEVI, while admirable from a national consistency perspective, make the private sector release proprietary information that they deem critical to maintaining their competitive advantage.
2. Although we understand the goal of access, the payment requirements may be challenging in rural Nevada, where internet is limited.
3. The reliability requirements are aggressive, which we support. The NV Energy ERTEP requires contractors to have a 97 percent reliability track record, but for the station to meet a 90 percent uptime.
4. A customer service requirement is laid out in the state requirements and was not found in the NPRM. These stricter federal requirements will require additional monitoring and tracking for NEVI-funded stations.

Specifically in Year 1, the requirements for operations and maintenance will be transferred to the utility owners/site owners. NV Energy is familiar with the federal requirements, which are similar to the state requirements, but will have to administer the reporting for sites they own or operate, which is still to be determined.

Overall, Nevada intends to pass along the responsibility for operations and maintenance to the station owners through the RFP procurement process. Many current owners are providing input on the NPRM requirements throughout the development of this Plan.

Strategies for Identifying Electric Vehicle Charger Service Providers and Station Owners

For the Nevada Electric Highway implementation, the Nevada Governor's Office of Energy provided a subgrant process to electric service providers, and they either own the sites or execute third-party host site agreements. Subgrantees select sites based on general guidance provided. This type of system is viable for future build-out of new stations with generic locations defined.

NV Energy has stated that they intend to provide an RFP with guidance on site selection but allowing the owners to select the specific sites that are most viable to own and operate. NV Energy also intends to own some of the stations that are part of their program.

Strategies for EVSE Data Collection & Sharing

NDOT understands the quarterly and annual data requirements outlined in the NPRM. Although NDOT recognizes some of the data concerns voiced by operators at the time of this plan writing, NDOT would intend to collect the NEVI-required data from the owners and operators and submit it to the Joint Office.

At this time, NV Energy has specific data reporting requirements for their program, so NDOT is working to align the data reporting such that within Nevada there is a single system that meets the federal and state requirements.

NDOT is also considering a publicly maintained dashboard that houses EV charging reporting as well as required reporting through state or federal standards.

Strategies to Address Resilience, Emergency Evacuation, Snow Removal/Seasonal Needs

Nevada has exposure to extreme heat in the south, and wildfires in the northern and southern parts of the state. Nevada will continue to work with charging station owners and operators to ensure that reliability metrics are in place and that specific seasonal factors do not interrupt accessibility to EV charging. Key considerations will include fire management plans and practices in place by the electric providers and provisions in procurement that address seasonal needs in northern Nevada.

NDOT will continue to work with current operators to understand their previous experience with and recommendations on seasonal needs in Nevada.

Strategies to Promote Strong Labor, Safety, Training, and Installation Standards

NDOT will reserve funds to invest in local EV workforce development. NDOT shall meet or exceed the FHWA minimum standards that address NEVI infrastructure workforce certification and safety requirements as well as consider the ERTEP labor and Electric Vehicle Infrastructure Training Program requirements established in statute (SB448). As is customary, NDOT will ensure that vendors selected under this Plan will focus on safety in all aspects of station development, installation, and maintenance. NDOT will work with existing programs and local groups and universities to promote training and employment opportunities. NDOT may include background, training, and certification criteria for vendor evaluation in the solicitation process.

Nevada acknowledges NPRM requirements are currently under review and will continue to evolve the labor and installation standards required through the NEVI program.

Refer to the Labor and Workforce Considerations section for further discussion.

Civil Rights

Per the NDOT *Title VI Implementation Plan*, "NDOT assures that no person shall on the grounds of race, color, or national origin be excluded from participation in, be denied the benefits of, or be subjected to discrimination under any program or activity under any NDOT program, activity, or service."[31] NDOT will require compliance with Title VI of the Civil Rights Act of 1964, the Civil Rights Restoration Act of 1987, and all related regulations and directives in contract materials and RFPs released using NEVI program funds.

NDOT will also comply with the Americans with Disabilities Act (ADA) and Section 504 of the Rehabilitation Act to make reasonable modifications necessary to ensure that individuals with disabilities have equal access to NEVI program benefits. The U.S. Access Board issues guidance on ADA Standards issued by the Department of Justice and DOT. Currently, the Access Board standards do not include specific provisions for EV charging stations. However, the Access Board includes the following recommendations that will be considered for inclusion in contracting documents for new station construction supported by NEVI program funds:[32]

- EV charging stations should be developed to meet the access needs of individuals with disabilities, with accessible routes (3 feet wide) on both sides of the vehicle space and including the approach to the EV charging station.
- Developing an accessible space at an EV charging station should not count toward the number of minimum numbers of accessible car and van parking spaces required at a parking facility.
- Marking the space with the International Symbol of Accessibility is not recommended unless the space is reserved exclusively for people with disabilities.

Contractors will be monitored for compliance by NDOT's Civil Rights Program, which monitors Title VI activities and prepares reports required by the *Code of Federal Regulations* and DOT regulations.

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31 NDOT. 2020. *Title VI Implementation Plan*. https://www.dot.nv.gov/home/showpublisheddocument/18024/637345581580670000.

32 U.S. Access Board. 2022. Electric Vehicle Charging Stations. https://www.access-board.gov/ada/guides/chapter-5-parking/#electric-vehicle-charging-stations.

Equity Considerations

Identification and Outreach to Disadvantaged Communities (DACs) in the State

Overview/Introduction

Equity is considered throughout the Plan in order to address burdens from transportation and energy systems, which have been disproportionately borne by DACs. Unequal benefits from the transportation and energy systems have precluded DACs and businesses belonging to members of those communities from equitably enjoying the benefits of investments. This Plan will be used to support objectives identified in the February 10, 2022, Memorandum on National Electric Vehicle Infrastructure (NEVI) Formula Program Guidance[33] and Executive Order 14008: Tackling the Climate Crisis at Home and Abroad, which established the Justice40 initiative,[34] and will target at least 40 percent of the benefit of program spending toward DACs. The Plan also aligns with actions underway by NV Energy required under SB448 in support of historically underserved populations,[35] as well as actions by other organizations described in this section. The Joint Office encourages states to consider both the DAC definition identified in NEVI guidance and locally developed definitions, both of which are described as follows.

Outreach efforts in support of this Plan include both direct and indirect methods of stakeholder engagements (refer to the Public Engagement section), including one engagement on July 6, 2022, focused on equity and civil rights. During that engagement, the state affirmed its commitment to Title VI requirements identified under the Civil Rights Act of 1969, the process of identifying, quantifying, and measuring benefits to DACs, and the currently identified benefits to DACs through this Plan. The meeting also addressed training, experience level, and diversity of the workforce.

