SAN MIGUEL, SAN JUAN, & OURAY COUNTY Regional Electric Vehicle Readiness Plan

Presented by Sneffels Energy Board Facilitated by EcoAction Partners

Table of Contents

Abbreviations Forward Overview Guide for Use of EV Readiness Plan Executive Summary Regional Vision Mission & Goals Jurisdictional Climate Action Goals	3 4 5 7 8	Existing Policy Framework & Current Initiatives Federal Programs State Programs Utility Programs State Initiatives, Executive Orders & EV Code Requirements IRA Breakdown in Relation to EVs	34
Regional Strategies to Increase Electric Vehicle Readiness	s 14	Appendix A: EVs: Barriers, Attitudes & Policy Community Survey Results	40
EV Market Trends & Accomplishments Regional Vehicle Transportation Trends Regional Vehicle Transportation Accomplishme Regional EV Adoption Regional EV Adoption & Charging Infrastructure		Appendix BHigh Priority Locations for New EV InfrastruAppendix B1: San Miguel CountyAppendix B2: Ouray CountyAppendix B3: San Juan County	cture 46 47 58 66
Electric Vehicle Background Electric Vehicle Terminology EV's & Batteries-Environmental Impacts Considerations for Driving EVs in the Mountains EV Ready Building Code Requirements EV Chargers by Level EV Charging Types Costs for Level 2 EVSE EV Connector Types	22		

Utility & Existing Conditions

31

- SMPA/Utility Section
 - Time of Use Education
 - Future of Vehicle to Grid System
 - Utility Rebates/EV Tax Credits

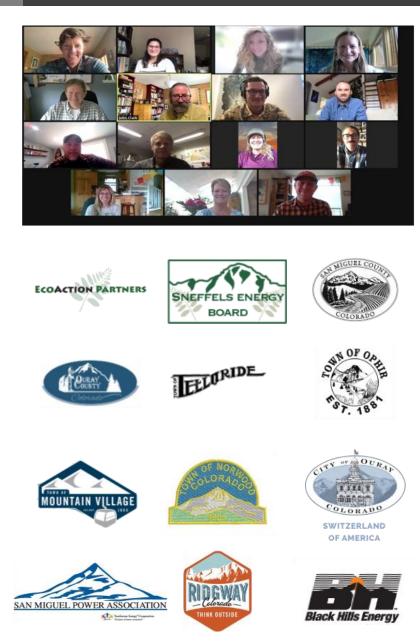
Key Definitions, Contributors & Partner Acronyms

AFV: Alternative Fuel Vehicle
BEV: Battery Electric Vehicle
CEO: Colorado Energy Office
CDOT: Colorado Dept of Transportation
CSB: Clean School Bus
DCFC: Direct Current Fast Charger
DOLA: Department of Local Affairs
E-bike: Electric bicycle
EAP: EcoAction Partners
EPA: Environmental Protection Agency
EV: Electric Vehicle
EVSE: Electric Vehicle Supply Equipment
FTA: Federal Transit Administration
GHG: Green House Gas

ICE: Internal Combustion Engine LEV: Low Emission Vehicle MTCO2e: Metric Tons of Carbon Dioxide Equivalent OC: Ouray County PHEV: Plug in Electric Hybrid SEB: Sneffels Energy Board SMC: San Miguel County SJC: San Juan County SJC: San Juan County SMPA: San Miguel Power Association SUV: Sports Utility Vehicle TOU: Time of Use V2G: Vehicle to Grid V2H: Vehicle to Home ZEV: Zero Emission Vehicle

