



2023



CLARK COUNTY REGIONAL TRANSPORTATION ELECTRIFICATION STRATEGY

Achieving the Rapid Adoption of Light-Duty Electric Vehicles



ACKNOWLEDGMENTS

This report was developed by S Curve Strategies in partnership with the Clark County Department of Environment and Sustainability and the Clark County Regional Transportation Electrification Working Group. Thank you to all those who participated in creating the Clark County Regional Transportation Electrification Strategy.

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EXECUTIVE SUMMARY

The All-In Clark County Regional Transportation Electrification Strategy (TE Strategy) provides recommended steps to accelerate the adoption of electric vehicles (EVs) in Southern Nevada. The benefits of transportation electrification include cost savings on fuel and maintenance, improved public health through reduced pollution, increased economic development, and contributions to social equity.

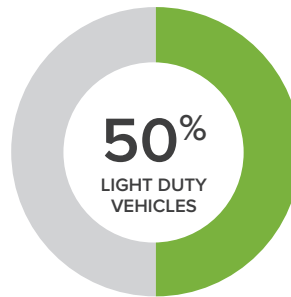




Over the last century, air pollution has increased as the number of vehicles on the road has grown, even with new vehicle technology creating reductions in emissions from equipment such as catalytic converters.¹ Air pollution is associated with respiratory diseases such as asthma and lung disease. Neighborhoods near highways are the most affected by emissions from cars, trucks, and buses. A 2022 study found that energy-related PM_{2.5} emissions are responsible for approximately 50,000 premature deaths yearly and added healthcare costs of approximately \$608 billion annually². Underserved communities bear disproportionate public health impacts from years-long overexposure to pollution. Cleaner air results in reduced costs of treating these health impacts.

A shift to transportation electrification will improve Clark County’s air quality and allow the region to capture some of the billions of dollars in investments committed to the EV industry’s growth over the next five years. The U.S. Infrastructure Investment and Jobs Act alone will see \$50 billion spent during this time³, with continued spending by the private sector that has already made \$149 billion in private investments across the U.S. over the past six years.⁴

Clark County and government partners across Southern Nevada have adopted goals to protect public health, improve air quality, and reduce greenhouse gas (GHG) pollution. The Board of County Commissioners has set these goals via the [All-In Clark County Sustainability and Climate Initiative](#) to become net zero by 2050.⁵ Toward these goals, the County has set near-term milestones to reduce GHG emissions by 28% by 2025 and 45% by 2030. An inventory of Clark County’s GHG emissions determined that more than one-third come from transportation. Light-duty vehicles produce 50% of these emissions, far outweighing those from any other vehicle type in the sector.

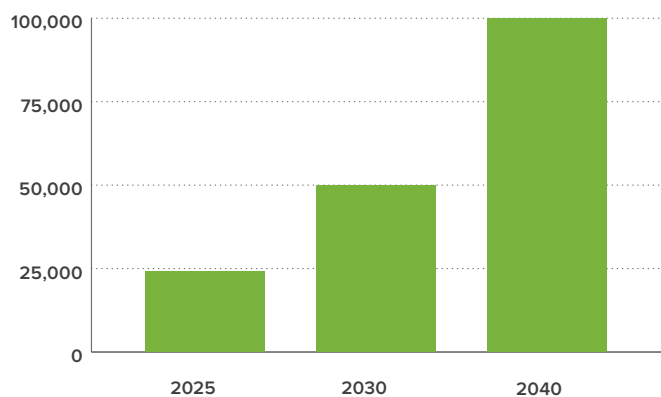


Light-duty vehicles produce 50% of emissions, far outweighing those from any other vehicle type in the sector.

Source: [Clark County emissions inventory](#)

For light-duty vehicles to reach net zero in Clark County by 2050, EV charging infrastructure will be needed to support just over 2 million EVs. Near-term milestones show that the region will need EV charging infrastructure to support annual EV sales of more than 24,000 by 2025, more than 50,000 by 2030, and more than 100,000 in annual EV sales by 2040.

EV SALES BY 2040



Source: Nevada Department of Motor Vehicles

The rate of EV adoption in Nevada in 2022 suggests an upward trend in the sale of EVs that may surpass current projections.

Clark County has seen its highest number of EV sales over the last year. This means the immediate acceleration of EV charging infrastructure is needed to support this demand.

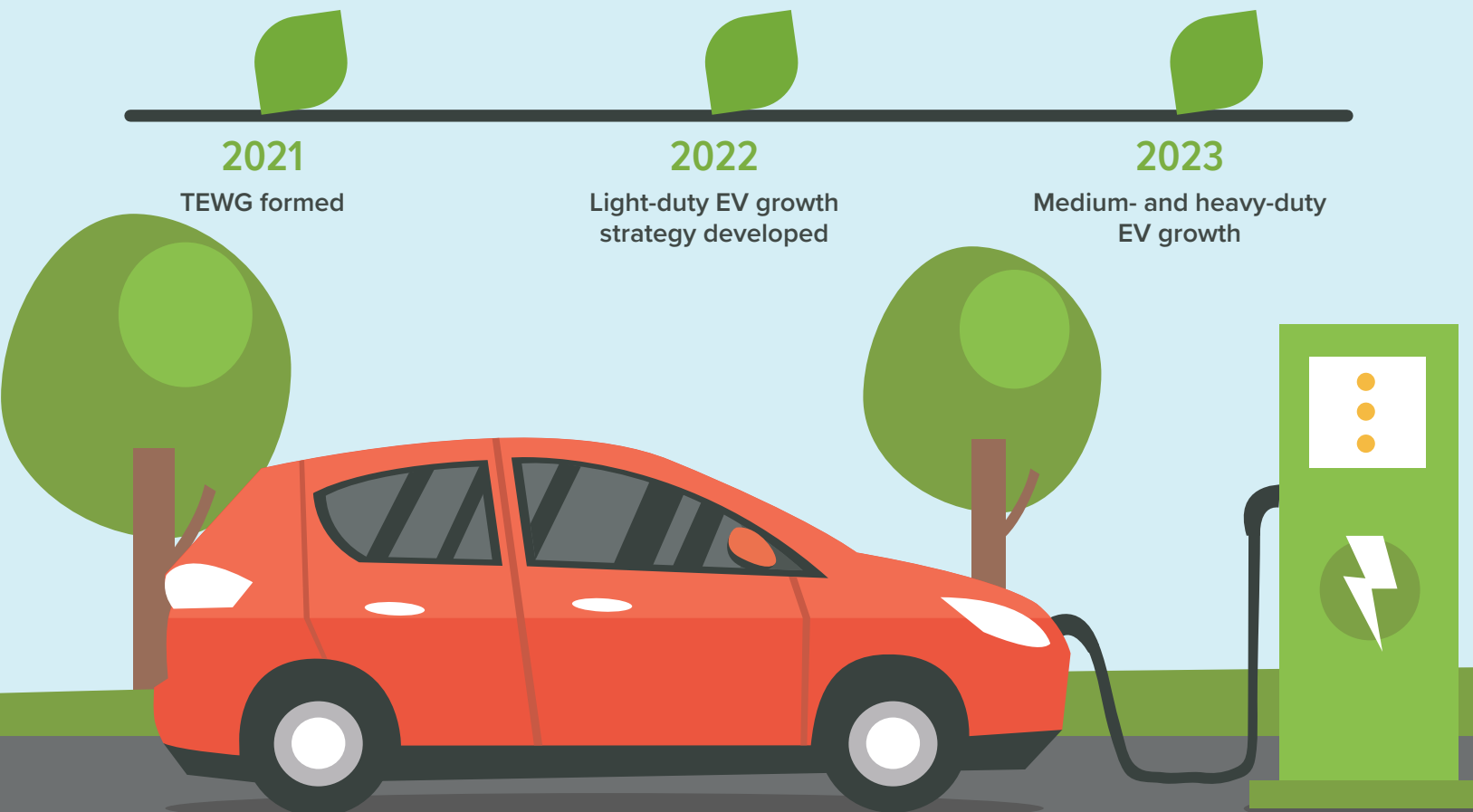
The Nevada Franchised Auto Dealers Association's Q2 2022 sales data showed for the first time that the state's EV market share (7.9%) surpassed the national EV market share (6.4%), and battery EV sales (sales of all-electric vehicles) matched that of standard hybrids. Further indications of EV growth show that two of the top six selling vehicles were electric—the Tesla Model Y and the Tesla Model 3—and Tesla saw a 45% increase in new vehicle registrations in Nevada while the other automakers saw a 10% to 56% decrease.⁶

The support of EV adoption from automakers is strong as they shift production to electric cars to meet policy requirements and customer demand. The Clean Cars Nevada program requires manufacturers in the state to increase the availability and sales of zero-emission vehicles. More than 55 models of EVs are currently available in Nevada and automakers have announced their commitment to another 64 electric models.⁷ As the number of EVs increases, Clark County must prepare to strategically supply the charging infrastructure

necessary to meet this demand. For local residents and commercial fleets to transition their vehicles to electric they need confidence in charging availability.

To support this EV growth and infrastructure need, the Clark County Transportation Electrification Working Group (TEWG) was created in 2021. The TEWG includes stakeholders from across Clark County and the state of Nevada to ensure the region's transportation goals are met equitably. Participants are from state, regional, and local governments, the business community, trade associations, educational institutions, and non-profits.

The TEWG worked together to determine the barriers preventing this growth, the solutions needed to overcome them, and how each stakeholder organization can contribute to the Clark County region's success. While there is work taking place on the federal, state, and municipal levels to support the transition to EVs, this is the first effort to set EV and EV charging infrastructure goals specifically for the Clark County region. The TEWG has been leading the development of a regional TE Strategy to help reduce vehicular emissions, improve air quality and public health, and prepare Southern Nevada to transform and modernize its transportation system.



TEWG GOALS

Meet local, regional, and state GHG emission reduction goals as part of the All-In Clark County Community Sustainability & Climate Action Plan

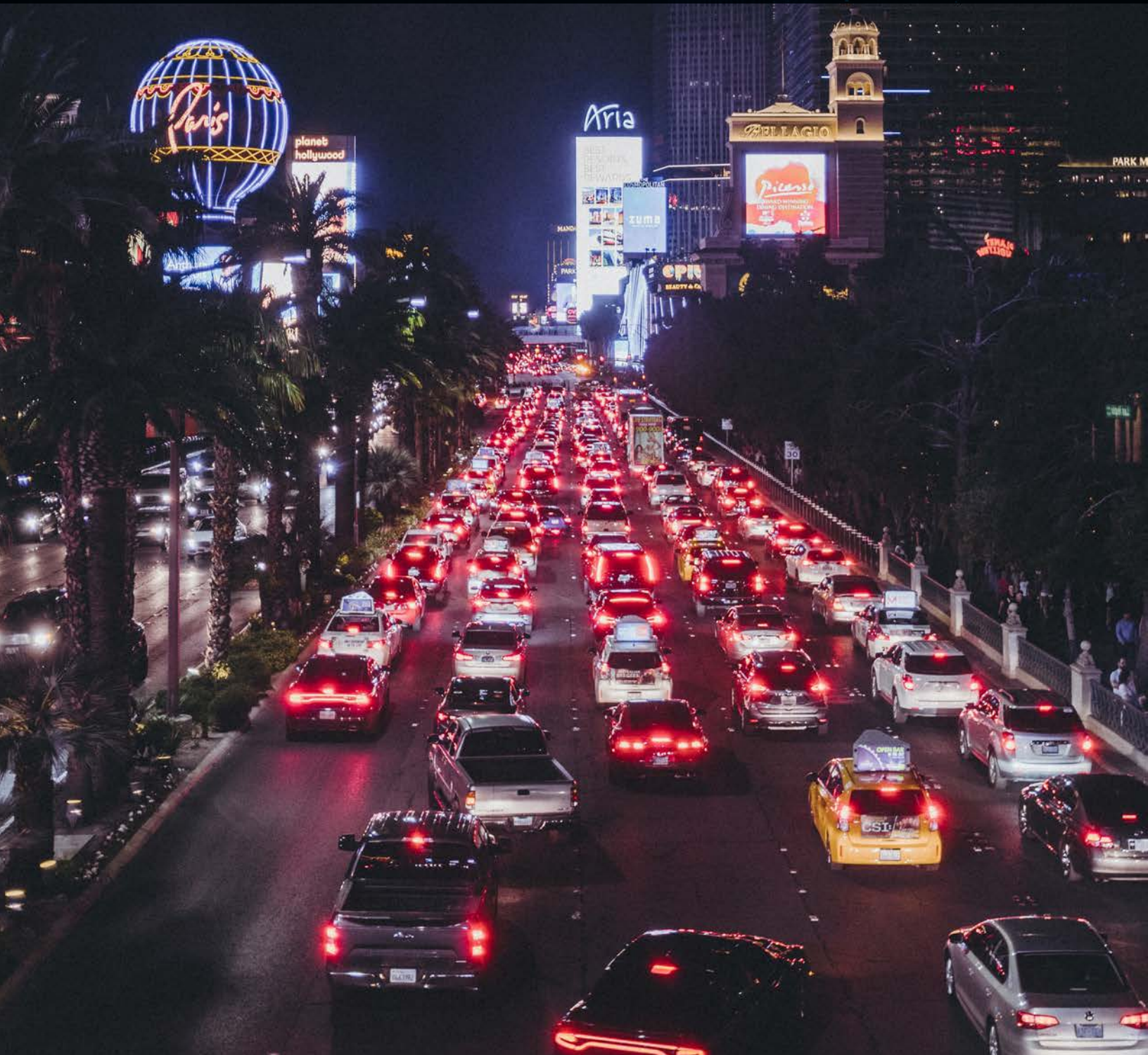
Set regional EV goals necessary to meet these GHG emission reduction targets

Recommendations for the Clark County region:

- 1 Lead by example and help electrify fleets throughout the region
- 2 Demonstrate how to create fleet electrification plans and set goals for which portions of the fleet will be electric, by when.
- 3 Demonstrate how to create an EV readiness plan, covering internal fleets and external infrastructure needs, and keep it current as changes occur and vehicles are replaced.
- 4 Identify public property that could host EV charging plazas and work with NV Energy to install charging stations over time, according to the EV readiness plan. (For example, recreation centers, libraries, government buildings, etc.), and install workplace charging to help staff who own EVs plug in at work.
- 5 Adopt an EV charging infrastructure ordinance to ensure that new construction and significant building retrofits are done in anticipation of higher levels of EV deployment.
- 6 Take full advantage of state and federal funding to accelerate EV deployment, including funds and tax credits from the Bipartisan Infrastructure Law and the Inflation Reduction Act.
- 7 Create a local Clean Cities Coalition chapter to work with local stakeholders on a campaign to educate the public about the benefits of driving electric and the tools and resources available to help residents and businesses make the transition.
- 8 Participate in transportation electrification policy discussions at the Nevada Public Utilities Commission, the legislature, and other state venues to ensure its interests are considered.
- 9 Support workforce development by incentivizing training programs on EV charging installations.
- 10 Prioritize equity by increasing access to the benefits of electric transportation for low-income and disadvantaged communities—not just through access to car ownership and charging, but also through transit, first-last mile connections, EV carsharing, EV paratransit, EV public services (like trash collection), and workforce opportunities.
- 11 Help residents and businesses access discounts on EV purchases by considering a county-level EV purchase subsidy focused on lower-income populations; set up a group-buy program for EVs or ebikes; discounted parking rates for EVs; or a county vehicle registration feebate.
- 12 Standardize EV signage and EV-designated parking rules.
- 13 Streamline the county planning review process for the installation of EV chargers.
- 14 Continue to collaborate with municipalities, the transit agency, the school district, trade organizations, and other commercial and public fleets to encourage and support all of the above residential and fleet electrification efforts.