Equity has been prioritized in the State of Nevada as demonstrated by the passage of SB448, which requires utilities to submit a plan to accelerate transportation electrification in the state and provide 40 percent of the funding dedicated to investment made in or for the benefit of historically underserved communities. Under SB448, "historically underserved" communities include the following communities:

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33 FHWA. 2022. INFORMATION: The National Electric Vehicle Infrastructure (NEVI) Formula Program Guidance. https://www.convenience.org/Media/Daily/2022/Feb/11/1-WhiteHouse-Release-5-Billion-Plan-EV-Charging_GR/90d_nevi_formula_program_guidance_Feb2022.pdf.

34 President Joseph Biden. Executive Order 14008: Tackling the Climate Crisis at Home and Abroad, January 27, 2021. 86 FR 7619. https://www.federalregister.gov/documents/2021/02/01/2021-02177/tackling-the-climate-crisis-at-home-and-abroad#p-163.

35 NV State Legislature. 2021. NV SB448. https://legiscan.com/NV/bill/SB448/2021.

- "A census tract:
  - Designated as a qualified census tract by the Secretary of Housing and Urban Development pursuant to 26 U.S.C. § 42(d)(5)(B)(ii); or
  - In which . . . 20 percent of households were not proficient in the English language, or:
- A public school in this State:
  - In which 75 percent or more of the enrolled pupils in the school are eligible for free- or reduced-price lunches . . . ; or
  - That participates in a universal meal service in high poverty areas pursuant to Section 104 of the Healthy, Hunger-Free Kids Act of 2010 . . . ; or
- Qualified Tribal land."

NV Energy has used this definition of historically underserved communities in preparing its ERTEP.[36] The ERTEP identifies several strategies for providing benefit to historically underserved communities. Charging stations are prioritized by developing an overlay focusing on (1) possible sites prescribed through state statute (including school bus depots and transit agency depots) and (2) possible sites for discretionary program spending (including community centers, colleges and universities, state capital buildings, and outdoor recreation and tourism sites). The Plan incorporates five new programs identified in the legislation and, for each program, identifies both potential sites and costs associated with implementing charging infrastructure at those sites. The current ERTEP ultimately allocates 51 percent of program dollars to historically underserved communities.

The ERTEP also includes several strategies to increase access to the benefits of transportation electrification to disadvantaged customers. One example of this is an Urban Charging Depot Program in which sites will be developed, owned, and operated by NV Energy. Selling energy as a utility prevents variable energy pricing that can disadvantage customers seeking predicable fuel pricing away from a home or workplace (pricing is equal to the time-of-use tariff that currently applies to residential single-family customers). Many community centers in Nevada are located close to underserved communities, and these locations are prioritized under the utility's Public Agency Vehicle Charging Program (along with colleges, universities, and state agencies), like the priority given to transit agencies located in historically underserved communities under its Transit Electrification Grant program.

Job creation and workforce development are also key elements of the ERTEP as required under SB448. NV Energy plans to partner with the Northern Nevada Electric Joint Apprentice and Training Committee and the Electrical Joint Apprentice and Training Center of Southern Nevada. Both organizations place priority on recruiting youth from disadvantaged and underserved communities throughout the state.

[36] NV Energy. 2022. Economic Recovery Transportation Electrification Plan. https://www.nvenergy.com/cleanenergy/ertep.

NV Energy covers approximately 96 percent of all electricity customers served in the state.[37] However, approximately 45 percent of the state's land area is served by cooperatives and municipal utilities. Many of these cooperatives were formed in the 1930s to purchase and distribute energy where service was not provided, and generally adhere to a not-for-profit, member-centric business model.[38] As of June 2022, cooperative and trade organization websites had limited information on transportation electrification in general (including the individual cooperative member sites, Nevada Rural Electric Association, the National Rural Electric Cooperative Association, and Touchstone Energy [a national trade organization focused on providing support to cooperatives]).

Electrify America has expanded its efforts to increase EV adoption by under-represented communities through a partnership with EVNoire's "Drive the Future" campaign aimed at educating Black Americans on the benefits of EV adoption and providing communities with financial assistance and other support. Electrify America is also conducting outreach to diversify suppliers and contractors, with an objective of increasing participation by under-represented groups (including certified veteran-, women-, and minority-owned businesses).[39] Many of Electrify America's stations are located along AFCs.

[37] U.S. Energy Information Administration. 2021. Sales to Ultimate Customers. https://www.eia.gov/electricity/data/eia861m/#salesrevenue.

[38] Nevada Rural Electric Association. 2019. *Representing Nevada's Rural Electric Cooperatives, Power Districts, and Municipal Utilities*. https://www.leg.state.nv.us/App/NELIS/REL/80th2019/ExhibitDocument/OpenExhibitDocument?exhibitId=36601&fileDownloadName=0226_JamR_NVRE_PDF.pdf.

[39] Electrify America. 2022. *Corporate Social Responsibility 2021 Highlights*. https://media.electrifyamerica.com/assets/documents/original/801-ElectrifyAmerica2021CSRHighlights.pdf