Foreword





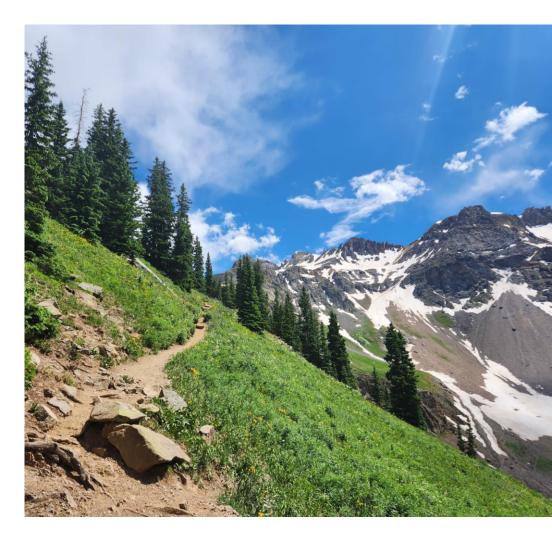
San Miguel, Ouray, and San Juan County Residents and Visitors: We are excited to share our regional Electric Vehicle Readiness Plan on behalf of the Sneffels Energy Board. The Board, developed in 2009, brings together government, utility, and community representatives from our three counties to collaborate in moving our region towards our emission reduction goals. The board in partnership with EcoAction Partners developed a Climate Action Plan in 2021 to guide our partners towards a more sustainable future. The Plan, formally adopted by each of our government partners, establishes our commitment to making change through climate action and collaboration. Through the Climate Action Plan, we identified the need for an Electric Vehicle Readiness Plan to support our region in the transition to a cleaner transportation sector. This document will help quide our region in envisioning a thriving community where electric vehicles are a key piece of a healthy, equitable, and sustainable transportation system. This plan lays out our commitment to taking action in moving our transportation sector forward in a sustainable manner. We invite you to take action with us.

Emma Gerona, Executive Director, EcoAction Partners

Overview

Implementing an action-oriented EV Readiness Plan will guide the region's future EV infrastructure investments and maximize use of existing EV infrastructure. This plan assesses the current state of EV infrastructure across all three counties, provides site recommendations for each community within its jurisdiction, and identifies implementation actions to support EVs and its charging infrastructure on a regional basis. Preparing for the increased use of EVs through a regional readiness plan will support ongoing greenhouse gas reduction goals, community resilience and sustainable economic development.

This readiness plan will support the Colorado Electric Vehicle plan of 2020 establishing a target of 940,000 EVs by 2030, as well as supporting numerous local, state, and federal climate action plans in preparing for and implementing actions that support increased use of plug-in electric vehicles (EVs) throughout the region. The plan is focused on supporting current and future adoption of EVs, including onroad personal and fleet vehicles, and establishing action items to install necessary regionwide EV infrastructure.



Overview

Continued...

The transportation sector is the largest contributor of greenhouse emissions (GHG) in the United States. In our region 29% of total GHG emissions come from the transportation sector, and the vehicles we drive daily, also known as light duty vehicles, represent the highest percentage of the sector at 57%.

Vehicle related GHG emissions have increased approximately 24% since our 2010 baseline and currently make up 23% of our regional emissions. The expansion in this sector is mainly associated with ongoing economic growth. Commuting workers, services of trades people and a decrease in available local affordable housing have increased the amount of workforce related to vehicle transportation. The expansion of tourism has come with a noticeable rise in visitor and service-related traffic throughout the year.

Though we recognize our tourism economy and the need for commuting workers will continue to grow, we can address these accelerating emissions by supporting a cleaner transportation system. One of the key objectives in our regional CAP is to increase the use of electric vehicles. This starts with developing a regional EV readiness plan and understanding the barriers to use with existing infrastructure. EcoAction Partners has worked with key stakeholders to develop a plan that clearly addresses these issues and will prepare our region as we examine our transportation strategy. EAP will continue to facilitate regular meetings of the EV Task Force to support implementation of the project and reflect regional needs throughout the planning timeframe. It is a priority to reflect both jurisdiction specific and regional goals across governments and communities, understand current utilization and barriers to existing infrastructure and address costs associated with the EV transition. This plan will allow for efficient effective steps forward as our region faces an increasing saturation of EVs and looks to support the move to a cleaner transportation sector.



Guide for Use of this EV Readiness Plan

This plan is designed to guide regional government officials and staff, business owners, residents and organizations in providing the infrastructure necessary to prepare for the transition to Electric Vehicles (EV) across our region through education, decision making and project implementation. By understanding the contents and implementing the strategic actions identified in this plan, we can achieve our goals for vehicle electrification.