INTRODUCTION

Clark County's 2.3 million residents account for 70% of Nevada's total population. This makes it Nevada's largest county and the nation's 14th largest. Clark County sees 45 million visitors⁸ annually and is America's 7th most frequented region.



The TE Strategy lays out a roadmap for strategically responding to a rapidly changing transportation sector in Southern Nevada. It demonstrates guiding principles, encourages stakeholder collaboration, and defines EV adoption and charging infrastructure targets. The TE Strategy provides recommendations for the following:

- Current and future projected EV adoption.
- Projected charging demand for public charging, multifamily, single family workplace, and historically underserved communities.
- Overcoming barriers.
- Existing EV charging infrastructure, development needs, and installation planning.
- A model EV charging infrastructure ordinance and the costs associated with such an ordinance.
- The Nevada Public Utilities Commission to facilitate the growth of the EV market.
- Strategies for funding the implementation of EV planning and the installation of charging infrastructure.
- Economic and workforce development opportunities.
- The launch of a new Clark County Clean Cities Coalition.

TEWG stakeholders met monthly from December 2021 through December 2022 to increase their transportation electrification acumen, determine the largest barriers to EV adoption, and develop a strategy to overcome them. All meetings were open to the public, with presentations and recordings posted to the Clark County website. The result of this work is the TE Strategy presented in this document.

To establish a baseline for EV adoption goals, the current counts of light-duty EVs within Clark County were examined and their associated charging infrastructure. There are just over 28,000 BEVs and PHEVs in the region as of December 31, 2022, as well as an additional 39,000 hybrid vehicles. To reach Clark County’s goal of net zero by 2050, the region needs to see a significant increase in the number of vehicles and chargers in the coming years.

Most public stations have Level 2 chargers that add about 25 miles of driving for each hour of charging. There are fewer numbers of direct current (DC) fast chargers that can add about 100 to more than 200 miles of range per 30 minutes of EV charging, depending on the vehicle and charger power. Newer EVs can travel 200 to 300 or more miles on a full charge, depending on the model.

ILLUSTRATION OF LEVEL 1, 2, AND DC FAST CHARGING LEVELS

Level One	Level Two	DC Fast Charge
4-5 miles per hour (charge overnight)	25 miles per hour (charge overnight)	60-80 miles in 20 minutes
Basic outlet anywhere	Installed public or private	Installed along highways
Standard wall plug 120 volts	Clothes dryer plug 240 volts	Charging station 480 volts



28,276
EV Registrations

Source: Nevada Department of Motor Vehicles

476
Level 2 Chargers

Source: U.S. Department of Energy Alternative Fuels Data Center

148
DC Fast Charger

Source: U.S. Department of Energy Alternative Fuels Data Center

0
Hydrogen

Source: U.S. Department of Energy Alternative Fuels Data Center

1,472,064
All Non-EV Fuels

Source: Nevada Department of Motor Vehicles

The U.S. Department of Energy states that as of December 31, 2022, in Nevada, there are 466 public charging station locations with 1,572 charge ports. This includes 426 DC fast chargers and 1,143 Level 2 chargers.⁹

To consider how the region could meet its goal of net zero by 2050, the following information was collected:

- Annual EV registrations
- What infrastructure will be required to support statewide executive orders in the region
- Existing programs, incentives, and regional strategies and developed models to estimate zero-emission vehicle (ZEV) growth in the region and assess the need for EV charging
- Evaluated EV charging infrastructure gaps to facilitate the prioritization of investment into these areas as the region decarbonizes its transportation sector

The TEWG determined what level of EV sales needs to take place to help Clark County achieve its goal of net zero by 2050. Annual new EV sales were adjusted for Clark County’s share of Nevada vehicle sales and projected forward with anticipated population growth.

EV SALES NEEDED TO MEET GOAL

Year	Percent of Light-Duty Sales	Annual New EVs ¹⁰	Cumulative EVs
2025	25%	24,676	92,174
2030	50%	50,181	285,107
2035	86%	87,183	629,631
2040	100%	104,759	1,105,074
2045	100%	108,725	1,587,407
2050	100%	112,691	2,069,741

Source: Clark County TEWG

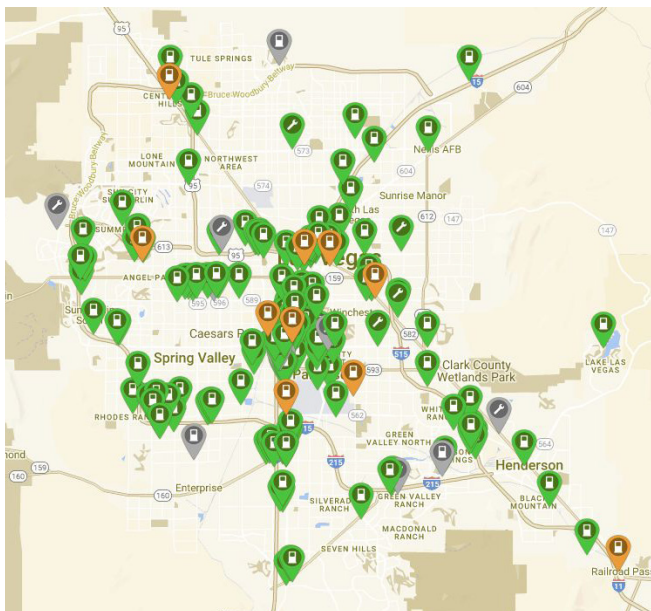
A forecast by NV Energy in April 2022 finds Clark County will lead the way in Nevada with the number of BEVs in service by 2032 at 7.8%.¹¹ Even though Clark County will be a leader in BEV adoption, the NV Energy report also concludes that the BEV adoption rate through 2032 will be 150,000 BEVs, which is considerably lower than the calculated number of 285,000 BEVs needed to stay on pace to achieve the Clark County region’s goals of net zero transportation by 2050.

To meet these Clark County regional EV adoption milestones, a steady and substantial amount of EV charging must be installed so that the community has convenient and reliable access to power the vehicles of the future. The transition to EVs will require many new charging stations at single-family homes, multifamily

communities, offices, resorts, and retail centers. The International Council for Clean Transportation estimates that the Las Vegas metropolitan area will need more than 16,000 charging ports at non-home locations by 2030. The TEWG sees that number increasing even further, with more than 24,000 charging ports needed at workplaces and made available to the public.¹²

Best practices in regional planning for EV charging infrastructure demonstrate that for every 11 EVs a public charging station port is needed. This considers that many drivers will be charging at home. The following table is based on these assumptions and does not consider the number of chargers that will be installed in single-family or multifamily communities.

CHARGING STATIONS IN CLARK COUNTY



● Level 2 ● DC Fast Charger

EV CHARGING INSTALLATIONS NEEDED TO MEET GOAL

Year	Workplace Level 2 Charging Ports	Public Level 2 Charging Ports	Public DC Fast Chargers
2025	4,440	2,723	752
2030	13,734	8,422	2,326
2035	30,329	18,599	5,138
2040	53,231	32,644	9,017
2045	76,465	46,892	12,953
2050	99,699	61,140	16,889

Source: Clark County TEWG



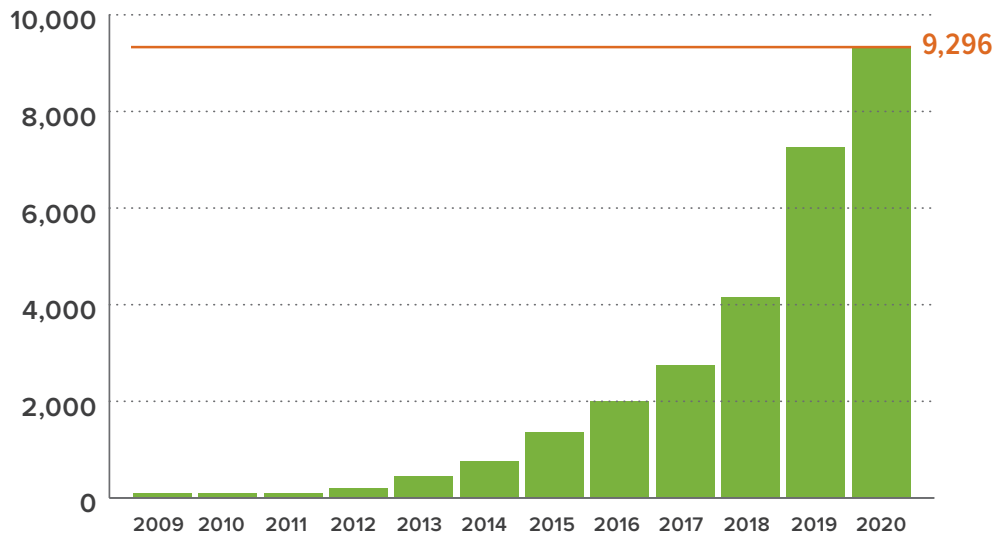
In the first quarter of 2022, Nevada had the largest percent growth of EVSE ports per 100 EVs in the nation (12.6%), mainly due to new installations of Level 2 electric vehicle supply equipment (EVSE) in Las Vegas and Reno.

However, Nevada ranks 33rd among states in terms of the overall total number of installed ports per 100 EVs.¹³ NV Energy’s Economic Recovery Transportation Electrification Plan (ERTEP) will contribute continued growth in EVSE installation in the region over the next 3 years.

There are no hydrogen fueling stations in the state, no hydrogen fuel cell vehicles registered with the Nevada Department of Motor Vehicles, and therefore they were not a part of the TE Strategy’s light-duty EV scope.

There is a solid trend of growth in the EV market while Nevada continues to invest in the EV charging infrastructure to support these drivers as demonstrated by the Nevada Electric Highway Report.¹⁴

EV REGISTRATIONS IN NEVADA



Source: Nevada Electric Highway Report, Sept. 2020

Because Clark County borders three states (California, Utah and Arizona), the region has seen a rise in the number of commuters traveling to work in Nevada from the surrounding states. Interstate 15 passes through southern Nevada, serving Las Vegas and surrounding communities, and connecting California with Arizona and Utah. Interstate 215 and Interstate 515 also serve the Las Vegas metropolitan area as spur interstates. Nevada also is served by U.S. highways 93 and 95 running north-south through the state.

Nevada is one of a few states in the U.S. that does not have a continuous interstate highway linking its two major population centers—the road connection between the Las Vegas and Reno is a combination of several different interstates and U.S. highways. A future expansion of these routes via completion of Interstate 11 is being studied to connect these regions.





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TREASURE

CASINO PALACE

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CURRENT POLICIES, INCENTIVES, AND PLANS

Nevada state legislation and numerous policies support the region's efforts to rapidly grow EV adoption. Nevada has made fighting climate change a priority by joining the U.S. Climate Alliance and passing Senate Bill 254 to implement Executive Order 2019-22.¹⁵ This bill requires the completion of an annual inventory and projection of transportation sector GHG emissions. In addition, Senate Bill 448¹⁶ supports EVs and EV charging infrastructure by reducing GHG emissions throughout the transportation sector.



Understanding the impact of this legislation, executive orders, and policies was critical as the TEWG developed EV and EV charging infrastructure projections. The Nevada Electric Highway report demonstrates how GHG emissions coming from transportation will exceed all other forms of emissions as electricity generation continues to decarbonize.¹⁷

Many state and regional efforts impact EV adoption in Clark County:

NV Energy Economic Recovery Transportation

Electrification Plan (2022): \$100 million plan created to support the transition of passenger and fleet vehicles to electric. An expanded Transportation Electrification Plan for 2023-2024 is pending approval at the Public Utilities Commission of Nevada (PUCN), and will be updated and filed at the PUCN every three years with the Integrated Resource Plan.

Nevada Alternative Fueling Infrastructure Plan (2022):

led by the Nevada Department of Transportation to build out a convenient, reliable, affordable, and equitable public charging network. The effort will receive \$38 million over the next 5 years as part of the U.S. Department of Transportation Federal Highway Administration’s National Electric Vehicle Infrastructure Formula Program (NEVI). It will deploy EV charging stations along Nevada’s interstate corridors and establish an interconnected network to facilitate data collection, access, and reliability.¹⁸

NV Energy Dealership EV Training (2022): in

collaboration with auto dealerships throughout Southern Nevada, a training was hosted for owners, managers, and salespeople to assist them in preparing their dealerships to support the sale and infrastructure support of EVs. They were provided with information about incentives; charging at home, work, and public areas; and EV time-of-use (TOU) rates. This program will likely be continued, pending approval from the Public Utilities Commission.