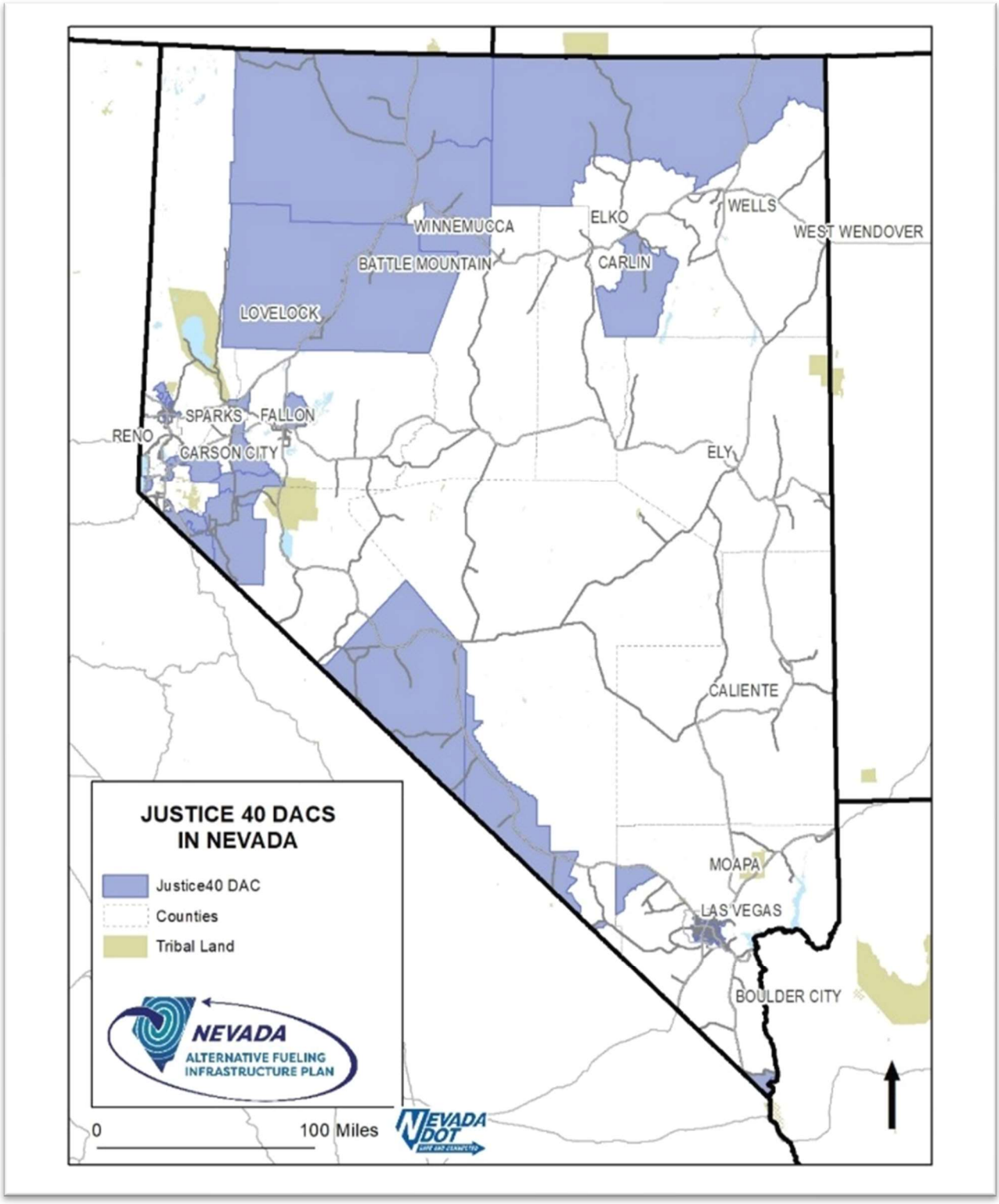


Figure 15. Justice40 DACs and Tribal Areas in Nevada

Existing and Future Conditions

The combined Justice40 DAC definition includes Tribal lands and U.S. Territories and incorporates an array of demographic and environmental measures to identify communities to be designated as DACs. The Joint Office encourages states to review the DACs but continue to consider local knowledge and nuance to further define the areas considered disadvantaged in NEVI plans. There are 27,358 census tracts, or 36 percent, considered to be Justice40 DACs in the United States.

Of the 687 census tracts in the state, 284 are considered Justice40 DACs, displayed in purple on Figure 16. Most of these DACs (219) are in Clark County, where most of the state's population is concentrated. In that county, 884,430 people live in an area considered a DAC (roughly 41 percent of the county population). DACs make up 41 percent of the census tracts and about 39 percent of the population. There are a few low-density counties in which the entire county is considered a DAC (Pershing and Esmeralda), as well as several counties in which more than half of the population lives in a DAC, including Carson City (74 percent), Lyon (58 percent), and Pershing (100 percent). These areas make up under 5 percent of the state's total population.

Figure 17 shows existing public charging stations in the state of Nevada as identified on the Alternative Fuels Data Center website in June 2022. These stations are listed as public and include all electric charging types. There are 503 public charging stations in the state, and 221 (43 percent) are located within a Justice40 DAC area.

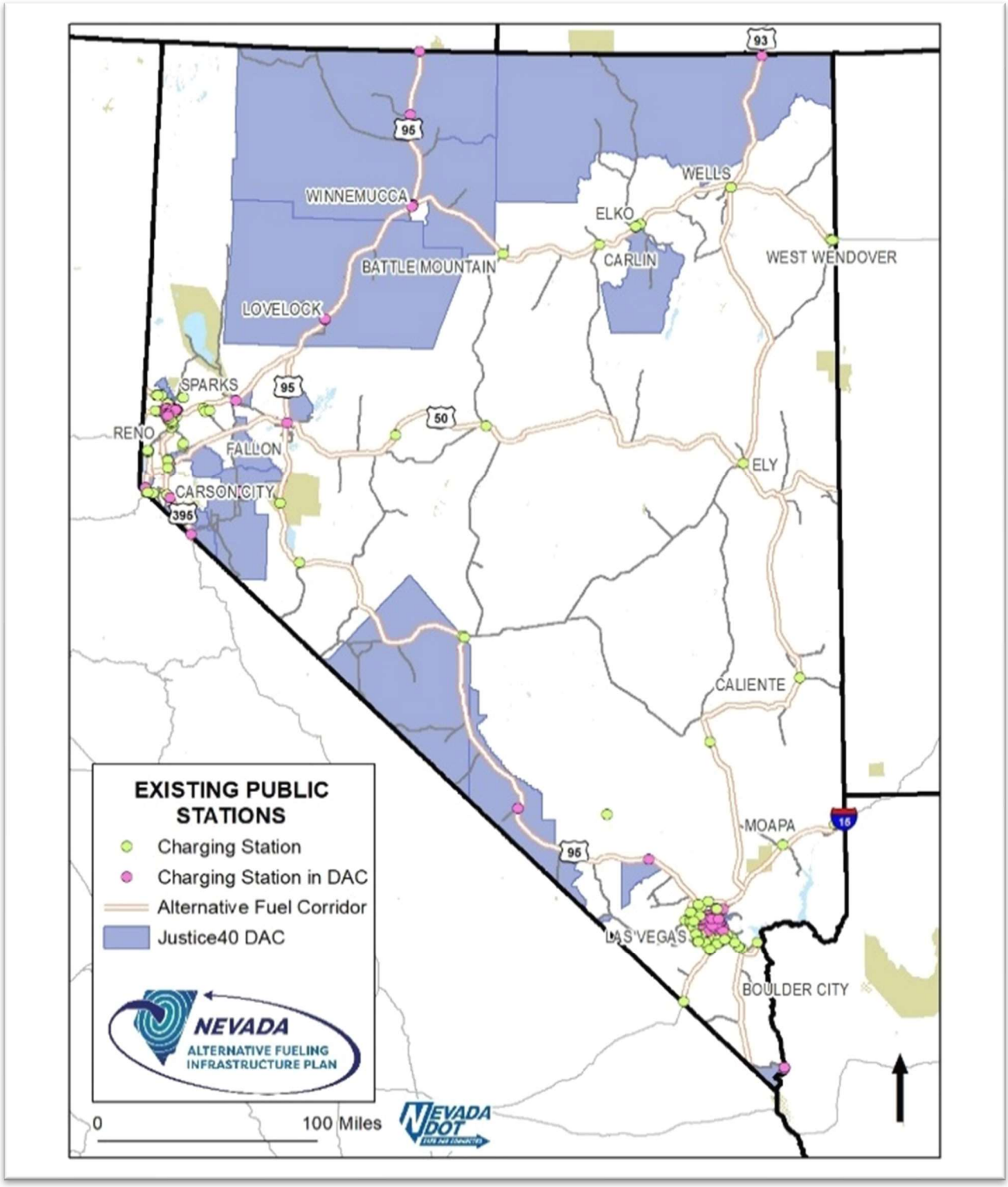


Figure 16. Existing Public Electric Charging Stations in Nevada

Process to Identify, Quantify, and Measure Benefits to DACs

The project team considered important factors of EV deployment that support equitable distribution of benefits informed both by Executive Order 14008 and NEVI guidance, including primarily the following areas:

- Health
- Environmental exposures
- Economic
- Participation
- Energy cost burden
- Capital
- Workforce development
- Energy resilience
- Displacement

For the first year of the Plan, the project team considered the following place-based benefits:

- Percentage of EV charging infrastructure in DACs
- Income characteristics of travelers to proposed locations of EV charging infrastructure
- Air quality nonattainment areas that overlap with DACs

Additionally, the project team sought to identify potential groups for future outreach, including the following:

- Community-based organizations (CBOs), disadvantaged business enterprises (DBEs), and other organizations engaged in questions of transportation, electrification, and equity
- Local credit unions, banks, community development financial institutions, and others that provide support for DACs or income-qualified applicants in accessing capital
- Community events and other opportunities to provide information on EVs and EV charging infrastructure
- Developers that have completed projects mindful of the impacts of gentrification or with input from community members to avoid disbenefits associated with property acquisition

This outreach will be expanded in Years 2 to 5. The focus of the first year of the Plan is to bring the AFCs in Nevada into compliance by meeting the technical requirements of the NEVI program. As those corridors are adequately served, NDOT will have more flexibility to identify and prioritize benefits to DACs and other identified needs in Nevada through this Plan. Additional details are addressed in the next section.

Benefits to DACs through this Plan

Strategies

One of the key benefits to directing benefit to disproportionately affected communities is direct spending in those communities. However, indirect benefits are also an important consideration. The Plan seeks to center overburdened and underfunded communities in the clean energy transition. NDOT is committed to working with these communities throughout the planning process to define benefits and desired outcomes of the NEVI funding. The project team's approach to capturing these benefits emphasizes flexibility to enable the project team to quantify benefits in the short run but continue to refine an approach to measurement over time. As this Plan is updated and more data are made available, these strategies and their measurement will be revisited. The strategies identified reflect preliminary input gathered through select conversations with community leaders in Nevada, as well as feedback gathered over the course of stakeholder engagement meetings. Community engagement and feedback will be an important factor in further refining these strategies.

Strategy 1: Prioritize direct benefits to DACs.

Objective: Direct 40 percent of spending to DACs.

Data: Estimate of future spending in DACs, previous year's spending in DACs (Years 2 to 5)

Currently, 43 percent of all stations in the state are in DACs. However, none of the planned construction proposed under this Plan will be in a DAC (Figure 18). Prioritizing station location in DACs helps to meet the Justice40 objective and aligns with the SB448 funding requirements to spend 40 percent of investments in historically underserved communities (as defined by SB448). This will be a priority for Years 2 to 5 after the AFCs have been fully built out. The project team will further include community input on outcomes that are important or relevant to community members, including direct benefits.

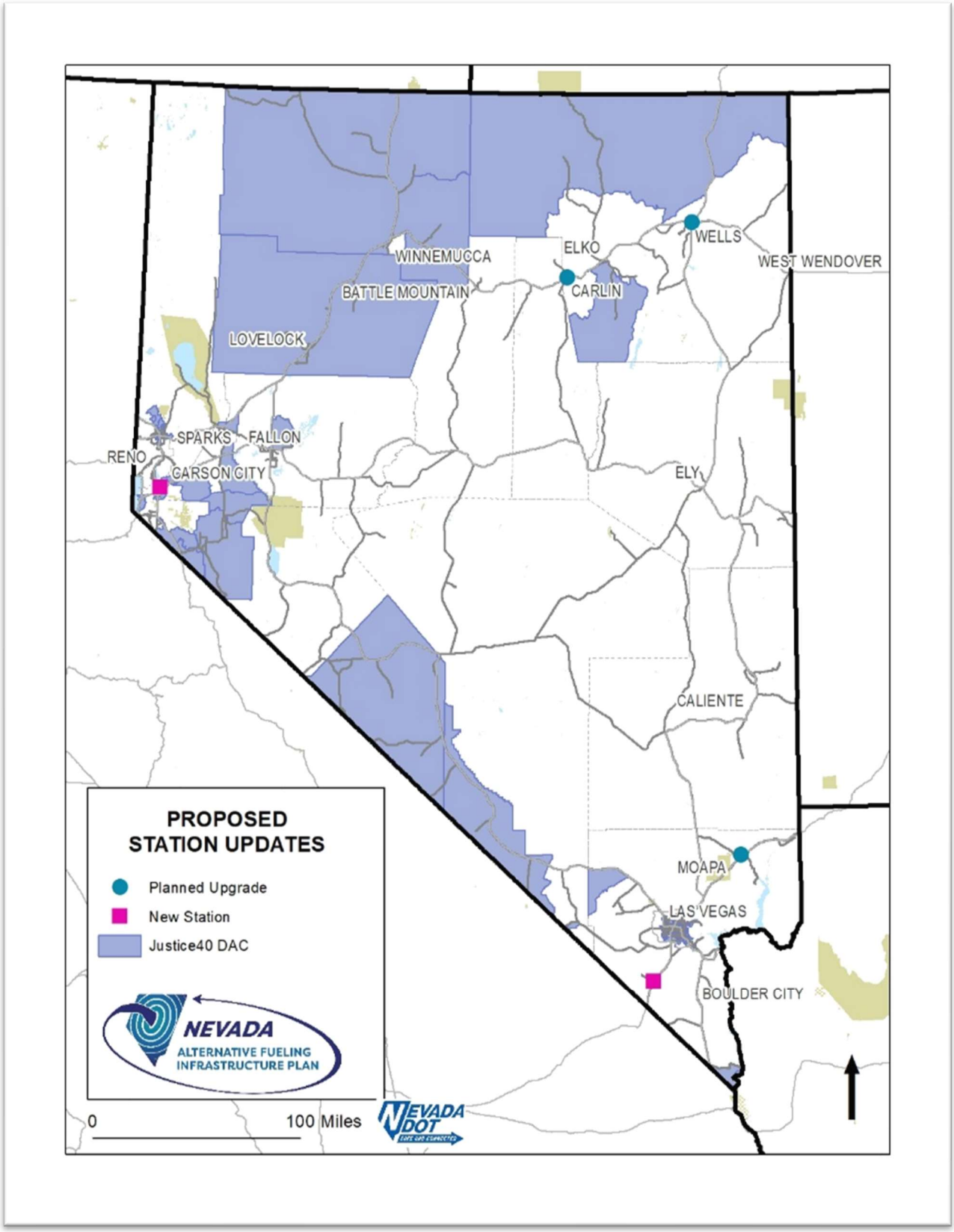


Figure 17. Planned Upgrade Charging Stations in Nevada

Strategy 2: Prioritize workforce development opportunities within DACs and by DAC members.

Objective: Increase recruitment of DACs and investment within DACs.