- The Executive Summary outlines the purpose and vision of this plan, explaining its initiation through development of our CAP by the Sneffels Energy Board, and our successful regional collaboration process to leverage resources. A list of key strategies and identified barriers are included to guide identification and implementation of actions by decision-makers and the public that will advance regional community readiness to adopt clean, zeroemissions vehicle technology.
- EV Market Trends & Accomplishments provides context for our EV transition related to national and state EV transition trends, the impact of vehicle transportation on our regional GHG emissions and the already increasing number of EVs and charging stations across our region.
 - EV Background educates our community about EVs and charging stations to support informed decision making and implementation of this Plan.
- Transitioning to a renewable-powered EV future will require a close partnership with our rural electric cooperative, San Miguel Power Association (SMPA). The Utility and Existing Conditions section covers this key aspect, showing SMPA's service territory, covering all three counties included in this Plan, our current electricity supply mix, and the critical aspect of a Time of Use rate structure to support renewable EV charging.
- The **Current Initiatives** section identifies existing national, state, and utility efforts to support the EV transition through financial incentives, state policies, and programs. 7



Vision for Electric Vehicle Future: Our regional EV Readiness Plan will guide us toward a future with Electric Vehicles powered by renewable energy, which will reduce GHG emissions, improve air quality and decrease traffic noise in our communities. Residents, visitors and commuters will embrace this clean technology as we prepare our communities with the infrastructure needs to support the transition to EV's.

Purpose of the Plan: This regional, community-wide plan will guide infrastructure expansion, to support increasing use of EVs to support state and local long-term goals of 100% of vehicles being electric and/or zero emission. The plan also aims to educate policy makers, government staff and community members about EVs and their associated infrastructure, provide information on financial incentives, and explain the relationship of this EV transition with our electricity supply.

Why EVs?: Our first vehicle-related goal of the CAP is to reduce vehicle travel, so we hope that community members and visitors will increasingly choose to walk, bike, take public transit, and carpool before using a personal vehicle. However, we realize that given our remote, rural region, vehicles will continue to be a part of our society. Thus, our second goal is to "Increase EV Use" and transition vehicles to emissions-free technology. When charged by renewable electricity supply, as supported by the Energy Supply section of our CAP, driving an EV (instead of a gas-powered vehicle) reduces GHG emissions and local air pollution. EVs have lower fuel costs, as electricity is less expensive than gasoline, and lower maintenance costs due to fewer moving parts and no internal combustion engine.

Stakeholder and Community Survey: EcoAction Partners conducted a regionwide community survey early in 2023 to understand current and future needs of the community with regards to electric vehicles and related EV infrastructure. This information has helped inform this regional EV Readiness Plan by identifying barriers to EV adoption, understanding driving patterns, and determining how incentive programs and education would help encourage adoption. The **Survey Results** listed in Appendix A indicate that over 50% of residents intend to transition to EVs or hybrids in the next 5 years and 81% of tourists prefer EV public transit. These results support a rapid investment in EV charging and EV public transit infrastructure.

Executive Summary

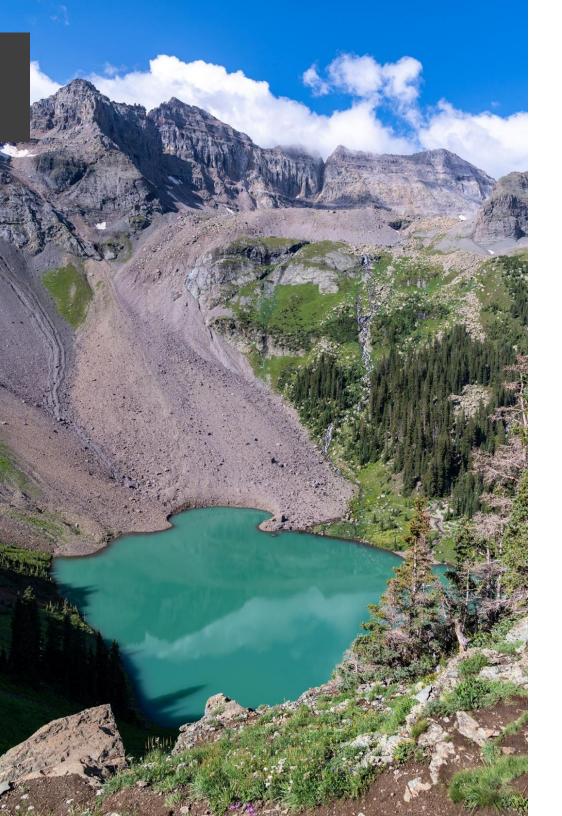
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Expand EV Infrastructure and Vehicle Use:

This plan includes 10 high level strategies to guide the EV Task Force in developing specific actions to accomplish our EV goals. These are listed later in the Plan with Actions and Key Contacts, but are defined here for reference:

- **1. Community Engagement and Policy:** Engage community members to inform EV readiness needs, and government representatives to inform best practice policy changes to encourage the EV transition.
- 2. EV Ride and Drive Events: Host educational test drive events.
- 3. Expand EV Charging Infrastructure: Increase public charging infrastructure and support private sector installations.
- 4. Fleet Electrification: Support government and private business fleets with EV infrastructure and resources for EV purchases.
- 5. Explore Financial Mechanisms: Understand financial incentives and support to implement creative financing for EV infrastructure.
- 6. Collaborate with Local Utility Provider: Work with SMPA for EV charger installations, necessary utility upgrades, and to educate community members about time of use electricity rates.
- 7. Require New Construction to be EV Ready: Update building energy codes to meet Colorado's new requirements for EV Readiness.
- 8. Encourage EVSE in multi-family housing: Identify challenges, support solutions, and educate management and tenants.
- 9. Create and Maintain Inventory of EV Resources: Maintain updated list of resources for EV infrastructure and financing.
- **10. Explore Alternative Clean Fuel Options:** For heavy-duty or other vehicles not ideal for EVs, explore hydrogen and other clean fuel technology options.

Implementation: EcoAction Partners has created an implementation tracking tool for each stakeholder organization to guide and track implementation of detailed actions. EAP will work with EV Taskforce members and other partners through implementation of this Plan.



Sneffels Energy Board

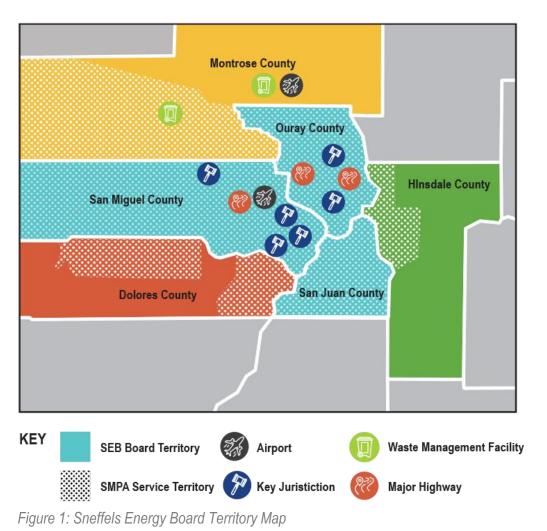
Recognizing the power of collaboration and leveraging grant funding, EcoAction Partners formed the Sneffels Energy Board in 2009 to address sustainability at a regional level. The SEB (formerly named the Western San Juan Community Energy Board), aims to reduce GHG emissions and consumption of valuable natural resources in the region through coordinated community engagement, project implementation, and policy change at both the local and state level.

The Sneffels Energy Board brings together local leaders to collaborate on setting and accomplishing regional sustainability goals. Partners of the Board meet quarterly to share information and experiences, design successful regional programs, identify new opportunities, and analyze progress.

The Board is made up of government and staff representatives from San Miguel, San Juan and Ouray counties, the towns of Telluride, Mountain Village, Ophir, Norwood, Ridgway, Silverton and the City of Ouray as well as utility partners, San Miguel Power Association, Black Hills Energy, and several citizen group representatives.

Sneffels Energy Board: EV Task Force

Continued...



The Board established regional sustainability goals and published an initial collaborative Sustainability Action Plan in 2010. The SEB updated this plan in 2021 with a Climate Action Plan, that represents the ongoing regional commitment to collaborative climate action in support of a more sustainable future for our region. On behalf of the SEB, EcoAction Partners collects, analyzes, and reports on regional greenhouse gas emissions data and coordinates the implementation of regional action items to reach regional goals more efficiently. The SEB gathers and shares information from the Colorado statewide sustainability network and identifies key local priorities, partnerships, and climate solutions.

The EV Task Force was created as a subset of the SEB to guide development and implementation of the regional EV Readiness Plan. This group is comprised of elected officials, jurisdictional staff, SMPA representatives, and community members across the region of San Miguel, Ouray and San Juan counties.

EV Task Force Vision, Mission & Goals

The VISION statement for this plan is:

To reduce greenhouse gas emissions and improve sustainability in San Miguel, San Juan, and Ouray Counties by creating conditions that make electric vehicles (EVs) more accessible for residents and visitors.