Regional Electric Vehicle Plan for the West (2021):

facilitate the widespread deployment of EV fast-charging infrastructure in the Intermountain West region.¹⁹

Clean Cars Nevada: Nevada adopted the California motor vehicle emissions and compliance requirements

for vehicle manufacturers, including the GHG emissions standard²⁰ and the zero-mission vehicle (ZEV) production and sales requirements,²¹ beginning with the model year 2025 vehicles. These regulations apply to all passenger cars, light-duty trucks, and medium-duty vehicles.

Access 2050: Regional Transportation Plan for

Southern Nevada (2021): the federal- and state-required plan developed by the Regional Transportation Commission of Southern Nevada, which serves as the metropolitan planning organization for Southern Nevada.²²

Southern Nevada Strong Regional Plan (2015):

develops regional support for long-term economic success and stronger communities by integrating reliable transportation, quality housing for all income levels, and job opportunities throughout Southern Nevada.²³ Efforts to support transportation electrification include:

- Promote the use of EVs in local and state government fleets.
- Incentivize the construction of EV charging stations in local zoning codes by offering parking space count reductions and other zoning-related incentives.

Transform Clark County Master Plan (2021):

Facilitate the expanded use of electric and alternative fuel vehicles and other emerging technologies that support Clark County’s sustainability goals.²⁴

EV Rates: NV Energy provides both residential and commercial EV rates that are priced based on energy consumption in specific time-of-use periods.²⁵

- Special residential EV rates are available for single-family homes (ORS-TOU REVRR), multifamily community residents (ORM-TOU REVRR), and large residences with three-phase electric service (OLRS-TOU REVRR).²⁶
- For commercial customers, NV Energy offers three EV rates tailored their size and electricity usage. They are for general service customers (OGS-TOU EVRR), large general service customers (OLGS-1-TOU EVRR or OLGS-1-TOU EVCCR), and for large general service customers that will have DC fast charging stations (LGS-2 Secondary EVCCR).²⁷

Electrifying Nevada’s 21st Century Transportation System: Actions, Opportunities, Aspirations.

Local Actions and Policies

The six jurisdictions that make up Clark County are active TEWG members and are considering ways to address the public infrastructure necessary to service EVs and increase EV adoption in each jurisdiction. Each unit of local government has autonomy over whether to implement the transportation electrification recommendations by the TEWG. The jurisdictions see their role in the effort as setting examples for EV adoption for their residents and businesses to adopt EVs.

Some have already enacted policies that support EV adoption while others are considering ways to do so. Examples include increasing the number of EVs in their fleets and installing public charging at their facilities where possible. Each jurisdiction expressed interest in applying for transportation electrification grants or programs to bring EV charging infrastructure investment funding to their locations to help support the goals of the TE Strategy.

2022 STATISTICS



BOULDER CITY

FLEET VEHICLES	169
EVs IN FLEET	13
SQ. MILES	208
POPULATION	14,972

EV Policies

The Boulder City Police Department is operating a pilot program testing EVs as patrol cars. It includes three Tesla vehicles and one Ford Mustang Mach-E, each of which are all-electric.

Boulder City operates its own municipal utility and is not able to participate in NV Energy's EV charging and fleet electrification programs. The City applied for a Clean Cars Nevada fleet grant and while they did not receive it, they continue to look for ways to fund their EV adoption efforts.



HENDERSON

FLEET VEHICLES	1,047
EVs IN FLEET	15
SQ. MILES	121
POPULATION	333,753

EV Policies

The City of Henderson is planning to develop a Climate Action Plan that could include regional or fleet adoption goals.



MESQUITE

FLEET VEHICLES	185
EVs IN FLEET	0
SQ. MILES	32
POPULATION	22,146

EV Policies

The City of Mesquite is considering their EV fleet adoption options.



NORTH LAS VEGAS

FLEET VEHICLES	998
EVs IN FLEET	2
SQ. MILES	103
POPULATION	277,933

EV Policies

The City of North Las Vegas plans to increase its adoption of EVs for its fleet and test the vehicles to determine which best fit their needs. They are also considering the infrastructure needed to support their fleet vehicles.



Each of the six jurisdictions see their role in the effort as setting examples for EV adoption for their residents and businesses.

Each jurisdiction expressed interest in applying for transportation electrification grants or programs to bring EV charging infrastructure investment funding to their locations.

2022 STATISTICS



LAS VEGAS

FLEET VEHICLES	2,000
EVs IN FLEET	6
SQ. MILES	131
POPULATION	659,236

EV Policies

The City of Las Vegas' 2050 Climate Action Plan incorporates an EV charging provision in transit-oriented zoning. The plan includes:

- Increasing the number of public DC fast charging stations to 1.07 per 10,000 vehicles.
- Implementation strategies specific to electrification like determining feasibility or implementing in partnership with utilities or other entities.
- Solar for residential commercial that will support clean electricity for EV drivers.
- Incentivizing access to clean transportation and EV transportation in partnership with NV Energy.

- Adoption of the latest International Energy Conservation Code.
- Installing EV charging for fleet and public use at city-owned facilities where possible.
- Incrementally electrifying its fleet vehicles—including light- and medium-duty vehicles, street sweepers, and construction units.



UNINCORPORATED

FLEET VEHICLES	2,400
EVs IN FLEET	10
SQ. MILES	8,000
POPULATION	1,023,893 ²⁸

EV Policies

Clark County is leading the Clark County TEWG and TE Strategy and supported the TEWG with grant writing services to apply for Clean Cars Nevada fleet electrification grants.

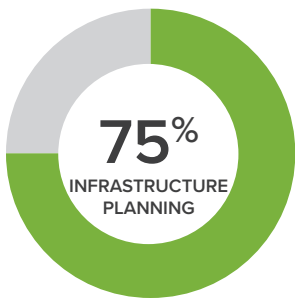
- Committed to 80% of fleet vehicles using alternative fuel by 2030 and 100% by 2050.
- Established a formal vehicle purchasing and replacement policy to shift the County fleet to low- and zero-emission vehicles.
- Developed a fleet electrification plan and participated in NV Energy's EV charging infrastructure program for fleet, employee and public charging.
- Installed 21 charging stations at County-owned facilities—nine reserved for the County fleet across two facilities and 12 for public.

- Participates in Club Ride to encourage employees to commute via alternative modes of transportation and implements the employee four-day work week and cut GHG commuter emissions.
- Launched Clark County Clean Cities to increase the use of cleaner fuels and fleet electrification in the region.
- Moapa, located in unincorporated Clark County, is the beneficiary of the Nevada NEVI funding plan for a statewide EV charging corridor along major highways. A DC fast charger installed here will help complete this federally funded effort.

EV ADOPTION GAPS AND BARRIERS

The TEWG and stakeholders throughout Clark County participated in a survey to identify barriers to EV adoption and help lay a foundation for the TE Strategy. The survey determined the current transportation electrification work being done by stakeholders in the region, captured future plans around EV adoption efforts, and confirmed where they should focus their light-duty electrification efforts. Most participants were from government organizations (55%), followed by businesses (25%), and non-profit advocacy organizations.





The most significant impact on light-duty EV adoption will be through charging infrastructure planning.

Source: S Curve Strategies



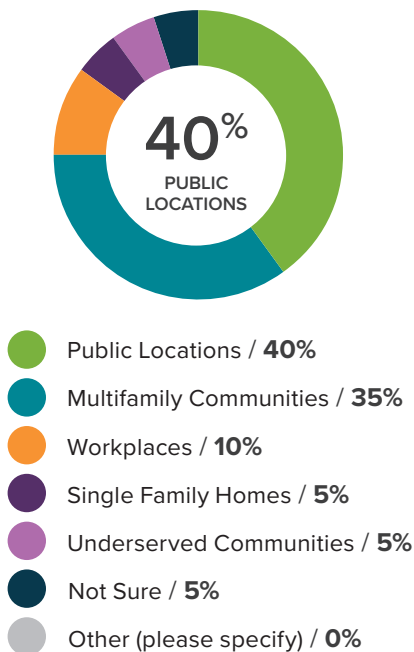
As for the survey methodology, a 15-question survey was emailed to 70 TEWG members and interested parties, with 28 organizations participating. Data was collected, and completed responses were analyzed for trends and insights.

The survey results determined the most significant impact on light-duty EV adoption will be through charging infrastructure planning (75%), followed closely by education and outreach, and accelerating EV adoption in underserved communities.

Public and multifamily EV charging locations should be the most significant focus of the group's efforts. Opportunities exist to assist the 40% of respondents without transportation electrification plans to develop at least one goal. Respondents' current implementation and planning can be leveraged as a foundation for the TE Strategy.

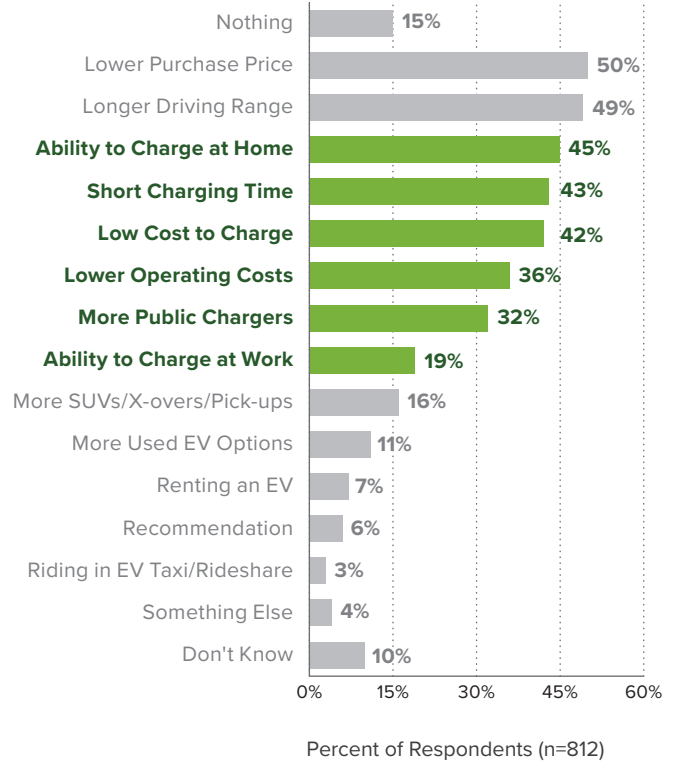
NV Energy surveyed 812 residents and asked their most significant barrier to EV adoption (see below). In the responses collected, charging at home (45%) was a more significant barrier than needing more public chargers (32%).

In your opinion, where should the region focus its light-duty EV charging installation efforts over the next five years? (Choose one.)



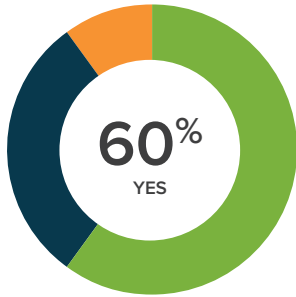
Source: S Curve Strategies

At least one respondent from each organization segment chose multifamily locations. Governments mostly favored public locations.



Source: NV Energy

Does your organization currently have any plans or programs in place to increase the adoption of light-duty EVs?

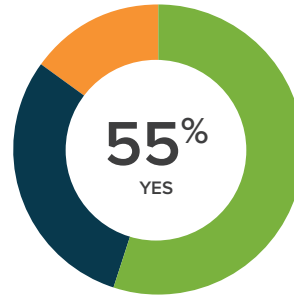


- Yes / **60%**
- No / **30%**
- Not Sure / **10%**

Source: S Curve Strategies

Respondents' current TE efforts include policy, stakeholder engagement, fleet electrification, EV programs and online tools, education and outreach, and infrastructure planning.

Is your organization developing any future plans or programs to increase the adoption of light-duty EVs?






- Yes / **55%**
- No / **30%**
- Not Sure / **15%**







Source: S Curve Strategies

Respondents from government organizations had the most TE efforts underway. Three of the eleven government organizations have no current or future TE plans.