Data: Qualitative discussion of activities by various agencies on increasing outreach to DACs

NV Energy already partners with the Northern Nevada Electric Joint Apprentice and Training Committee and the Electrical Joint Apprentice and Training Center of Southern Nevada. This Plan recommends strengthening outreach by these organizations within DACs and will seek opportunities to increase both training programs' reach in areas outside of the NV Energy service area. NDOT will coordinate with the Governor's Workforce Investment Board Clean Energy Sector Council and the Department of Employment, Training and Rehabilitation to identify opportunities to increase reach into DACs. Labor unions and trade organizations will also be targeted, including the International Brotherhood of Electrical Workers.

During this period of economic shift, there may also be an opportunity to target organizations and industries that anticipate job losses during the transition to EVs. The United Auto Workers (UAW) has a strong presence in Nevada due to a large membership of gaming workers.[40] Similarly, there may be additional job opportunities not traditionally associated with the automotive industry, such as in energy, chemical, battery, and software engineering. Coordination with these and other groups will be valuable to identify opportunities in directly affected industries.

These outreach efforts will consider activities and guidance by other state agencies and new federal agencies also seeking to prepare the workforce for the adoption of EVs, such as the U.S. Electric Vehicle Working Group (Working Group) that is being established by the Joint Office. The Working Group will advise the U.S. Department of Energy and DOT regarding the development, adoption, and integration of EVs into the transportation and energy systems of the United States.[41]

[40] UAW. 2022. UAW | Gaming. https://uaw.org/gaming/.

[41] Office of Energy Efficiency and Renewable Energy, Department of Energy. 2022. Notice for solicitation for members [in the Electric Vehicle Working Group]. https://www.federalregister.gov/documents/2022/06/14/2022-12755/electric-vehicle-working-group.

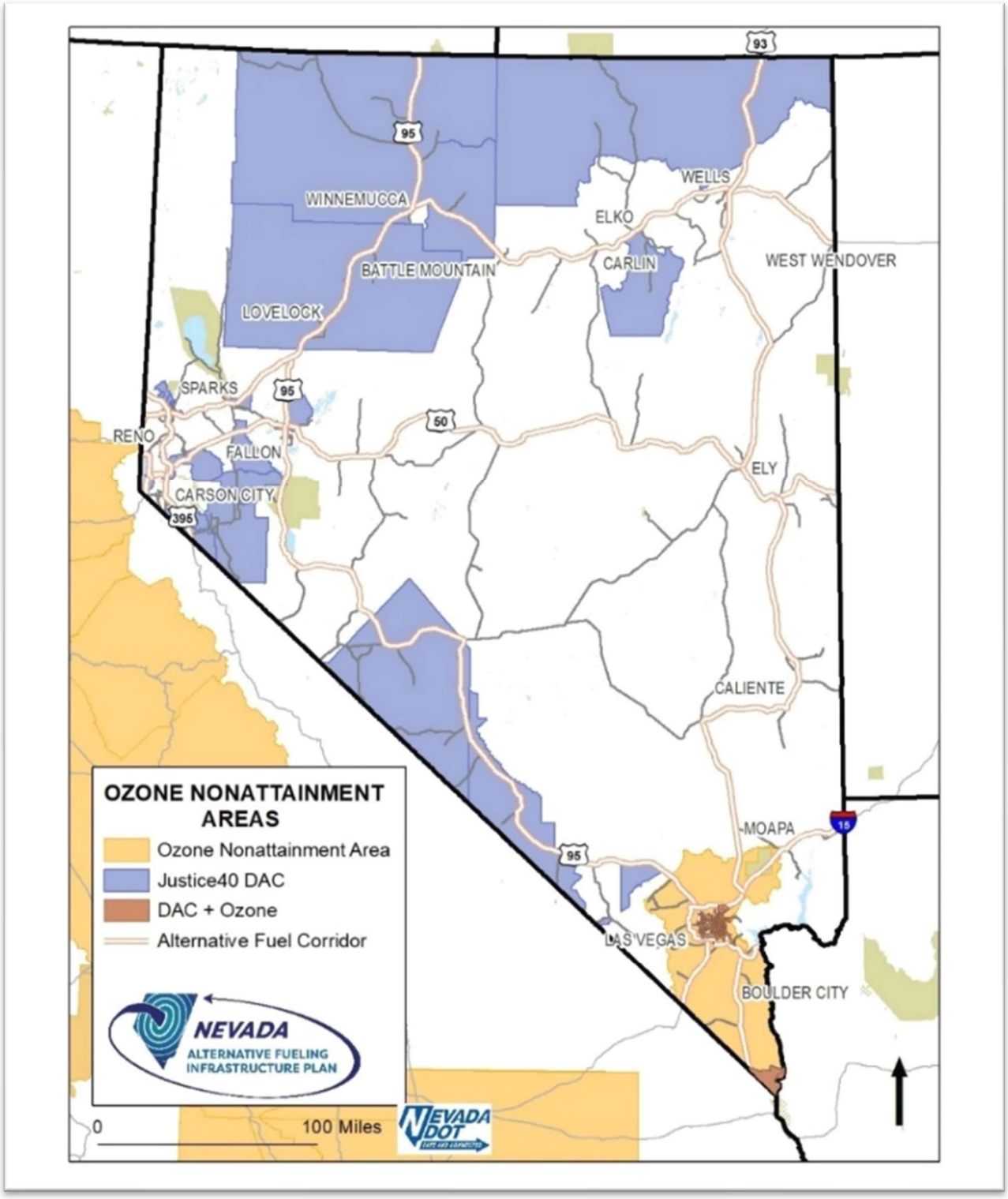


Figure 18. Overlap between Ozone Nonattainment Zones and Justice40 DAC Areas

Strategy 3: Consider indirect benefits to DACs by prioritizing adjacent investments.

Objective: Pilot measurements of indirect benefits to DACs.

Data: Tracts located in nonattainment areas that have overlap with DACs

Data: Tracts that receive many/high-mileage trips from DACs

Measuring indirect benefits may require further guidance from the Joint Office on defensible methods for accounting for indirect benefits. Additionally, NDOT will further include community input on outcomes that are important or relevant to community members. EVs and access to EV charging infrastructure are known to provide indirect benefits such as decreased health impacts, reduced environmental exposures, economic opportunities, reduced transportation fuel costs, and job creation. As identified in SB448, a key benefit of accelerating the use of EVs is to reduce pollution in low-income neighborhoods and communities of color, which traditionally have been most affected by transportation pollution. Generally, air quality benefits will accrue in DACs located in a nonattainment area however, the degree of benefit those investments provide may require further coordination with NDEP and stakeholders, particularly considering hyperlocalized impacts.

Figure 19 displays the overlap of ozone nonattainment areas as monitored by the U.S. Environmental Protection Agency with Justice40 DACs. Areas of Clark County, Nevada, are considered nonattainment for ozone by the standards set in 2015 and 1997, and do not meet the national primary or secondary ambient air quality standards. Of the 284 Justice40 DACs in Nevada, 218 DACs overlap with ozone nonattainment zones, and all DACs located in Clark County near Las Vegas are in nonattainment areas. Although a small land area of the state, approximately 73 percent of the state's population lives in these areas. Targeting these high-population areas for air quality improvements is one recommended area of investigation for Year 2 of this Plan. An area to be considered for further evaluation is identifying existing air quality data to be used as baseline data, particularly in proximity to charging stations, and evaluating emissions to understand hyperlocalized air quality impacts.