The MISSION statement for this plan is:

To provide clear direction to develop and implement appropriate EV charging infrastructure for public use and to foster greater use of EVs within San Miguel, San Juan, and Ouray County.

The GOALS of this plan are to:

- Support installation of EV charging infrastructure across the region to ensure accessibility as EVs increase in popularity.
- **Strategically identify** charging station types and locations that best support EV adoption in specified counties.
- Integrate EVs into a renewably powered electric grid with SMPA and lay the foundation for a vehicle-to-grid system.

Jurisdictional Climate Action Goals

- San Miguel County: Municipal & community-level GHG tracking in place; adopted CC4CA goals and strategies; target of carbon neutrality.
- Town of Telluride: Municipal and community-level GHG tracking in place; Telluride-specific CAP developed 2015, updated in 2021; target of carbon neutrality.
- Town of Mountain Village: Municipal & community-level GHG tracking in place; TMV-specific CAP developed 2020; target of carbon neutrality by 2050.Climate Action Roadmap to be completed in Q12024.
- **Town of Norwood:** Adopted Colorado's previous state goals of reducing GHG emissions 20% by 2020 along with the rest of the Sneffels Energy Board.
- Town of Ophir: 2018 resolution to achieve 100% GHGfree electricity; Ophir Self Reliance Committee working towards the goal of carbon neutrality; Ophir Water Commission is implementing water efficiency actions.

- **Ouray County:** Adopted CC4CA goals and strategies.
- **City of Ouray:** Through 2012, the City adopted an Energy Action Plan, guiding them toward implementing many actions that reduce government energy use into the future.
- **Town of Ridgway:** Ridgway encourages the use of carbonfree and renewable energy systems within the town; Supports the goal of carbon neutrality for Colorado.
- San Juan County: Joined the Sneffels Energy Board in 2023; Working with EAP to establish specific CAP actions, with formal adoption planned for 2024.
- **Town of Silverton:** Joined the Sneffels Energy Board in 2023; Working with EAP to establish specific CAP actions, with formal adoption planned for 2024.

All jurisdictions have adopted the Regional Climate Action Plan!



Regional Strategies to Increase Electric Vehicle Readiness



	STRATEGY	ACTIONS	LEAD PARTIES			
1	Community Engagement and Policy	 Sharing of information to understand gaps and needs Jurisdiction EV Parking Policies Create webpage on EAP website to post EV information and resources 	EAP, All regional governments, SMART			
2	EV Ride & Drive Events	 Hold Ride & Drive events across region for public, staff, and visitors. 	EAP, 4Core, Town of Mountain Village, ROCC			
3	Expand EV Charging Infrastructure	 Install new chargers at regional government facilities Install chargers for SMC transit operations Install chargers at local businesses Increase installation of residential chargers 	EAP, All regional governments, SMART			
4	Fleet Electrification	 Convert government fleets Convert SMC SMART fleet Convert business fleets Convert school fleets 	SMART, All regional governments, businesses, schools			
5	Explore Financial Mechanisms	 Create inventory of funding opportunities Explore financial modeling options Discuss charging cost strategy regionally to encourage consistency where possible." 	EAP, 4CORE			
6	Collaborate with Local Utility Provider	 Create time of use education Assess automatic metering software DCFC/L3 (Pilot) Rate education 	EAP, SMPA			
7	Require New Construction to be EV Ready	 Adopt and enforce EV Ready building energy code requirements 	Regional building departments, EAP			
8	Encourage EVSE in multi-family housing	 Educate HOA's, owners, and tenants about EV charging. Identify and communicate funding support opportunities for EVSE infrastructure. 	EAP, All regional governments			
9	Create and Maintain Inventory of EV Resources	 Create inventory of EVSE Installers Create inventory of rebates and incentives Collaborate with Eagle County EV Readiness Plan creators to compare resource lists 	EAP			
10	Explore Alternative Clean Fuel Options	1. Explore hydrogen fuel options	EAP			

Figure 2: EV Strategy Matrix

Regional Challenges to Electric Vehicle Transition



During EAP staff interviews with members of the EV Task Force and review of the community survey, several challenges were expressed that need to be addressed to achieve a complete EV transition.