Survey respondent's current transportation electrification efforts include:

 <p>Policy</p> <ul style="list-style-type: none"> Clean Cars Nevada rulemaking for light-duty vehicles placing regulations on Model Year 2025 vehicles for sale in calendar year 2024 Developed a policy team to advocate for EV adoption Participate in PUCN proceedings 	 <p>Stakeholder Engagement</p> <ul style="list-style-type: none"> Leading the TEWG to develop a regional TE Strategy on light-duty EV adoption Working with public and private entities to assess growing EV demand Dealer partnership program Governor's Office of Energy partnership 	 <p>Fleet Electrification</p> <ul style="list-style-type: none"> Online tool to help fleets determine costs and electrify Created online portal for client to have equal access to competitively bid EVs Offers technical advisory services Adopted Ozone Advanced Plan
 <p>EV Programs</p> <ul style="list-style-type: none"> EV time-of-use rate Commercial charging rider for DC fast chargers 	 <p>Education & Outreach</p> <ul style="list-style-type: none"> Hosts educational EV events and test drives EV incentive for economically disadvantaged people in 2022 Online EV calculator 	 <p>Infrastructure Planning</p> <ul style="list-style-type: none"> Electrification of school buses Completing plan to install public EV charging stations (Level 2 and DC fast charging) Electrify city fleet Drive infrastructure efforts through planning policies

Survey respondent's future transportation electrification efforts include:

 <p>Policy</p> <ul style="list-style-type: none"> • Policy planning to make EVs more affordable • Considering adopting CA's Advanced Clean Cars 2 regulation • Want to see offer as an option to homebuyers "if" the infrastructure is available and doesn't add cost to the house • Working with the federal/state delegation and PUCN to ensure incentives are in place and infrastructure reimbursement plans are outlined to increase private development 	 <p>Stakeholder Engagement</p> <ul style="list-style-type: none"> • The TEWG is a trigger to assist our organization in planning  <p>Infrastructure Planning</p> <ul style="list-style-type: none"> • Working with RTC on planning  <p>Education & Outreach</p> <ul style="list-style-type: none"> • Hosts educational EV events and test drives • EV incentive for economically disadvantaged people in 2022 • Online EV calculator 	 <p>Fleet Electrification</p> <ul style="list-style-type: none"> • Evaluating fleet operation impacts and will implement a fleet transition plan that includes looking at nonrevenue fleet soon • Fleet procurement of light-duty EVs and PHEVs along with charging • Looking to identify fleets to assist with transition to electric  <p>EV Programs</p> <ul style="list-style-type: none"> • Additional utility EV charging infrastructure program offerings coming
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Other barriers to EV adoption include:

EV Availability

• Due to the pandemic and associated supply chain issues, the limited availability of EVs is among the major barriers to EV adoption. The recent surge in gasoline prices may have led some consumers to consider EV options, but they may have been surprised by the limited number of EVs available at the retail level. Mainstream legacy automakers, early EV pioneers, and emerging startups are rapidly expanding the lineup of EVs available ranging from micro-mobility to heavy-duty industrial vehicles, yet the availability of models continues to hinder the wide adoption of e-mobility. While this is perhaps the most obvious of the barriers to EV adoption, it is a significant obstacle affecting EV adoption rates.

valid justification for purchasing an EV, but is it cheaper than the fossil-fuel-based alternative? The average purchase price for EVs currently available in the United States, after considering tax credits, is \$75,398.²⁹ The industry average price for a vehicle in the United States, including EVs, was \$42,380³⁰ in 2021. According to the 2022 Global Automotive Consumer Study by Deloitte, 75% of consumers considering an EV purchase³¹ intend to spend less than \$50,000. Yet, fewer than half of the options currently available meet this mark. The purchase price is one of the significant barriers to EV adoption, although EVs can be cheaper from an overall total cost of ownership perspective.³²

EV Affordability

• EV to gasoline vehicle cost parity is anticipated by 2024. Another considerable challenge among the barriers to EV adoption is the affordability of EVs. The need to address the climate crisis is a

Lack of EV Education

• The uncertainty and complexity around EV technology and EV charging feed consumers' fears of not knowing how to charge and running out of battery along a desolate highway. Such perceptions

keep drivers from going electric. Drivers hear that most of today's home chargers are Level 1, which use a standard 120-volt plug and provide only about 5 miles of driving per hour of charging. However, messaging around the benefits of EV charging does not clearly communicate that for most days of the year, an EV driver needs only to replenish their average 25-mile-a-day commute and not their full 250-mile battery range.

Another challenge in educating potential drivers about EV charging is that today there are more than 65 public-charging networks, and each is an independent business. A driver needs an account, an app, or key fob to use a charging station, and each is unique. Some stations, however, can be activated with a credit card. EV drivers can't easily get a comprehensive picture of which network's stations are working and which aren't. It also means that an EV owner gets a bill from each charging network. Breaking down the barriers to charging at home and in public is critical.

Grid Reliability

- Transportation electrification in Nevada will contribute to growth in electricity demand. By 2030, new EVs will add three terawatt-hours of annual energy demand or about six percent of total electricity use. By 2050, the transportation sector could consume as much as 19 terawatt-hours of energy annually, or approximately 20 percent of total energy consumed.³³ However, a sizable portion of the EV charging load is flexible and can be served during the midnight hours when the grid has excess capacity. EV TOU rates can help transition EV charging load to the desired times. The upshot of using TOU rates is that many EVs with flexible charging load can be added to the grid before expensive grid upgrades need to be designed and funded.

Infrastructure Costs

- For EV adoption to proceed at the rate needed to reach the appropriate Clark County GHG reduction goals, charging stations will need to be installed at homes, at workplaces and in public locations. To install these charging stations, there are costs for the charging station hardware itself, for the utility portion

of the electrical infrastructure (as appropriate), and for the installation of the charging stations behind the utility meter. These costs can be significant, especially in certain locations such as multifamily residential locations and public or workplace locations that need to have new electric service or substantial electric infrastructure installed or modified.

The CALeVIP grant program for EV charging stations has documented costs for the purchase and installation of charging stations in various California locations, which are typical of the costs that would be seen in Clark County for similar installations. The average costs for procuring networked Level 2 charging stations are approximately \$6,000 per port for the charging hardware and \$9,000 per port for installation (including any required utility infrastructure components). DC fast charging stations cost, on average, approximately \$37,000 per port for the charging hardware and \$66,000 per port for installation.³⁴

- As covered elsewhere in this report, various incentive programs are available to help defray the cost of installing charging equipment from programs offered by NV Energy and other state and federal organizations.³⁵ These incentives change from time to time, as new incentives come into effect and others time out. NV Energy is a leader in this space, offering several different incentive programs for EVs and charging stations, EV rates for charging vehicles, education and outreach efforts, as well as ongoing work to re-draft the Rule 9 line extension rules that would help to reduce the customer fees for new electric service that might be required for EV charging installations.



Average costs for procuring networked **Level 2** charging stations are approximately

\$6,000

per port for the charging hardware and

\$9,000

per port for installation, including any required utility infrastructure components.



DC fast charging stations cost, on average, approximately

\$37,000

per port for the charging hardware and

\$66,000

per port for installation.³⁶



Source: CAlLeVIP

RECOMMENDATIONS

The All-In Clark County Regional Transportation Electrification Strategy features recommendations to:

- Accelerate the adoption of EVs in Southern Nevada.
- Include a model EV charging infrastructure ordinance.
- Provide funding and incentives for EV charging infrastructure.
- Share charging cost data, support underserved communities with EV charging and education and outreach.
- Provide input to the Nevada Public Utilities Commission on transportation electrification.
- Work with NV Energy to simplify line extension agreements for new EV charging infrastructure.
- Provide utility on-bill financing for residential and commercial to ease the costs of EV charging station installations.



Model EV Charging Infrastructure Ordinance

Clark County should adopt a model EV charging infrastructure ordinance for single-family, multifamily, and commercial developments to support a rapid increase in EV adoption by requiring new buildings and significant building retrofits in the region to provide EV charging or EV-ready capabilities. Such an ordinance would mitigate the disproportionately high retrofit expenses to install EV charging infrastructure in the future. Numerous cities and counties across the U.S. have already adopted such an ordinance.



EV Infrastructure Requirement	During New Construction	During Retrofit	Savings
EV Capable (panel capacity and raceway)	\$300 per space	\$2,500 per space	\$2,200 per space
EV-Ready (full circuit)	\$1,300 per space	\$6,300 per space	\$5,000 per space

Source: [Denver EV charging building code proposal](#)

A TEWG stakeholder survey was created to better understand the region's perspectives on how implementing a model EV charging infrastructure ordinance would help accelerate EV adoption around the need for EV charging infrastructure in this region. The "Clark County Regional EV Charging Ordinance Survey" was administered in June 2022, was open for a one-month period, and focused on gathering information regarding options for a potential EV charging ordinance.

Survey Methodology: Thirty individuals responded to the survey. Most stakeholders engaged through this survey were either a part of the TEWG or an otherwise interested party in this effort. Most respondents represented organizations located in Las Vegas, Henderson, or unincorporated areas of the county. Over 30% of respondents represent a government entity, and over 25% were residential developers for single-family homes. Other participants included individuals from non-profits, non-residential developers, and local businesses and corporations.

Survey Objectives: An EV charging infrastructure ordinance could support the region's efforts to increase EV adoption by requiring new construction to include charging for EVs. The objective of the survey was to provide insight into which infrastructure ordinances would be preferred by interested parties. Following the

collection of the data, results were discussed in the July 7 Clark County TEWG meeting. The survey was followed by developing potential cost estimates for different infrastructure ordinance scenarios.

Survey Results: Overall, a strong majority of respondents (70%) support the adoption of an EV charging infrastructure ordinance for Clark County and surrounding areas. Opinions were varied about whether the ordinance should apply to only new or both new and existing developments. However, over 50% of respondents supported the idea of the ordinance being applicable to both new and existing developments assuming certain conditions for existing developments are met (such as substantial changes or renovations). Across all land use types, more respondents believed an ordinance should be applicable than those who believed the type of structure should be exempt.



A strong majority of stakeholders recommend the adoption of an EV charging infrastructure ordinance for Clark County and surrounding areas.

Source: TEWG Ordinance Survey

MODEL EV CHARGING INFRASTRUCTURE ORDINANCE PROPOSED REQUIREMENTS

Land Use	Requirement	Applicability
Single Family	1 Level 2 outlet (240 volt)	N/A
Multifamily	25% EV Capable 3% EV Installed	25 Parking spaces
Non-Residential—Office Parks, Retail, and Shopping Center	10% EV Capable 3% EV Installed	100 Parking spaces
Non-Residential—Resorts, Hotels, Schools, Colleges/ Universities, Convention Facilities, Cultural and Entertainment	25% EV Capable 3% EV Installed	50 Parking Spaces
Non-Residential—Distribution, Manufacturing, and Industrial	5% EV Capable 2% EV Installed	100 Parking Spaces

Regarding potential ordinance specifics, 40% of respondents believed the ordinance should prioritize EV-capable parking spaces, and half believe that projected EV registration data should be a baseline for determining the percentage of parking spaces required. When asked how many spaces and what type of charging would be appropriate for several types of buildings, a high percentage of individuals responded that they were either unsure or did not know what an appropriate number was.

Respondent Input: As part of the survey, respondents were asked to choose between three different scenarios for each land-use type. These scenarios consisted of three different potential requirements- for EV-capable parking, EV-ready electrical outlets, and already installed EV charging stations. The following scenarios garnered the most support among survey participants and summarize the proposed requirements. A detail of the model ordinance can be found in [Appendix A](#).

To determine the impact of adopting an EV charging ordinance in the jurisdictions within Clark County, baseline information data was collected in order to estimate, within a rough order of magnitude, the number of EV chargers that would be installed as a result of the ordinance. The information included the number of housing units, both single family and multifamily, as well as the number of resorts/hotels/convention/cultural/entertainment, schools/colleges, distribution/manufacturing/industrial and office/retail/shopping centers.

Model Ordinance Adopted: In December 2022, the Clark County Board of County Commissioners received a presentation on the proposed final Model EV Charging Infrastructure Ordinance developed and vetted by the TEWG. In Agenda Item 55, the Board directed staff to incorporate the requirements of the model ordinance as proposed into the Department of Comprehensive Planning’s rewrite of Title 30 (Land Use, Zoning and Development).^{37 38} The ordinance is likely to go into effect in Clark County in the summer of 2023.



ESTIMATED EVS BY BUILDING TYPE

Clark County staff estimates that if Clark County and all local governments adopted the model ordinance as finalized, it would result in a substantial increase in residential and non-residential charging availability. This chart shows the estimated number of EV installed spaces per year by the various building types.

Building Type	Estimated Average EV Installed Spaces Per Year*
Single Family	7,829
Multifamily	225
Non-Residential—Office Parks, Retail, and Shopping Centers	986
Non-Residential—Resorts, Hotels, Schools, Colleges/Universities, Convention Facilities, Cultural & Entertainment	465
Non-Residential—Distribution, Manufacturing, and Industrial	1,455

* Level 2 chargers; estimations based on sustained average growth using 2021 & 2022 building type data.

ESTIMATED LEVEL 2 CHARGING STATIONS NEEDS

This chart shows an estimate of Level 2 charging stations needed to charge the anticipated number of EVs that will be placed into service in the region, as well as the estimated number of EV installed spaces and EV capable spaces that the model ordinance will require.

Year	Projected Level 2 Chargers Needed	Estimated EV Installed Spaces*	Estimated EV Capable Spaces*
2025	7,163	6,098	25,845
2030	22,156	16,260	68,920
2035	48,928	26,423	111,995
2040	84,875	36,585	155,070
2045	123,357	46,748	198,145
2050	160,839	56,910	241,220

* Level 2 chargers; estimations based on sustained average growth using 2021 & 2022 building type data.

Each city located within Clark County has the autonomy to decide whether they too will implement an ordinance and what form it will take. This charging data acts as a baseline to help inform each jurisdictions of the impacts of a Clark County-like ordinance.



Funding and Incentives

Current Funding Sources

NV Energy offers the following incentive programs for customers to install EV charging stations:

NV Energy 2022 Transportation Electrification Plan: NV Energy filed its \$155M Transportation Electrification Plan on September 1, 2022.³⁹ Before filing, they hosted quarterly stakeholder meetings to review the plan.⁴⁰ It covers the two-year period from 2023 through 2024 and is included in NV Energy’s Distributed Resource Plan that was filed with the PUCN. Senate Bill 448 from 2021⁴¹ directs the details of what will be included in the plan. It contains residential and non-residential components, as well as new EV tariffs. The proposed programs and budget include the following:

- Residential Charging Incentive Program (\$4.7M)
- Residential Turnkey Charging Program (\$14.8M)
- Lower Income Electric Vehicle Rebate Program (\$500K)
- Lower Income Telematics Program (\$500K)
- Residential Technical Advisory Services (\$330K)
- Dealer Partner Program (\$167K)
- Multifamily Charging Infrastructure Program (\$34M)
- Fleet Charging Infrastructure Program
- Workplace Charging Infrastructure Program (\$33.9M)

- Interstate Corridor Charging Depot Program (\$22.6M)
- Urban Charging Depot Program (\$33.1M)
- Personal Vehicle Program Administration (\$10.3M)

In addition to the personal vehicle portion of the plan, there is also a commercial vehicle portion. The proposed budget for this portion of the plan is \$147M, with the proposed programs and budgets as follows:

- Commercial Technical Advisory Services (\$417K)
- State, Local and Tribal Governments Fleet Telematics Program (\$1M)
- Fleet Charging Infrastructure Program (\$48.8M)
- Fleet Charging Depot Program (\$18M)
- Transit Electrification Grant (\$30M)
- Electric School Bus Vehicle-to-Grid Trial (\$31.9M)
- Commercial Vehicle Program Administration (\$16.9M)

Electric Vehicle Infrastructure Demonstration Program (EVID): Established in 2017 by the Nevada legislature in Senate Bill 145,⁴² this rebate program provides \$15 million in financial support to help offset the costs of installing non-residential EV charging stations in the NV Energy service territory.⁴³ Incentive levels are shown below, and it is fully subscribed with customer applications requesting to install EV chargers within the next two years.