The StreetLight data show that approximately 43 percent of trips into, from, or through the traffic zones are made by individuals whose household income is below $50,000 per year. Furthering this analysis will be key to identifying further benefits to DACs and DAC members.

Strategy 4: Gather, through stakeholder outreach, in order to measure benefits, feedback on current incentives, within-community considerations for siting stations, displacement practices, and other topics.

Objective: Conduct robust outreach to community stakeholders to identify community partners and identify community-highlighted benefits.

Data: Summary of comments from stakeholders

The project team was able to directly coordinate with several individuals through various stakeholder outreach opportunities and direct interviews. In particular, the team sought

feedback on current challenges with respect to transportation electrification among DAC members. This stakeholder engagement will be expanded starting in Year 2 of this Plan. Initial engagements focused on identifying key groups important to engage on questions of transportation, electrification, and equity and will also inform future outreach efforts.

Key takeaways:

- Although banks are critical partners in helping DACs and DAC members to access capital, credit unions and community development financial institutions are also critical partners and should be engaged.
- There are a number of organizations that would be useful to scale outreach to specific groups. The American Association of Retired Persons could help to reach older Americans. Many fraternities and sororities require members to perform services to their communities, and those members could be engaged to expand stakeholder outreach and share information on the benefits of transportation electrification, particularly concerning air quality improvements and vehicle ownership cost savings. Veterans communities, which have been actively engaged in advocating for national security through energy independence, are a particularly strong means of outreach, particularly in southern Nevada, where a large population of active military personnel are stationed.
- Cross-marketing may help reach different groups whose interests are aligned with EV advocates.
- Educational opportunities should follow more than just vehicle-specific events. Educational opportunities should be available at a variety of community events, including holiday celebrations (such as Juneteenth), faith-based events, festivals, conferences, and others.
- Elected officials may not understand long-term opportunities associated with transportation electrification, and educational opportunities specific to those members may also help to promote transportation electrification within specific communities as well as at the state level.
- The digital divide will need to be factored into future outreach efforts. Not all communities have access to broadband Internet. Engagement opportunities must meet communities where they are.

Subsequent engagement efforts will focus on both supporting current plan strategies (such as identifying important community benefits) and refining the strategies based on community priorities. In future engagement efforts, NDOT will continue to include equity-focused questions in engagement sessions to solicit input and identify opportunities from as broad a group of stakeholders as possible.

Labor and Workforce Considerations

As stated in the Implementation section, Nevada acknowledges that NPRM requirements are currently under review and will continue to evolve the labor and installation standards required through the NEVI program.

The NV Energy ERTEP lays out a framework for workforce development, based on the SB448 requirement that contractors must have valid licenses in the work they are performing and at least one electrician holding a certification from the Electric Vehicle Infrastructure Training Program. Nevada utility companies are partnering with the Northern Nevada Electric Joint Apprentice and Training Committee as well as the Electrical Joint Apprentice and Training Center of Southern Nevada to strengthen their workforce outreach efforts and the existing Electric Vehicle Infrastructure Training Program. These programs help apprentices achieve a livable wage while completing the 5-year program, and they have a focus on recruiting from the disadvantaged and underserved communities throughout the state, yielding a diverse class of apprentices.

NDOT intends to work with these organizations, alongside the utilities, and will support them through the implementation of the NEVI program.

Cybersecurity & Connectivity

The network connectivity and safety, reliability and access to the charging station infrastructure need to be considered from a cybersecurity perspective. A robust cybersecurity strategy mitigates charging infrastructure, electrical grid and consumer vulnerabilities. NDOT will work with the Nevada Office of Cyber Defense Coordination in developing detailed cybersecurity requirements for design, testing, operations and maintenance as well as updates as new best practices and requirements emerge.

NDOT will follow the FHWA outline for network connectivity requirements for charger-to-charger network communication, charging network-to-charging network communication, and charging network-to-grid communication. NDOT standard requirements will include secure remote monitoring, diagnostics, control, and updates. Proposed network connectivity requirements would also specifically require chargers to be capable of a smart charge management and Plug and Charge capabilities. NDOT will continue to collaborate with utilities to ensure their process and procedures with grid connected devices are incorporated. The requirements identified in this section are consistent with NV Energy's technical requirements for charging infrastructure; however, in those instances where there may be a deviation from NEVI, such as the requirement for card readers, NDOT would follow NV Energy's requirements for stations within its service territory.

The following minimum requirements would help address cybersecurity concerns while mitigating stranded assets:

- OCPP 1.6 (2.0 preferred)
- UL certified
- Wi-Fi or cellular networking
- Ability to be controlled remotely
- Open ADR 2.0b (or current IEEE 1547)
- Payment Card Industry Data Security Standards in compliance with ISO 15118

Program Evaluation

Evaluating the progress and impact of NEVI fund deployment through this program will be an integral and essential part of evolving the program over the next 5 years. Flexibility is critical in the constantly advancing transportation electrification and equally critical for this Plan to be effective. Annual updates will keep the Plan flexible to respond to changing needs and in the early years will allow for continued and more informed development of the Plan approach and evaluation. Evaluation approaches will be assessed annually to maintain alignment with measuring progress towards annual goals and long-term electrification goals. Program evaluation in Year 1 will be different from subsequent years because Year 1 will in large part be focused on building the framework and determining appropriate metrics and data needs for future years.

The two goals in Year 1 of this program are as follows:

1. Define the methodology for ensuring NEVI funds in Nevada are deployed strategically alongside other Nevada EV investments to maximize the benefit to the community and the traveling public.
2. Bring the interstates proposed as AFCs up to meeting the "Corridor Ready" standards under the current NEVI requirements.

Goal 1 requires a more nuanced two-pronged approach that will evaluate the efficacy of the deployment in Year 1 and lay the groundwork for evaluating future years. Evaluation in Year 1 is limited by the availability of existing baseline data. To mitigate this, the first part of evaluating strategic deployment in Year 1 will be focused on qualitative and direct measurements of benefits. The second part of this approach will be to determine the right metrics to evaluate the effectiveness of NEVI fund strategic deployments more holistically and to identify appropriate data sources and measurements so that baseline metrics can be established in Year 1.

The following evaluations are proposed for measuring Year 1 strategic deployment:

- Quantify local/private investment benefits leveraged with NEVI funds.
- Pilot measures of direct and indirect benefits of NEVI-funded infrastructure in order to determine the percentage of benefits experienced by DACs.
- Quantify investment benefits leveraged with other EV efforts across the state.

Goal 2 will be directly measured by tracking the number of miles of interstate that achieve "Corridor Ready" in this first year of proposed improvements against the total number of miles within designated corridors.