- 1. Vehicle range anxiety is one of the greatest barriers to EV adoption. This anxiety can cause drivers to rely on ICE vehicles for long trips and prevent drivers from switching to EVs entirely. However, the EPA reports "EVs have sufficient range to cover a typical household's daily travel, which is approximately 50 miles on average per day. Most households (~85%) travel under 100 miles on a typical day. Most EV models go above 200 miles on a fully-charged battery, with nearly all new models traveling more than 100 miles on a single charge. And automakers have announced plans to release even more long-range models in the coming years." Additionally, the EPA states "How you drive your vehicle and the driving conditions, including hot and cold weather, also affect the range of an EV; for instance, researchers found on average range could decrease about 40% due to cold temperatures and the use of heat."
- 2. Available vehicle market & lack of secondary market. Vehicle options continue to expand but remain limited for the vehicle types needed in a high alpine environment.
- 3. Charging infrastructure deployment must occur at a rate and at locations capable of sustaining and enabling the increased adoption rate of EVs.
- 4. Public knowledge of technology and EV performance must be improved through education and outreach.
- 5. Financial barriers / cost differential: EVs are currently more expensive than ICE vehicles, and charging infrastructure will require investment. Financial incentives will need to continue to be deployed to support the EV transition.
- 6. Access to trained EV service technicians: There is a gap in local maintenance expertise.
- 7. **Residential street parking** in "downtown areas" where resident parking is street-side.
- 8. Utility and building infrastructure upgrades needed where transformers or buildings do not have sufficient electrical capacity to add EV charging load(s).
- 9. Equipment Production Backlog of critical infrastructure, including transformers and chargers across the United States and globally.
- **10. Remote roads** across our region create unique challenges ranging from transitioning certain types of passenger vehicles (OHVs and jeeps) and road maintenance equipment to the reliability of emergency vehicles to address rescue needs.
- **11. Existence of diverse EVs** (trucks, heavy machinery, OHVs, ski area grooming machines). For heavy-duty or other vehicles for which current EV technology is not ideal, we will explore the use of hydrogen and other clean fuel options.
- 12. EV charging data is not readily available to collect as separate from other building electricity use.

Source: https://www.epa.gov/greenvehicles/electric-vehicle-myths.



EV Market Trends

US EVs (BEV & PHEV) Sales & Sales Share Forecast: 2021-2030



Figure 3: US EV Sales Forecast Source: <u>https://evadoption.com/ev-sales/ev-sales-forecasts</u> After 10 years of rapid growth, in 2020 the number of global EVs hit 10 million units, a 43% increase over 2019. Battery electric vehicles (BEVs) accounted for two-thirds of new electric car registrations and two-thirds of the stock in 2020.

In 2022, Colorado saw EVs pass the 10% mark. In the end, 10.5% of new vehicle sales in Colorado were electric vehicle sales in 2022. That is higher than the national average which is closer to 6% or 7% of new vehicle sales being electric.

15 million EVs will be on the road nationally by 2030 according to the National Renewable Energy Laboratory.

EV Market Trends

Continued...

Decline of Vehicle Costs

As demand for electric vehicles increases nationally, EV prices will continue to decrease. The higher price tag of EVs is largely due to the price of mining the minerals that create the vehicles battery. According to multiple sources, the cost of traditional gas-powered vehicles and EVs will roughly cost the same starting in 2025. Subsidies will also play a role in bringing down the overall price of the vehicle. The price of EVs has steadily decreased over the last 10 years mainly due to improvements in battery technology and market competition.

Increased Model Availability

Many automakers have plans to electrify large portions of their fleet offerings over the next decade, some announcing goals to fully electrify their lineups in the next five years. To name a few, GM who owns Buick, Cadillac, Chevrolet, and GMC aims to have 20 EV models by 2025. Honda Motors plans to offer a zero-emission lineup by 2040, and Lexus promises that all vehicles would be electrified by the end of the decade. Looking across the automotive industry, most automakers have issued similar goals concerning EV expansion in an effort to be more environmentally friendly.