DC FAST CHARGING: Workplace, Multifamily, Fleet, & Public Convenience Non-proprietary Charging

Charging System Type	Incentive	Minimum System Size	Maximum Incentivized System Size
DC Fast Charger	\$400/kW up to a cap of the lesser of \$40,000 per charging station or 50% of project costs	1 charging system	5 charging systems

LEVEL 2 CHARGING: Workplace, Multifamily, Fleet, Public Convenience, Lower-income Multifamily, & Governmental Charging

Level 2 Charger Incentive	Lesser of: Incentive per Port	Lesser of: % of Total Project	Min # of Ports	Max # of Ports	Max Incentive Per Project
Workplace	\$3,000	75%	2	10	\$30,000
Multifamily	\$5,000	75%	2	10	\$50,000
Fleets	\$5,000	75%	2	10	\$50,000
Public Convenience	\$3,000	75%	2	10	\$30,000
Governmental	\$10,000	100%	2	4	\$40,000
Lower-income Multifamily	\$10,000	100%	2	4	\$40,000

Source: NV Energy EVID Program Incentive Summary

US DOT Carbon Reduction Program: Provides \$6.4B in funding for states and localities over five years to help reduce pollution from transportation and achieve the goal of cutting vehicle emissions in half by 2030.

Economic Recovery Transportation Electrification Plan (ERTEP): Through this program,⁴⁴ NV Energy will invest nearly \$100M for the expansion of EV charging stations across their service territory from 2022 through 2024. The plan goal is 1,000 charging ports at highway rest stops, urban areas, public buildings, transit bus depots, and recreation and tourism destinations. Over 40% of the funding for ERTEP will benefit historically underserved communities, and over 20% of the funding is dedicated to outdoor recreation and tourism locations. In addition, the plan has workforce development, education, and outreach components. The various sub-programs of ERTEP are as follows:⁴⁵

- Interstate Corridor Depots to help facilitate EV travel between the Las Vegas and Reno/Lake Tahoe areas
- Urban Charging Depots—Downtown and Commercial to increase public vehicle and bike/scooter charging at eligible urban downtown locations for residents, visitors, employees, and local fleets
- Transit Electrification Grant to support historically underserved communities in partnership with Nevada transit agencies
- Transportation Electrification: Custom competitive grant program for non-governmental commercial customers

- Public Agency charging at colleges, universities, community centers, and capitol complexes
- Electric School Bus Vehicle-to-Grid trial with eligible school districts
- Outdoor Recreation and Tourism

Clean Cars Nevada: The Nevada Division of Environmental Protection filed the Clean Cars Nevada regulations⁴⁶ with the Secretary of State in October 2021. Starting with the model year 2025, vehicle manufacturers will be required to comply with California's low and zero-emission vehicle standards. To support Nevada's new zero-emission vehicle program (and as a part of the finalized regulations), starting January 1, 2022, manufacturers can earn early action credits for qualifying model year 2022 and later vehicles delivered for sale in the state.

National Electric Vehicle Infrastructure (NEVI):

The \$5B NEVI Formula Program⁴⁷ will fund states to strategically deploy EV charging stations and establish an interconnected network to facilitate data collection, access, and reliability. Initially, funding under this program is directed to designated Alternative Fuel Corridors for EVs to build out this national network, particularly along the Interstate Highway System. When the national network is fully built, funding may be used on any public road or in other publicly accessible locations. Funding is available for up to 80% of eligible project costs annually through the fiscal year 2026.



Nevada Department of Transportation submitted the Nevada State Plan for EV Infrastructure Deployment in July 2022.⁴⁸

The Bipartisan Infrastructure Law also made EV readiness planning and charging infrastructure installation eligible expenses for the Surface Transportation Block Grant and other federal transportation dollars that local governments are apportioned via formula.⁴⁹

Federal Tax Credit: As part of the Inflation Reduction Act, a revised EV tax credit will go into effect on January 1, 2023.⁵⁰ The old per-manufacturer limit of 200,000 vehicles will be removed.

New EVs that meet qualifications are eligible for a tax credit of up to \$7,500, and used EVs will qualify for a tax credit of up to 30% of the purchase price with a maximum of \$4,000.

Modest income limits and vehicle pricing limits apply, and incentives are geared towards vehicles assembled in North America with battery pack components sourced from North America. In addition to vehicle tax credits, the Inflation Reduction Act also includes funding for EV charging stations.⁵¹ The Alternative Fuel Vehicle Refueling Property Credit will start on January 1, 2023, and will provide a credit for up to 30% of the cost of a qualified alternative fuel vehicle refueling station, subject to a \$100,000 per station limit. There are prevailing wage and apprenticeship requirements for labor, as well as geographic location limitations related to eligible low-income census tracts.

Recommended Funding

- **Charging infrastructure costs should be shared** across many interested stakeholders. The diverse charging infrastructure needs present opportunities for coordination and broad cost sharing. Electric power utilities, private charging companies, automakers, public and private fleets, and property owners each have roles in developing the charging infrastructure network. Charging investments can be spurred by public support from federal, state, and local governments via direct funding, cost-sharing, tax credits, regulations, and city codes. Further exploration into the ideal combination of new policies, standards, investments, and coordination across the players is warranted.

Although EV charging infrastructure costs are substantial, the benefits are also great. Charging infrastructure enables a fleet of EVs with lower upfront costs than conventional vehicles and will deliver thousands of dollars in fuel savings per vehicle by 2030. The benefits of the EV transition are at least an order of magnitude greater than charging infrastructure costs, making charging infrastructure a modest down payment to decarbonize the transport sector.

- **Clark County should make a significant effort to include underserved communities** in EV incentives and infrastructure development plans. Otherwise, there is a risk that transportation electrification will reinforce existing racial and economic inequities. Residents living here pay a disproportionate amount of their income on transportation costs.⁵² These demographic sectors are also more likely to experience harmful health impacts from air pollution from internal combustion engines.⁵³ Rising electricity costs also disproportionately impact





households that already experience high energy burdens.⁵⁴ EV tax credits and purchase incentives don't benefit families that have no taxes due at the end of the year that are needed to claim such tax credits. In addition, EV charging infrastructure deployment must reach multifamily communities.

- Input to the Nevada Public Utilities Commission that will facilitate the growth** of the EV market and charging infrastructure and fairly distribute costs among utilities, EV owners, developers, and property owners in a manner that balances economic development and the benefits of electrifying transportation to the region and the State of Nevada. The TEWG received a presentation from the PUCN on their current and upcoming transportation electrification efforts and how stakeholders can become involved in the process. A more significant impact on this work will come from each stakeholder individually due to the diverse perspectives from the group vs. from the TEWG acting as the voice for all participating stakeholders. Stakeholders were invited to participate actively in the process by following the PUCN's TE proceedings and submitting comments.
- Simplify utility line extension agreements.** The TEWG expressed line extensions fees to add utility infrastructure to a larger charging installation may be high, and the length of time for approvals unclear. NV Energy plans to reevaluate their line extension process and fees, and will provide feedback to the group.

- Provide on-bill financing** for residential and commercial EV charging station installations. On-bill financing or repayment can offer home and building owners the option to repay the utility for EV charging infrastructure projects on their utility bill over time and at no cost to ratepayers. Such an option can encourage charging installations without the customer having to provide the full payment upfront.

Look to Available Tools

To help electrify transportation in Southern Nevada, various tools can be used to calculate energy costs, charging station needs, fleet electrification costs, available EVs, and vehicle costs. The following websites and tools are available:

EVI-Pro Lite: To assist state and local governments in planning for EV growth and the associated charging infrastructure required, the National Renewable Energy Laboratory and the California Energy Commission have collaborated to create a tool called EVI-Pro Lite. This tool identifies existing public EV charging infrastructure and projects future demand for public and workplace charging infrastructure by state, city, or urban area based on user inputs for the anticipated number of EVs.⁵⁵

NV Energy Rates: NV Energy offers residential and business (commercial) EV rates for vehicle charging based on TOU billing. In addition, NV Energy provides a guaranteed lowest rate for the first 12-month period. NV Energy will refund the difference if a user switches to an EV rate but could have paid a lower price by staying on the standard rate.⁵⁶ Drivers can sign up online for an EV rate at the NV Energy website.⁵⁷ Previous incentives offered by NV Energy included up to \$500 for installing a residential Level 2 charging station.⁵⁸ While that program is now fully subscribed, NV Energy filed an application with the PUCN on September 1, 2022 for additional incentive programs that have yet to be rolled out, including EV fleet telematics, fleet charging infrastructure, fleet charging depot, transit electrification, electric school bus vehicle-to-grid and education and outreach efforts.⁵⁹

PLUG IN AMERICA OFFERS MANY EV RESOURCES!



EV Support Program

Plug in America's EV Support Program can answer all of your EV-related questions. Email support@pluginamerica.org or call 1 (877) EV-HELP-1.



Charging

Get equipped for charging at home and find a qualified electrician. Plus, find public charging in your area at [PlugStar.com](https://www.plugstar.com).



Incentives

Many EVs are eligible for a federal tax credit of up to \$7,500 and additional incentives may be available in your area. Visit [PlugStar.com](https://www.plugstar.com) to learn more!



Used Electric Vehicles

Used EVs can be a great option given the fewer moving parts. Download our **Used EV Buyer's Guide** on [PluginAmerica.org](https://www.pluginamerica.org).

Electrification Coalition DRVE Tool: The Electrification Coalition created the Dashboard for Rapid Vehicle Electrification (DRVE) tool, which provides a turnkey cost and emissions analysis for light-, medium-, and heavy-duty fleet electrification. The Excel-based DRVE tool provides total cost of ownership information for various fleet vehicles and offers the best fit for EV deployment. The DRVE tool works for private-sector and public fleets, including local and state fleets.⁶⁰

Other Tools: With the acceleration of fleet electrification there are a handful of companies with tools that can help manage fleets and project out the costs and timeline of a fleet's planned transition.

U.S. Department of Energy Website:

- **Vehicle Cost Calculator:** The Alternative Fuels Data Center at the U.S. Department of Energy offers a tool that uses basic information about driving habits to calculate the total cost of ownership and emissions for most vehicles, including alternative fuel vehicles.⁶¹
- **Alternative Fuel and Advanced Vehicle Search:** The Alternative Fuels Data Center also offers a search tool to help users find and compare alternative fuel vehicles. This tool contains an up-to-date list of 2023 Light Duty Vehicles by Fuel/Technology.⁶²

- **Clean Cities Coalition Network Fleet Technical Assistance:** The Clean Cities Coalition Network offers transportation stakeholders objective information and experts to help with questions about alternative fuels, fuel economy improvements and up and coming transportation technologies.⁶³

Plug In America EV and EV Charging Search: Plug In America, via its Plug Star website, offers drivers several tools to help them choose an EV and understand charging requirements, incentives, upcoming events, and dealer information by zip code.⁶⁴

PlugShare: For drivers looking for the most accurate and up-to-date list of available charging stations, PlugShare provides the information on their website or via their phone app. The charging station information is easy to filter by type or plug and is shown in an easy-to-use format that allows drivers to quickly plan their route or charging stops.⁶⁵ In addition, drivers can also "Check-in" at charging station locations on the PlugShare platform to leave comments or ratings to let others know the station's status.

Economic and Workforce Development

The U.S. EV market is benefiting from the windfall of consumer awareness and demand as drivers experienced significantly higher fuel prices over the summer, and auto dealers continue to report they cannot keep EVs in stock.

This interest is sustained by massive levels of U.S. government EV investment totaling \$100 billion over the past year—nearly 30 times the total funding awarded by the U.S. government to date. Initial funding was authorized in November 2021 with the Infrastructure Investment and Jobs Act, also known as the Bipartisan Infrastructure Law, authorizing at least \$7.5 billion to fund EVs and charging infrastructure. The act included an additional \$32.5 billion eligible to support EVs, plus \$10.5 billion for grid upgrades and battery development. The Inflation Reduction Act created an additional \$47 billion in funding eligible to support EVs—not including tax credits or loan programs.

The benefits that will flow from investing in EV charging will be at least an order of magnitude greater than the costs. This is due to the cars requiring less maintenance than their gasoline and diesel counterparts. A transition to transportation electrification at a pace consistent with Nevada’s climate goals will save Nevadans more than \$14 billion through 2050 while providing an additional \$3 billion in public health and climate benefits and another \$3 billion in savings on electricity bills.⁶⁶

The EV charging infrastructure industry needs a significant increase in this workforce to meet Clark County’s EV adoption goals. The industry must find a way to incentivize a contractor to respond to a request for a job that is relatively small, like installing a charging station at a business or residence but takes a similar amount of effort with permitting and approvals as a larger, more-profitable construction job. For example, low-income drivers need help installing home charging; however, most don’t have the tax liability to take advantage of an EV charging tax credit. If an incentive covers part of the cost of a charger and a low-income driver can’t afford the rest, then the driver can’t move forward with the installation.