Potential Future Year Evaluation Metrics

Evaluation metrics will be reconsidered annually to maintain alignment with goals. The NPRM proposes some standardized metrics for ensuring reliability and data, so our future program evaluation will fall in line with the rule making as well as the needs of owners and operators. Our desired outcome would be that the metrics encourage and not deter participation. The following performance standards are being considered as indicators to evaluate NEVI benefits contributing toward progress on Nevada statewide priorities. The feasibility of collecting data and identifying metrics to measure impacts in the following areas will be evaluated over the next year:

- Climate goals
  - Tracking EV adoption
    - Possible measurements include EV sales, EV registrations, and statewide charging hours
  - Approximating GHG reduction attributed to EV use
  - Localized air quality monitoring
- Promoting equity
  - Demographics of EV registrations, EV sales, and charging station users
  - EV education
    - Possible measurements include developing and tracking hits on an informational website, and general surveys
  - Air quality impacts in DACs
  - Small business participation
- Diversifying the economy
  - Metrics related to small businesses and DBEs
  - Surveys of business owners within 1 mile of new stations

  - Contractor training programs and employment requirements/data tracking tied to new infrastructure construction contracts
  - Employment and training partnerships with energy providers
  - OEM surveys
- Infrastructure implementation strategy
  - New/improved station usage
  - Maintenance surveys
  - Host location surveys
  - In-person surveys of new station users

Discretionary Exceptions

Exception Requests – NDOT

Exception #[1]	Type[2]	Distance of Deviation[3]	Included in Round 6 AFC Nomination	Reason for Exception Request[4]
1	50 miles apart	5 miles	No	Geography
2	50 miles apart	21 miles	No	Grid Capacity Geography Extraordinary Cost
3	50 miles apart	5 miles	No	Geography
4	50 miles apart	7 miles	No	Geography

1. Indicate the number for this specific exception request that corresponds to the same number located on the map provided below.

2. Select 50-mile and/or 1-mile distance exception or both

3. Note the distance of the exception request. For example, if the exception request is for a deviation of 5 miles from the 50-mile requirement, indicate 5-miles.

4. Check all reasons that apply.

Justification for Exception(s)

As explained in the Climate and Land Use Patterns subsections within the Existing and Future Conditions Analysis section, the state of Nevada is largely a rural semi-arid desert. Most of the population (89 percent) is split between two metropolitan areas: Las Vegas and Reno. The remainder of the population is divided among small rural towns. This presents challenges when

trying to meet the NEVI criteria because population centers can be spaced greater than 50 miles apart, and achieving the power needed for direct current fast charging is not possible without expensive upgrades to the grid and power generation facilities. Balancing these factors, four exceptions to the 50-mile criteria are requested. All exceptions requested are along I-80, and three of the four are less than 10 miles of deviation.

Exception 1

Within the towns of Fernley and Lovelock are two existing DCFC stations (ID no. 136698 and 199184) that meet the NEVI criteria. The distance between stations is 55 miles, and both are within 1 mile of I-80. The Trinity Rest Area in Fallon was determined the only potential site location between the existing stations because no other commercial or population centers exist. Because commercial activity at interstate rest stops is prohibited by federal law, this would prohibit any revenue collection and require the station to be owned and operated by NDOT. This does not align with the strategy outlined within the EV Charging Infrastructure Deployment section. In future years this site location will be re-evaluated as the bill H.R.2, Moving Forward Act, advances through Congress. Additionally, increasing power availability at this site to meet the NEVI standards would require a new transformer as well as trenching a new line toward the interstate, requiring significant utility investment anticipated to be over $1 million.

Exception 2

Within the towns of Lovelock and Winnemucca are two existing DCFC stations (ID no. 199184 and 121745) that meet the NEVI criteria. The distance between stations is 71 miles and both are within 1 mile of I-80. Potential upgrade or new site locations were reviewed and discussed with the energy provider for the area (NV Energy). An existing site exists adjacent to Nevada's Rye Patch State Park, which contains three existing charging ports that do not meet the NEVI criteria. It was determined that getting the power required for DCFC at this site or any other potential sites would require large upgrades to the power grid and would be cost prohibitive. Upgrading that site was estimated based on similar projects to cost $7 million to $8 million due to the limited power supply and limited infrastructure in the area. In future years this site will be considered for any on site generation potential with the hopes of upgrading the existing ports to meet the criteria.

Exception 3

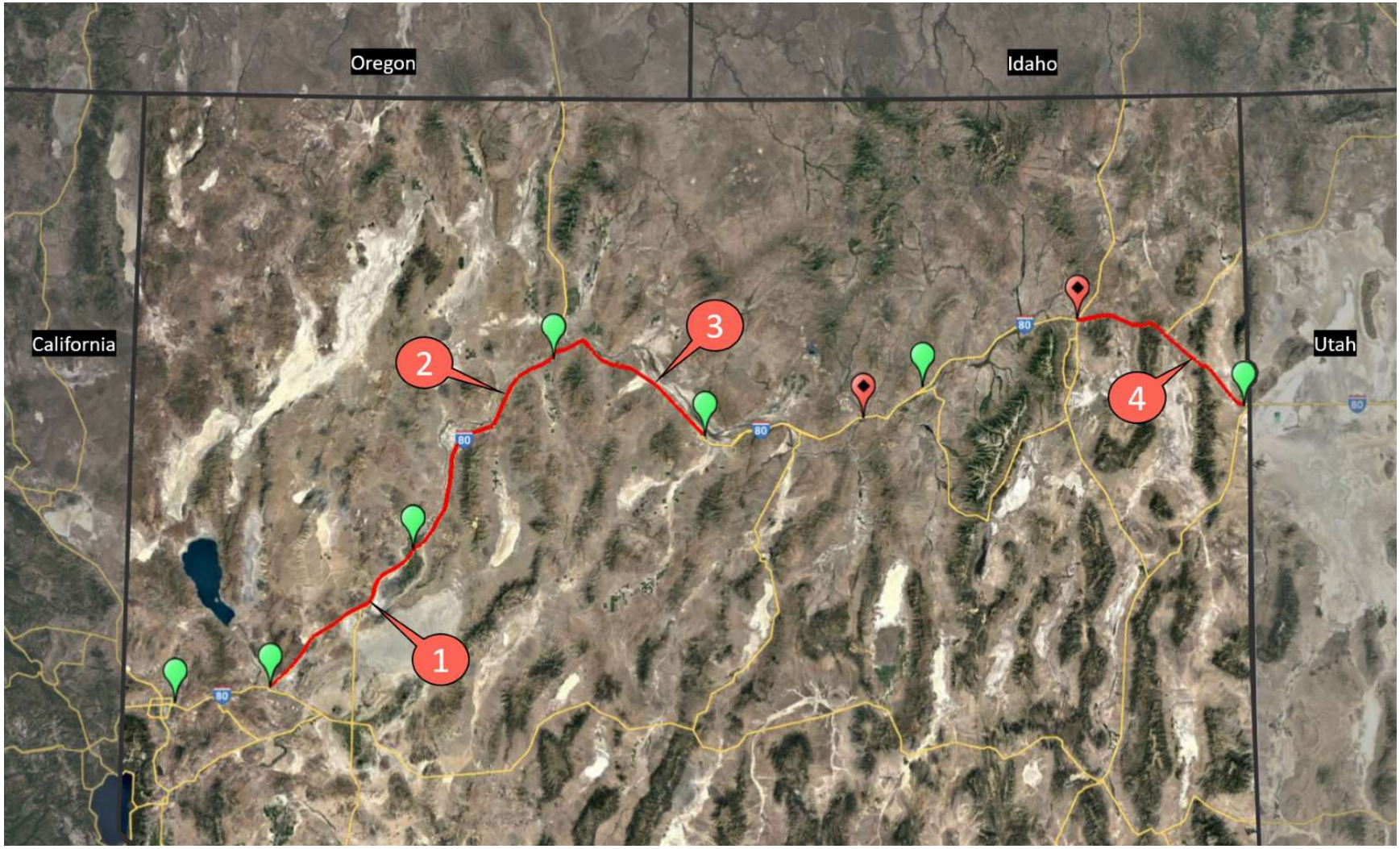
Within the towns of Winnemucca and Battle Mountain are two existing DCFC stations (ID no. 121745 and 170357) that meet the NEVI criteria. The distance between stations is 55 miles and both are within 1 mile of I-80. A potential new site within the town of Valmy was identified during a previous study by NV Energy and determined feasible. However, when evaluating the first-year program funding, it was determined that a 5-mile exception allows spending in other higher-priority areas. In future years this site could be reconsidered.