According to the Economic Policy Institute, the shift to battery EVs could create more than 150,000 U.S. jobs by 2030 as vehicle production transitions to EVs.⁶⁷ Existing automotive workers will have to be re-trained to meet this need. The educational pipeline for new workers from community college and university automotive programs will have to be revamped with courses specializing in EV-related technology. This is starting to occur on a nationwide basis at many educational institutions.^{68 69 70 71 72 73 74 75 76 77 78}

In Nevada, the Community College Workforce Training and Programs Committee⁷⁹ was recently formed through the signing of Assembly Bill 450 to bring together key stakeholders from higher education, business, and industry to learn how better to prepare Nevadans for the jobs of the future. The committee was charged with conducting an interim study concerning opportunities to align workforce training and programs offered by community colleges in the state with business and industry needs. The committee’s final report was released in July 2022 and includes references to automotive education.⁸⁰

Due to the large number of upcoming EV charging station installations that will be needed to charge the EVs purchased in the future, there will be a need for additional trained workers to install and maintain these charging stations. Many utility, ratepayer, and government EV programs around the U.S. have recognized this need and included specific training requirements in their programs. The leading EV infrastructure training program for electricians is the Electric Vehicle Infrastructure Training Program offered by a non-profit of the same name.⁸¹ It was designed with input from automakers, utilities, charging station manufacturers, and other stakeholders and covers all the topics necessary to install and maintain high-powered EV charging stations safely.

In July 2022, NV Energy provided a \$500,000 grant to the Northern and Southern Electrical Joint Apprentice and Training Committee to support the expansion of EV infrastructure in Nevada. The committee is part of the International Brotherhood of Electrical Workers 359. The grant is aimed at developing and expanding NV Energy’s workforce.⁸²

Education and Outreach

Clark County should develop an education and outreach campaign for Clark County residents and businesses to tout the benefits of transitioning to electric transportation. Myth-busting common consumer misconceptions about the relatively new technology behind EVs will remove barriers to widespread EV adoption. A consistent campaign will help combat consumers' general lack of a strong understanding of the benefits of EVs, available models, and incentives to reduce the cost of the vehicle and charging infrastructure.

A focus of the campaign should be on demonstrating these benefits to underserved communities. Developing the resources necessary for consumers to make informed decisions can play a critical role in encouraging EV deployment. Clark County and NV Energy each have websites dedicated to the subject.^{83 84}



Create a Clean Cities Coalition

One way to drive the region forward as a leader in clean transportation is to pursue designation from The Department of Energy's Clean Cities Coalition. Clean Cities is a national network dedicated to the country's economic, environmental, and energy security and works with local coordinators to promote petroleum fuel reduction methods in their communities.

The Clark County Clean Cities Coalition improves air quality and reduces petroleum dependency using alternative fuels, vehicles, and infrastructure. Leading by example, the coalition serves as a resource to the community to ensure its future resiliency and economic viability.

Clark County has begun this process and will work with vehicle fleets, fuel providers, municipalities, trade unions, community organizations, and more to find and implement strategies that reduce petroleum use in our region. Supporting its members and community in the transition to alternative fuels and vehicles, the Southern Nevada Clean Cities Coalition will offer various educational projects. Examples include technical training, EV ride-and-drives, webinars, and community events.

The benefits to Clark County Clean Cities Coalition members include the following:

- Access funding only available to Clean City Coalitions
- Receive technical support for fleet transition
- Exchange information and resources
- Inform public policy
- Advance alternative fuel options
- Collaborate on transportation projects
- Educate the public
- Help the region reach its sustainability goals
- Enjoy cleaner air by reducing pollution and GHGs





CONCLUSION

Transitioning from fossil-fueled gasoline and diesel vehicles in Clark County to zero-emission transportation is the most significant way to reduce their harmful pollutants⁸⁵ that contribute to climate change, and in particular ozone depletion, poor air quality and respiratory illness. In addition, other e-mobility options such as bikes and scooters may be viable options in the effort to help reduce overall emissions in the region.



The rapid adoption of light-duty EVs over the next several years and the installation of associated charging stations will have the most impact to help reduce GHG emissions in the region and help the County achieve their All-in Clark County zero GHG emission goals by the targeted years.⁸⁶ Because of the quantities of EVs and charging stations needed to achieve the goals, there is a sense of urgency to make as much progress as is practical within the next several years.

APPENDICES



MODEL EV CHARGING INFRASTRUCTURE ORDINANCE DRAFT LANGUAGE

SUMMARY TABLE OF PROPOSED REQUIREMENTS

Land Use	Requirement*	Applicability
Single Family	1 Level 2 outlet (240 volt)	N/A
Multifamily	25% EV Capable 3% EV Installed	25 Parking spaces
Non-Residential—Office Parks, Retail, and Shopping Center	10% EV Capable 3% EV Installed	100 Parking spaces
Non-Residential—Resorts, Hotels, Schools, Colleges/ Universities, Convention Facilities, Cultural and Entertainment	25% EV Capable 3% EV Installed	50 Parking Spaces
Non-Residential—Distribution, Manufacturing, and Industrial	5% EV Capable 2% EV Installed	100 Parking Spaces

* Based on the required parking spaces per Table 30.01-4: Minimum Required Off-Street Parking and Stacking Spaces in Transform Clark County Title 30 rewrite

Purpose

Provide EV charging infrastructure distributed throughout Clark County to prepare for a changing vehicle market and emerging vehicle technologies, improve air quality and reduce greenhouse gas emissions.

Applicability

The requirements of this ordinance apply to new development.

General Requirements

EV infrastructure requirements are categorized as follows:

- **EV Capable:** parking spaces equipped for future EV supply equipment by providing dedicated electrical capacity in the service panel and conduit to the EV capable space.
- **EV Installed:** parking spaces reserved for EVs that provide drivers the ability to charge their EV using installed charging stations at the EV installed space.

Number of Spaces

The parking requirements of this ordinance are intended to provide minimum standards. EV capable and EV installed parking spaces count towards minimum parking space requirements. EV infrastructure parking requirements per use type:

MINIMUM REQUIRED OFF-STREET PARKING AND STACKING SPACES

DU = dwelling unit / Sq ft = gross floor area measured in square feet, unless otherwise indicated

N = Not Required / Y = Required

	Existing	Proposed	EV Infrastructure Requirement
Residential Uses			
HOUSEHOLD LIVING			
Dwelling, Accessory	1 per unit	1 per unit	N
Dwelling, Live-Work (NEW)	1 per unit	2 per DU	Y; at 25 required spaces 25% EV Capable 3% EV Installed
Dwelling, Multifamily	1 BR = 1.25 spaces	Studio and 1 BR = 1 per DU	Y; at 25 required spaces 25% EV Capable 3% EV Installed
	2 BR = 1.75 spaces	2 BR & up = 1.75 per DU	
	3 BR & up = 2 spaces	Visitor Parking	
	Visitor Parking	1 per 5 DU.	
	1 per 5 DU. If required resident parking spaces are enclosed, an additional 1 space is required for every 5 enclosed spaces		
Dwelling, Single Family Attached	2 per unit	2 per DU	Y; at 25 required spaces 25% EV Capable 3% EV Installed
	Visitor Parking	Visitor Parking	
	1 per 5 DU. If required resident parking spaces are enclosed, an additional 1 space is required for every 5 enclosed spaces	1 per 5 DU.	
Dwelling, Single Family Detached	2 per unit	2 per DU	Y; at 25 required spaces 25% EV Capable 3% EV Installed
	Visitor Parking	Visitor Parking	
	1 : 5 Units.	1 per 5 DU.	
	If required resident parking spaces are enclosed, an		
	Additional 1 space is required per every 5 enclosed spaces.		
Dwelling, Temporary		None beyond requirement for dwelling	N
Employee Housing		1 per unit	Y; at 25 required spaces 25% EV Capable 3% EV Installed
Family Daycare		None beyond requirement for dwelling	None beyond requirement for dwelling
Garage Sale		None required	N

	Existing	Proposed	EV Infrastructure Requirement
Home Occupation		None beyond requirement for dwelling, for home occupations that do not request a Special Use Permit Approval	None beyond requirement for dwelling
Manufactured Home Park	2 per unit	2 per DU	N
	Age-restricted park	Age-Restricted Parking	
	1 per unit	1 per DU	
	Visitor Parking	Visitor Parking	
	1 space per 15 dwelling units	1 per 15 DU	
Model Residence, Temporary		2 per DU	N
GROUP LIVING			
Assisted Living	1 per 3 beds + 1 per employee	1 per 2 beds	N
	Congregate Care: 1 per 6 beds + 1 per employee		
Childcare Home		1 per 3 beds	N
Community Residence (NEW)		None beyond requirement for dwelling	None beyond requirement for dwelling
Dormitory	0.5 per room, or per 120 sq ft, whichever is greater	1 per 3 beds	Y; at 25 required spaces 25% EV Capable 3% EV Installed
Rooming House	1 per 120 sq ft	1 per guest room	N
Senior Housing	1 per du	1 per DU	N
Supportive Housing	Supportive Housing: 1 per unit, with 40% being mobility impaired accessible	1 per 4 beds	N
Transitional Living for Released Offenders		1 per 4 beds	N
Civic and Institutional Uses			
COMMUNITY AND CULTURAL FACILITIES			
Banquet Facility	4:1,000 sq ft	1 per 250 sq ft	Y; at 50 required spaces 25% EV capable 3% EV installed
Cemetery		None required	N
Convention Facility	2:1000 sq ft	1 per 300 sq ft	Y; at 50 required spaces 25% EV capable 3% EV installed
Crematory		1 per 250 sq ft	N
Daycare	1 per 400 sq ft of classroom and office area	1 per 400 sq ft	N
Funeral Home	10 per 1,000 sq ft	1 per 250 sq ft	N
Museum	3.3 per 1,000 sq ft	1 per 400 sq ft	Y; at 50 required spaces 25% EV capable 3% EV installed

	Existing	Proposed	EV Infrastructure Requirement
Place of Worship	10 per 1,000 sq ft, except for living quarters,	1 per 300 sq ft plus 1 per two bedrooms if on-site living quarters are present	N
	0.5: bedroom; however, facilities for the use of a cloistered religious community (monastery, etc.) need only provide required bedroom parking		
Union Hall	10:1,000 sq ft	1 per 400 sq ft	N
EDUCATIONAL FACILITIES			
School	Varies by grade level:	Elementary & Middle Schools:	Y; at 50 required spaces 25% EV capable 3% EV installed
	Elementary & Middle Schools 1 per classroom + 4 per 1,000 sq ft of office space	1 per classroom plus 1 per 400 sq ft of office area plus 10 stacking spaces in pick-up/drop-off area	
	High Schools 7 per classroom + 4 per 1,000 sq ft of office space		
	OR	High Schools:	
	1 per 90 sq ft of gymnasium/ auditorium, whichever is greater	7 per classroom plus 1 per 400 sq ft of office area plus 10 stacking spaces in pick-up/drop-off area	
Avocational or Vocational Training	2 per 1,000 sq. ft. classroom area + 4 : 1,000 sq. ft. of office	1 per 400 sq ft	Y; at 50 required spaces 25% EV capable 3% EV installed
Instruction or Tutoring	2 per 1,000 sq. ft. classroom area + 4 : 1,000 sq. ft. of office	1 per 400 sq ft	Y; at 50 required spaces 25% EV capable 3% EV installed
HEALTHCARE FACILITIES			
Emergency Care		1 per 300 sq ft	N
Hospital	1.5 per bed	1 per 400 sq ft	N
Commercial Uses			
ADULT			
Adult Business	Bookstores & Sex Novelty Shops	Bookstores & Sex Novelty Shops	
	3 per 1,000 sq ft	3 per 1,000 sq ft	N
	Adult Cabarets & Theaters	Adult Cabarets & Theaters	
	10 per 1,000 sq ft but not less than 15	10 per 1,000 sq ft but not less than 15	N
AGRICULTURE AND ANIMAL-RELATED			
Accessory Agriculture Buildings and Structures		None required	N
Animal Care Project		None required	N
Animal Hospital		1 per 400 sq ft	N
Apiary		None required	N
Aquaculture		1 per 400 sq ft	N

	Existing	Proposed	EV Infrastructure Requirement
Aviary		None required	N
Community Garden		1 per every two garden plots	N
Exotic/Wild Animals		None required	N
Farm or Garden		None required	N
Guest Ranch		1 per guest room	N
Hogs and Pigs		None required	N
Household Pet		None required	N
Livestock , Large		1 space per acre of lot area	N
Livestock, Medium		1 space per acre of lot area	N
Livestock, Small		1 space per acre of lot area	N
Plant Nursery	2 per 1,000 sq ft + 1 per 2,500 sq ft of outdoor display	1 per 550 sq ft of indoor area + 1 per 2,500 sq ft of outdoor area	N
Stable, Commercial	1 per 3 boarding stalls or corrals	1 per 3 boarding stalls or corrals	N
Stable, Residential	1 per 3 boarding stalls or corrals	1 per 3 boarding stalls or corrals	N
CANNABIS			
Cannabis Cultivation Facility	1 per employee on largest shift	1 per 1,000 sq ft up to 100,000 sq ft plus 1 per 5,000 sq ft over 100,000 sq ft	N
Cannabis Dispensary	4 per 1,000 sq ft	1 per 300 sq ft	N
Cannabis Distribution		None required	N
Cannabis Independent Testing Laboratory	1 per employee on largest shift	1 per 400 sq ft	N
Cannabis Retail Store		1 per 300 sq ft	N
Cannabis Production Facility	1 per employee on largest shift	1 per 1,000 sq ft up to 100,000 sq ft plus 1 per 5,000 sq ft over 100,000 sq ft	N
FOOD AND BEVERAGE			
Catering		1 per 500 sq ft	N
Craft Brewery, Distillery, or Winery		1 per 150 sq ft	N
			N
Mobile Food Vending		None required	N
Outside Dining, Drinking, and Cooking		1 per 150 sq ft	N
Restaurant	10 per 1,000 sq. ft. Plus 4 per 1,000 sq. ft. for Outside Drinking, Dining and Cooking	1 per 150 sq ft	N
LODGING			
Bed and Breakfast	1 per guest room + 2	1 per guest room	N

	Existing	Proposed	EV Infrastructure Requirement
Hotel or Motel	Up to 500 rooms = 1 per guest room	0.7 per guest room, up to 500 rooms	Y; at 50 required spaces 25% EV capable 3% EV installed
	501 to 1,000 rooms = 1 per 2 guest rooms	0.7 per 2 guest rooms, between 501 and 1,000 guest rooms	
	1,001 rooms and up = 1 per 4 guest rooms	0.7 per 5 guest rooms, over 1,000 guest rooms	
	Plus 10 per 1,000 sq. ft. for restaurants on the same premises	Plus 1 per 200 sq ft for restaurants on the same premises	
Long-/Short-Term Lodging		1 per guest room	Y; at 50 required spaces 25% EV capable 3% EV installed
Resort Hotel and Rural Resort Hotel	(Requirement includes areas accessing rooms)	0.7 per guest room, up to 500 rooms	Y; at 50 required spaces 25% EV capable 3% EV installed
	0.7: guestroom up to 500 +	0.7 per 2 guest rooms, between 501 and 1,000 guest rooms	
	0.7: 2 guestrooms over 500 up to 1,000 +	0.7 per 4 guest rooms, over 1,000 guest rooms	
	0.7: 4 guestrooms over 1,000 +	Plus 1 per 250 sq ft all areas accessible to the public except convention facilities	
	4.2: 1,000 sq. ft. all areas accessible to the public except convention facilities	0.7 per 1,000 sq ft for convention facilities	
	0.7 : 1,000 sq. ft. for convention facilities and areas not accessible to the public		
Timeshare		1 per unit	Y; at 50 required spaces 25% EV capable 3% EV installed
RECREATION AND ENTERTAINMENT			
Campground		2 spaces in addition to those provided for users of the facility	N
Dayclub/Nightclub		1 per 250 sq ft	N
Instructional Wine-Making Facility		1 per 400 sq ft	N
Live Entertainment		None required	N

	Existing	Proposed	EV Infrastructure Requirement
Recreation	Billiard Halls, Dance, Halls, and Skating Rinks: 10 per 1,000 sq ft	Bowling alley: 2 per lane	Y; at 50 required spaces 25% EV capable 3% EV installed
	Bowling Alley: 4.5 per lane	Shooting Range: 1 per firing lane, plus 1 per 300 sq ft of accessory classroom or retail sales area	
	Convention Facilities (not in conjunction with a Resort Hotel): 2 per 1,000 sq ft	Stadium, Theatre, Arena: 1 per 4 seats	
	Theatre: 1 per every 4 seats	All other: 1 per 300 sq ft of publicly accessible indoor area	
	Shooting Range: 1 per bay plus 4 per 1,000 sq ft (excluding bays and range)		
	Stadiums and Arenas: 1 per 4 seats, or 8 ft of bench length		
	Tennis Club: 3 per court		
Recreational Vehicle Park	1 per 5 spaces	1 per 5 spaces	N
Retreat		1 per guest room	N
Special Event		Determined on a case-by-case basis at time of temporary use permit	N
RETAIL AND SERVICES			
Accessory Commercial		None required	N
Bathhouse		1 per 300 sq ft	N
Caretaker Unit		1 per unit	N
Escort Bureau		1 per 400 sq ft	N
Financial Services	4 per 1,000 sq ft	1 per 400 sq ft	N
Office	4 per 1,000 sq ft	1 per 400 sq ft	Y; at 100 required spaces 10% EV capable 3% EV installed
Office, Temporary		1 per 400 sq ft	N
Outdoor Market		1 per 500 sq ft of market area	N
Personal Services	Varies by use type:	1 per 300 sq ft	N
	Fitness: 5 per 1,000 sq ft		
	General: 4 per 1,000 sq ft		
Retail	Shopping Center:	1 per 350 sq ft up to 50,000 sq ft	Y; at 100 required spaces 10% EV capable 3% EV installed
	5 : 1,000 sq. ft. for 25,000 to 50,000 sq. ft. of GFA	1 per 500 sq ft up to 100,000 sq ft	
	4 : 1,000 sq. ft. for over 50,000 sq. ft. of GFA	1 per 1,000 sq ft over 100,000 sq ft	
	Retail: 4 per 1,000 sq ft		
Sales/Leasing Office, Temporary		Determined on a case-by-case basis	N

	Existing	Proposed	EV Infrastructure Requirement
Seasonal Sales		Determined on a case-by-case basis at time of temporary use permit	N
Wedding Chapel		None beyond that required for the primary use	N
TRANSPORTATION AND AUTOMOTIVE			
Aircraft Hangar		1 per 1,000 sq ft up to 20,000 sq ft 1 additional for each 2,000 sq ft over 20,000 sq ft	N
Airport or Airstrip		1 per 1,000 sq ft up to 10,000 sq ft 1 per 2,500 sq ft over 10,000 sq ft	N
Gas Station	3 per service bay + 4 per 1,000 sq ft accessory retail sales	1 per 250 sq ft of indoor area	N
Heliport		None required	N
Monorail		None required	N
Parking Lot		N/A	N
Passenger Terminal		1 per 1,000 sq ft up to 10,000 sq ft 1 per 2,500 sq ft over 10,000 sq ft	N
Transportation or Tour Service		1 per 400 sq ft of office space + sufficient on-site spaces for parking fleet vehicles	N
Truck Stop		1 per 300 sq ft	N
Vehicle and Equipment Rental or Sales	2 per 1,000 sq ft + 1 per 20 vehicle display spaces provided	1 per 500 sq ft of sales floor area, plus 1 per 1,000 sq ft of lot area. Vehicles on display for sale or rental may not be parked in the spaces required for the sales floor area.	N
Vehicle and Equipment Repair	5.5 per 1,000 sq ft, but not less than 5	1 per 500 sq ft plus 1 stacking space per service bay. Facilities that store vehicles overnight while they are awaiting repair shall have a designated on-site parking area for those vehicles with at least 1 overnight storage parking space per service bay.	N
Vehicle and Watercraft Storage, Accessory		None required.	
Vehicle Wash	Principal use: 2, plus 1 per employee Self-service: none Accessory: Only stacking space requirements apply.	Principal use: 2 spaces Self-service: 2 stacking spaces per automated wash bay	N

	Existing	Proposed	EV Infrastructure Requirement
Industrial Uses			
INDUSTRIAL SERVICES			
Auction	4 per 1,000 sq ft	1 per 350 sq ft	N
Dry Cleaning Plant		1 per 1,000 sq ft up to 10,000 sq ft	N
		1 per 2,500 sq ft over 10,000 sq ft	N
Laboratory (NEW)		1 per 400 sq ft	N
MANUFACTURING AND PRODUCTION			
Alternative Fuels Processing		1 per 1,000 sq ft up to 20,000 sq ft	N
		1 additional for each 2,000 sq ft over 20,000 sq ft	
Animal Byproducts	1.5 per 1,000 sq. ft. (including incidental uses such as office uses)	1 per 1,000 sq ft up to 10,000 sq ft	N
		1 per 2,500 sq ft over 10,000 sq ft	
Batch Plant		1 per 1,000 sq ft up to 20,000 sq ft	N
		1 additional for each 2,000 sq ft over 20,000 sq ft	
Batch Plant, Temporary		1 per 1,000 sq ft up to 20,000 sq ft	N
		1 additional for each 2,000 sq ft over 20,000 sq ft	
Brewery, Distillery, or Bottling Plant	1.5 per 1,000 sq. ft. (including incidental uses such as office uses)	1 per 1,000 sq ft up to 10,000 sq ft	N
		1 per 2,500 sq ft over 10,000 sq ft	
Food Processing	1.5 per 1,000 sq. ft. (including incidental uses such as office uses)	1 per 1,000 sq ft up to 10,000 sq ft	N
		1 per 2,500 sq ft over 10,000 sq ft	
Gunsmith		1 per 1,000 sq ft up to 10,000 sq ft	N
		1 per 2,500 sq ft over 10,000 sq ft	
Manufacturing, Artisan (NEW)		1 per 1,000 sq ft up to 10,000 sq ft	
		1 per 2,500 sq ft over 10,000 sq ft	
Manufacturing, Heavy	1.5 per 1,000 sq. ft. (including incidental uses such as office uses)	1 per 1,000 sq ft up to 10,000 sq ft	Y; at 100 spaces 5% EV Capable 2% installed
		1 per 2,500 sq ft over 10,000 sq ft	
Manufacturing, Light	1.5 per 1,000 sq. ft. (including incidental uses such as office uses)	1 per 1,000 sq ft up to 10,000 sq ft	
		1 per 2,500 sq ft over 10,000 sq ft	
Manufacturing, Medium	1.5 per 1,000 sq. ft. (including incidental uses such as office uses)	1 per 1,000 sq ft up to 10,000 sq ft	
		1 per 2,500 sq ft over 10,000 sq ft	
Taxidermy		1 per 1,000 sq ft up to 10,000 sq ft	N
		1 per 2,500 sq ft over 10,000 sq ft	
NATURAL RESOURCES AND EXTRACTION			
Gravel Pit		1 per 1,000 sq ft up to 100,000 sq ft plus 1 per 5,000 sq ft over 100,000 sq ft	N

	Existing	Proposed	EV Infrastructure Requirement
Gravel Pit, Temporary		1 per 1,000 sq ft up to 100,000 sq ft plus 1 per 5,000 sq ft over 100,000 sq ft	N
Mining and Extraction		1 per 1,000 sq ft up to 100,000 sq ft plus 1 per 5,000 sq ft over 100,000 sq ft	N
Rock Crushing		1 per 1,000 sq ft up to 100,000 sq ft plus 1 per 5,000 sq ft over 100,000 sq ft	N
WAREHOUSING AND STORAGE			
Fuel Storage		None required	N
Hazardous Materials or Waste Storage		None required	N
Mini-Warehouse	5 spaces in the vicinity of the leasing office + 27 foot minimum drive aisles adjacent to all storage unit doors	1 space per 20 storage units; plus 1 space per 400 square feet of office area	N
Outdoor Storage and Display	1 per 7,000 sq ft up to 42,000 sq + 1 per every additional 42,000 sq, but no less than 3 spaces, in addition to spaces required for offices	1 per 10,000 sq ft	N
Petroleum Product Storage		None required	N
Truck Staging		None required	N
Warehouse and Distribution	1.5 per 1,000 sq ft (including incidental uses such as office uses)	1 per 1,000 sq ft up to 100,000 sq ft plus 1 per 5,000 sq ft over 100,000 sq ft	Y; at 100 spaces 5% EV Capable 2% installed
Wholesale	1.5 per 1,000 sq ft (including incidental uses such as office uses)	1 per 1,000 sq ft up to 100,000 sq ft plus 1 per 5,000 sq ft over 100,000 sq ft	N
WASTE AND SALVAGE			
Composting		1 per 10,000 sq ft	N
Public Storage Bin Facility		None required	N
Recyclable Collection		1 per 10,000 sq ft	N
Recycling Center		1 per 10,000 sq ft	N
Refuse Transfer Station		1 per 10,000 sq ft	N
Salvage Yard	1 per 7,000 sq ft up to 42,000 sq + 1 per every additional 42,000 sq, but no less than 3 spaces, in addition to spaces required for offices	1 per 10,000 sq ft	N
Sanitary Landfill		1 per 10,000 sq ft	N

	Existing	Proposed	EV Infrastructure Requirement
Public and Quasi-Public			
GOVERNMENT			
Detention Facility		As shown on site plan	Y; at 50 spaces 25% EV capable 3% EV installed
Government Facility		As shown on site plan	
Government Facility, Temporary		As shown on site plan	
Library		As shown on site plan	
Park		As shown on site plan	
UTILITIES			
Communications Antenna		None required	N
Communications Building		None required	N
Communications Tower		None required	N
Electric Generation, Distributed		None required	N
Electric Generation, Emergency		None required	N
Package Wastewater Treatment Plant		None required	N
Reclamation Facility		None required	N
Utility, Major		None required	N
Utility, Minor		None required	N
Wastewater Treatment Plant		None required	N

Parking for multiple uses: The new proposed development standards propose: For sites with multiple uses, the required parking shall be the sum of the required parking for each of the uses on the site, but also allows a shared parking reduction calculation. The EV infrastructure requirements should be treated the same.

Location

Placement of the required EV capable and EV installed parking spaces shall be determined and identified on the plans submitted with the development application.

Accessibility

Where applicable in multifamily and non-residential developments, a minimum of one (1) EV installed parking space must be located adjacent to an ADA designated space to provide access to the charging station. The EV installed space should have all relevant parts located within accessible each and free of barriers to use by the accessible space. One (1) additional EV installed parking space must be located adjacent to an ADA accessible space for every 50 required EV installed parking spaces.

Signage

Each EV installed space shall be reserved and designated as EV parking.

Waivers

The Board may grant a waiver of development standards according to the procedures outlined in the Waiver of Development Standards section.

Alternatives

The Director may approve an alternative EV infrastructure plan per the procedures outlined in the Alternative EV Infrastructure Plan section.



NEXT
4 MILES



TERMS AND ABBREVIATIONS

DC Fast Charger	Direct current fast charger for electric vehicles
DRVE	Electrification Coalition’s Dashboard for Rapid Vehicle Electrification tool
ERTEP	NV Energy’s Economic Recovery Transportation Electrification Plan
EV	Electric vehicle
EVID	NV Energy’s Electric Vehicle Infrastructure Demonstration program
GHG	Greenhouse gas
LGS-2 Secondary EVCCR	Large General Service 2 Secondary Electric Vehicle Recharge Rider (NV Energy)
MD/HD	Medium- and heavy-duty vehicle
NEVI	National Electric Vehicle Infrastructure
OLGS-1-TOU EVRR	Optional Large General Service Time-of-Use Electric Vehicle Recharge Rider (NV Energy)
ORS-TOU REVRR	Optional Residential Single-Family Time-of-Use Electric Vehicle Recharge Rider (NV Energy)
PUCN	Nevada Public Utilities Commission
REV West	Regional Electric Vehicle Plan for the West
TEWG	Clark County Regional Transportation Electrification Working Group
TE Strategy	Clark County Regional Transportation Electrification Strategy
TOU	Time of use energy rate
ZEV	Zero-emission vehicle



NEVADA LEGISLATION AND REGULATION

The following is a comprehensive list of Nevada legislation and regulations that could impact EV adoption in Clark County.