Exception 4

Within the towns of Wells and West Wendover are two existing charging stations (ID no. 204719 and 187647). The station in the town of Wells does not meet NEVI criteria, but it is planned to be upgraded within Year 1 to meet NEVI criteria. The existing station within West Wendover does meet NEVI criteria. The distance between stations is 57 miles, and both are within 1 mile of I-80. The only other potential site locations are at the Wells Conservation Camp Prison, or the town of Oasis with a population of 34 people, because no other commercial or population centers exist. These sites were not evaluated for feasibility because it was determined that other potential stations were higher priority to ensure all interstate routes are corridor ready within Year 1. In future years this site could be reconsidered.

Note on Future Exceptions

We are still coordinating three proposed upgrade stations with the rural electric providers that currently operate the stations at Carlin and Wells on I-80, and Moapa on I-15, which would bring the interstates to fully built out. Pending the power availability and feedback we receive, we may have additional exceptions in the future.


Oregon
Idaho
California
Utah
1
2
3
4

Appendix A. Funding Matrix

Potential Funding Opportunities for Alternative Fuel Infrastructure in Nevada

Funding Type	Available Amount (FY 2022) Nevada	Available Amount (FY 2023) Nevada	Available Amount (FY 2024) Nevada	Available Amount (FY 2025) Nevada	Available Amount (FY 2026) Nevada
Federal – Formula					
Surface Transportation Block Grant (STBG Funds)	$123.2M	$125.7M	$128.2M	$130.8M	$133.4M
EV Formula Program (National Vehicle Electric Formula)	$5.6M	Not Available	Not Available	Not Available	Not Available
Carbon Reduction Formula Program	$10.9M	$11.2M	$11.4M	$11.7M	$11.9M
Congestion Mitigation and Air Quality Improvement Program	$35.5M	$36.2M	$36.9M	$37.7M	$38.4M
National Highway Performance Program	$253.3M	$258.3M	$263.5M	$268.8M	$274.1M
National Highway Freight Program	$12.6M	$12.9M	$13.1M	$13.4M	$13.6M
Metropolitan Planning Program	$4.3M	$4.4M	$4.5M	$4.6M	$4.7M

	Available Amount (FY 2022) - Nationally	Available Amount (FY 2023) - Nationally	Available Amount (FY 2024) - Nationally	Available Amount (FY 2025) - Nationally	Available Amount (FY 2026) - Nationally
Federal – Discretionary					
Rebuilding American Infrastructure with Sustainability and Equity (RAISE)	$1.5B	$1.5B	$1.5B	$1.5B	$1.5B
Infrastructure for Rebuilding America (INFRA)	$1B	$1.1B	$1.2B	$1.3B	$1.4B
Charging & Fueling Infrastructure program	$300M	$400M	$500M	$600M	$700M
Low-No Emissions Program (Transit)	$1.12B	$1.123B	$1.125B	$1.127B	$1.128B
Advanced Transportation and Technologies and Innovative Mobility Deployment	$60M				
Rural Surface Transportation Grant Program	$300M				
Alternative Fuel Corridor Grant Program	$2.5B Total				
State					
Nevada Electric Highway (NEH) - partnership between the Governor's Office of Energy (GOE), NV Energy, and Valley Electric Association to expand Nevada's electric vehicle (EV) charging infrastructure, initially along US 95, with cost-effective and strategic installations.	TBD	Not Available	Not Available	Not Available	Not Available
Tribal Nation Energy Resilience Program - Governor's Office of Energy	TBD	Not Available	Not Available	Not Available	Not Available
Remaining VW Funds	$24.8M	Not Applicable	Not Applicable	Not Applicable	Not Applicable

	Available Amount (FY 2022) - Nationally	Available Amount (FY 2023) - Nationally	Available Amount (FY 2024) - Nationally	Available Amount (FY 2025) - Nationally	Available Amount (FY 2026) - Nationally
Federal – Discretionary					
Diesel Emission Mitigation Fund - Nevada Division of Environmental Protection - (To replace older diesel -powered vehicles (class 4-8 freight trucks, last mile delivery trucks, school buses, and transit buses) and equipment with new alternative fuel and zero emission vehicles and equipment)	TBD	Not Available	Not Available	Not Available	Not Available
Nevada Clean Diesel Program - Nevada Division of Environmental Protection - partly funded by federal grant funds through the National Clean Diesel Campaign, authorized by the Diesel Emission Reduction Act - to replace and retrofit diesel-powered equipment	TBD	Not Available	Not Available	Not Available	Not Available
Private					
NV Energy	$99.8M from 2022-2024	Not Available	Not Available	Not Available	Not Available

	Available Amount (FY 2022) - Nationally	Available Amount (FY 2023) - Nationally	Available Amount (FY 2024) - Nationally	Available Amount (FY 2025) - Nationally	Available Amount (FY 2026) - Nationally
Federal – Discretionary					
NV Energy Supply Incentives - Renewable Energy Rebate Programs (like: Solar Energy Systems Incentive Program, Solar Thermal Systems Demonstration Program, Wind Energy Systems Demonstration Program, Waterpower Energy Systems Demonstration Program)	Not Available	Not Available	Not Available	Not Available	Not Available
Rural Utilities - Nevada Rural Electric Association (NREA)	TBD	Not Available	Not Available	Not Available	Not Available