EV Charging Station Grant Authorization

Utilities are authorized to offer public school districts grants of up to 75% of the cost of EV charging station installation on school property or the purchase of all-electric school buses. (Reference [Nevada Revised Statutes](#) 701B.670)

Transportation Electrification Investment Authorization

Utilities were required to file a plan to accelerate transportation electrification with the PUCN by September 1, 2021. Two or more utilities that share common ownership or transmission systems must include a plan to allocate up to \$100,000,000 for transportation electrification. Plans were required to be designed to accelerate transportation electrification between January 1, 2022, and December 31, 2024, and were required to include the following:

- An Interstate Corridor Charging Depot Program to increase the availability of public charging infrastructure along state highways and support tourism
- An Urban Charging Depot Program to help customers that are unable to charge vehicles at home or work
- A Public Agency EV Charging Program to serve the public, workplace, and government fleet charging needs
- A Transit, School Bus, and Transportation Electrification Custom Program to serve the needs of transit agencies, public schools, planning organizations, and commercial entities; and,
- An Outdoor Recreation and Tourism Program to support tourism and outdoor recreation entities.

Nevada Power Company, NV Energy, and Sierra Pacific Power Company submitted a joint plan to the PUCN in 2021. See the NV Energy Economic Recovery Transportation Electrification Plan website for more information. (Reference [Senate Bill](#) 448, 2021, and [PUC Docket No. 21-09004](#))

Clean Cars Nevada: Zero Emission Vehicle Sales Requirements and Low Emission Vehicle Standards

Nevada adopted the California motor vehicle emissions and compliance requirements specified in Title 13 of the [California Code of Regulations](#). Manufacturers must meet the [GHG emissions standard](#) and the [ZEV production and sales requirements](#), beginning with the model year 2025. These regulations apply to all passenger cars, light-duty trucks, and medium-duty vehicles. For more information, see the [Clean Cars Nevada](#) website.

(Reference [Nevada Administrative Code](#) 445B.2 through 4445B.36 and [Nevada Administrative Regulation](#) R093-20)

Alternative Fuel Vehicle and Infrastructure Grants Authorization

The Nevada Office of Energy administers the Nevada Clean Energy Fund to fund qualified clean energy projects, including any program, technology, product, or service that supports the deployment of alternative fuel vehicles and related infrastructure. Technologies that involve the combustion of fossil fuels are not eligible for funding. For more information, see the [Nevada Clean Energy Fund](#) website. (Reference [Nevada Revised Statutes](#) 701B.930-995)

NEVADA LEGISLATION AND REGULATION (CONTINUED)

EV Charging Station Demonstration Program Requirements

The Electric Vehicle Infrastructure Demonstration Program (Program) requires Nevada utilities to promote and incentivize the deployment of EV charging stations. Utility customers may include public schools that install EV charging stations on-site or purchase electric school buses. Incentives may cover up to 75% of the installation or purchase cost.

Utilities may request to recover the costs associated with carrying out the Program, including customer incentives, by filing an application with the Nevada Public Utilities Commission. (Reference [Nevada Revised Statutes](#) 701B.670 and 704.110)

Regional Electric Vehicle Plan for the West (REV WEST)

Nevada joined Arizona, Colorado, Idaho, Montana, New Mexico, Utah, and Wyoming (Signatory States) in signing the REV West [Memorandum of Understanding](#) to create an Intermountain West EV Corridor that will make it possible to seamlessly drive an EV across the Signatory States' major transportation corridors. In 2019, the [document was updated](#) to include EV corridor goals based on progress. Signatory States are committed to the following:

- Educate consumers and fleet owners to raise EV awareness, reduce range anxiety, and increase EV adoption.
- Coordinate on EV charging station locations to achieve a consistent user experience across the Signatory States.
- Use and promote the REV West Voluntary Minimum Standards for EV charging stations and explore opportunities for implementing the standards in the Signatory States.
- Identify and develop opportunities to incorporate EV charging stations into planning and development processes such as building codes, metering policies, and renewable energy generation projects.
- Encourage EV manufacturers to stock and market various EVs within the Signatory States.

- Identify, respond to, and collaborate on funding opportunities to support the plan's development.
- Support the build-out of DC fast charging stations along EV corridors through investments, partnerships, and other mechanisms.

The Signatory States maintain a coordination group composed of senior leadership from each state who meet every quarter and report on the above actions. For more information, see the [REV West](#) website.

EV Manufacturer Franchise Exemption

A vehicle manufacturer is not required to sell its vehicles through franchised dealers if the manufacturer:

- Only produces passenger cars powered solely by at least one electric motor
- Only sells new or used passenger cars that it manufactures
- Was selling such passenger cars in Nevada on or before January 1, 2016

(Reference [Nevada Revised Statutes](#) 482.36349)

Public Utility Definition

A person who owns, controls, operates or manages a facility that supplies electricity to charge EVs is not defined as a public utility. (Reference [Nevada Code](#) 704.021)

Authorization for High Occupancy Vehicle Lane Exemption

The Nevada Department of Transportation, in consultation with the U.S. Department of Transportation, Federal Highway Administration, and U.S. Environmental Protection Agency, may establish a program allowing federally certified alternative fuel vehicles to operate in high occupancy vehicle lanes regardless of the number of passengers. (Reference [Nevada Revised Statutes](#) 484A.463)

NEVADA LEGISLATION AND REGULATION (CONTINUED)

Autonomous Technology Funding Authorization

A regional transportation commission that operates in a Nevada county with a population of 700,000 or more may provide grants to fund projects that promote innovative transportation and transit technology, including autonomous technology. Autonomous technology is installed on a motor vehicle that can drive the vehicle without a human operator's active control or monitoring. (Reference [Nevada Revised Statutes](#) 277A.430 and 482A.025)

Autonomous Vehicle Testing and Operation Requirements

An autonomous vehicle may not be tested or operated on a highway in Nevada unless it can operate in compliance with all applicable motor vehicle and traffic laws, it has been granted an exemption by the Nevada Department of Motor Vehicles, and it meets the following requirements:

- It is equipped with an easily accessible way for the driver to engage or disengage the autonomous driving system.
- It contains an indicator inside of the vehicle that notifies the driver when the autonomous driving system is engaged.
- It has a means to alert the driver to take manual control of the vehicle should the autonomous driving system fail.
- If operated without the driver's direct control, it can reach a safe state as determined by the Nevada Department of Motor Vehicles, such as bringing the vehicle to a complete stop if the automated driving system fails.
- Autonomous vehicles are motor vehicles equipped with an automated driving system designed to function at a 3, 4, or 5 level of driving automation, as defined by the [Society of Automotive Engineers Code J3016](#).

(Reference [Nevada Revised Statutes](#) 482A.025 through 482A.080 and 482A.100)

EV Parking Space Regulation

An individual may not park a motor vehicle within any parking space designated for charging EVs. To use the parking space, EVs must be actively charging. Violators may receive a fine of up to \$750. (Reference [Nevada Revised Statutes](#) 484B.468)

Medium- and Heavy-Duty (MD/HD) Zero Emission Vehicle Deployment Support

Nevada, California, Colorado, Connecticut, District of Columbia, Hawaii, Maine, Maryland, Massachusetts, New Jersey, New York, North Carolina, Oregon, Pennsylvania, Rhode Island, Vermont, Virginia, and Washington (signatory states) signed a [memorandum of understanding](#) to support the deployment of MD/HD ZEVs through involvement in a Multi-State ZEV Task Force (Task Force).

In March 2022, the Task Force released a draft multi-state action plan to support the electrification of MD/HD vehicles. The Task Force will consider actions to accomplish its goals, including limiting all new MD/HD vehicle sales in the signatory states to ZEVs by 2050. The signatory states will also seek to accelerate the deployment of MD/HD ZEVs to benefit disadvantaged communities and explore opportunities to coordinate and partner with key stakeholders. See the MD/HD ZEVs: Action Plan Development Process website for more information.



RESOURCES

The following documents and resources were reviewed as part of the TE Strategy development.

Federal

- [Infrastructure Investment and Jobs Act](#), The White House, November 2021.
- [EV Charging Action Plan](#), The White House, December 2021.
- [U.S. Department of Energy Alternative Fuels Data Center](#), November 2022.
- [Department of Energy EV Working Group](#), Joint Office of Energy and Transportation, June 2022.
- [Electric Vehicle Charging Infrastructure Trends from The Alternative Fueling Station Locator](#), National Renewable Energy Laboratory, September 2022.
- [International Council for Clean Transportation, Charging Up America: Assessing The Growing Need For U.S. Charging Infrastructure Through 2030](#), July 2021.

State

- [Nevada Alternative Fueling Infrastructure Plan, Nevada Department of Transportation](#), July 2022.
- [Nevada Senate Bill 448](#), 2021.
- [NV Energy TE Plan](#), 2022.
- [NV Energy Residential Electric Vehicle Adoption Forecast 2023-2032](#), April 2022.
- [Regional Electric Vehicle Plan for the West 2021 Progress Report](#), REV West, 2021.
- [The State Transportation Electrification Scorecard, American Council for Energy Efficiency](#), February 2021.
- [Nevada Electric Highway Report](#), Nevada Governor's Office of Energy.

- [Nevada's 2020 State Climate Strategy Builds a Foundation for Future Climate Action](#), Nevada State Climate Initiative, State of Nevada, 2020.
- [Electrifying Nevada's 21st-Century Transportation System](#), Nevada Governor's Office of Energy, January 2019.
- [On Board Mobility Plan](#), Regional Transportation Commission, July 2020.
- [Economic and Emissions Benefits of Electric Vehicles in Nevada](#), January 2019.

Regional

- [Clark County Sustainability and Climate Action Plan](#), Clark County, December 2020.
- [Regional Community Greenhouse Gas Inventory Report](#), Southern Nevada Regional Planning Commission, December 2021.
- [Southern Nevada Strong Regional Plan](#), Southern Nevada Strong, January 2015.
- [Clark County Master Plan](#), Clark County, November 2021.

RESOURCES (CONTINUED)

EDUCATIONAL PRESENTATIONS

S Curve Strategies created a series of educational presentations for the TEWG to meet their goal of increasing their transportation electrification acumen. TEWG stakeholders were also invited to present on industry best practices that would benefit the TE Strategy.

Stakeholder Presentations

- NV Energy, Marie Steele, VP of Electrification: Transportation Electrification and the Electric Grid (Dec. 9, 2021)
- NV Division of Environmental Protection, Greg Lovato, Administrator: VW EV Grant Funding Available Now (Jan. 6, 2022)
- The Electrification Coalition, Jared Walker, Sr. Program Specialist: 3 Steps for Successful Fleet Electrification (Feb. 7, 2022)
- Public Utilities Commission of Nevada, Karen Olesky, Economist: The PUCN's Role in Transportation Electrification (March 10, 2022)
- Clark County, Marci Henson, Director of Sustainability and Environment: Overview of All-In Clark County Plan (April 7, 2022)
- City of Orlando, Chris Castro, LEED GA, Director of the Office of Sustainability and Resilience (June 2, 2022)
- NV Energy, Marie Steele, VP of Electrification: NV Energy Transportation Electrification Plan to PUCN (Sept. 8, 2022)
- AmpControl, Connor Tariche, Business Development: EV Charging Load Management (Nov. 9, 2022)

S Curve Strategies Presentations

- EVs & Charging Best Practices: Dec. 9, 2021
- Multifamily Charging Best Practices: Jan. 6, 2022
- Public EV Charging Best Practices: Feb. 7, 2022
- EV Charging Site Walk Best Practices & Business Models: March 10, 2022
- EV Charging Infrastructure Model Ordinance: April 7, 2022

ENDNOTES

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- 2 <https://agupubs.onlinelibrary.wiley.com/doi/10.1029/2022GH000603>
- 3 https://www.ey.com/en_us/infrastructure-investment-and-jobs-act
- 4 Atlas EV Hub, Global Private Investment Tracker, Nov. 2022
- 5 <https://www.reviewjournal.com/news/politics-and-government/clark-county/clark-county-adopts-historic-climate-action-plan-2282404/>
- 6 Nevada Franchised Auto Dealers Association, Nevada Auto Outlook Q2 2022
- 7 Atlas EV Hub Automakers Dashboard of National EV Sales by Make and Model, August 2022
- 8 https://www.clarkcountynv.gov/residents/about_clark_county/index.php#:~:text=With%20jurisdiction%20over%20the%20world,45%20million%20visitors%20a%20year
- 9 <https://afdc.energy.gov/stations/states>
- 10 <https://evadoption.com/ev-market-share/ev-market-share-state/>
- 11 https://www.nvenergy.com/publish/content/dam/nvenergy/brochures_arch/cleanenergy/ertep/BEV-Adoption-Forecast.pdf
- 12 <https://theicct.org/publication/charging-up-america-assessing-the-growing-need-for-u-s-charging-infrastructure-through-2030/>
- 13 <https://www.nrel.gov/docs/fy22osti/82987.pdf>
- 14 https://energy.nv.gov/uploadedFiles/energyngov/content/Pages/neh_report_final.pdf
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- 16 <https://www.leg.state.nv.us/App/NELIS/REL/81st2021/Bill/8201/Text>
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- 27 <https://cdxapp1.nvenergy.com/account-services/energy-pricing-plans/electric-vehicle/standard-rates-business>
- 28 https://files.lasvegasnevada.gov/planning/statistics/2022_Place_Population.pdf
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- 33 https://gridlab.org/wp-content/uploads/2020/10/GridLab_Nevada-Report.pdf
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- 42 <https://legiscan.com/NV/bill/SB145/2021>
- 43 <https://www.utilitydive.com/news/nevada-regulators-approve-nv-energys-first-ev-infrastructure-program/526785/>
- 44 <https://cdx.nvenergy.com/cleanenergy/ertep>
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