Trends in EV Charging Infrastructure

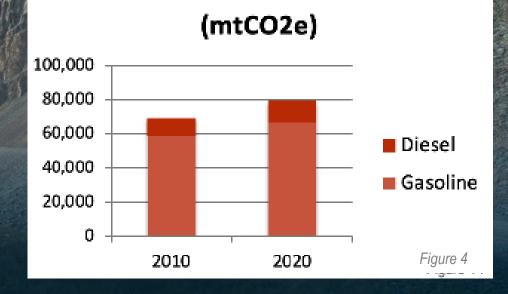
As the number of EVs increase, so will access to public charging. According to a report from the U.S. Department of Energy, the ideal ratio of EVs to charging stations is 40 Level 2 charging ports and 3.4 DC fast chargers (DCFC) per 1,000 EVs. Currently, there are 41 Level 2 charging ports and 5.7 DCFC charging ports per 1,000 EVs, respectively, or about 21 EVs for every charging port. 7-11 has already promised to install 500 charging ports by the end of 2022, and BP plans to increase its number of charging points from 11,000 to 70,000 by 2030.

Over time as more renters adopt EVs, the need for more public charging stations increases, especially as owners of many multi-family unit developments are reticent to invest in installing charging stations until there is a clear and strong demand and when a lack of access to charging for tenants becomes a competitive disadvantage. One of the reasons the need for more charging stations per EV increases along with adoption, is that a much higher percentage of early adopting EV buyers live in single-family (detached) homes where the homeowner controls charging access.

Preparing our communities for the influx of EVs is crucial, and as we plan and install more EV charging stations, the hesitation surrounding EV driving range will subside.

Regional Vehicle Transportation Trends

Vehicle emissions have increased significantly since our 2010 baseline, by approximately 24%. This is mainly associated with an increase in our economy. Commuting workers, services of trades people, and a decrease in local affordable housing have increased the amount of workforce-related vehicle transportation. The region has also experienced an increase in tourism, with noticeable visitor and service-related traffic increases throughout the year. During the 2020 and 2021 summer season, as people flocked away from cities, campers, motorhomes, and similar vehicles became more prevalent. Jeep and OHV traffic has also been increasing, which is difficult to quantitatively capture in our emissions calculations due to the remote nature of the roads they travel. As demand for parking grows, creating the need for the development of additional infrastructure, we see the opportunity to support infrastructure that prioritizes EV and public transit options.



Vehicle GHG Emissions

Regional Vehicle Transportation Accomplishments

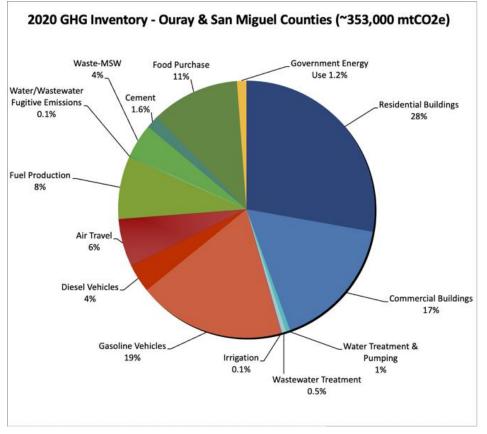


Figure 5

- Creation of the San Miguel Authority for Regional Transportation (SMART) to manage and improve public transportation serving San Miguel County.
- Development of Region 10's Four County Transit Study Update report in 2013 identifying needs and opportunities for greater regional public transit.
- Government and commercial business supplied increases in public transportation opportunities for commuters and visitors.
- Ongoing operation of the free gondola service between TMV and Telluride. Gondola electricity emissions are 100% offset through SMPA's Totally Green Program.
- Since 2010, EcoAction Partners has maintained a Greenhouse Gas Inventory for the region.

Regional Vehicle Transportation Recommendations from CAP

OBJECTIVE 1: Decrease vehicle travel

ACTION	GHG REDUCTION POTENTIAL			CO-BENEFITS					TIMELINE	PARTNERS	
Subsidize bus passes for commuting workers.	1/2	1/2	1/2	1/2	Π	\$		÷	¥	1-3	TSG, SMART, private employers
Increase affordable and available housing for local workers.	1/2	1/2	1/2	1/2	Π	\$		÷	¥	Ongoing	All regional governments
Reduce in-community vehicle use by residents and visitors, i.e. encouraging use of electric bikes	1/2	1/2	1/2	1/2		\$	٥	+	¥	5	All regional governments, SMART
Continue outreach and education efforts around public transit.	1/2	1/2	1/2	1/2		\$		٠	¥	Ongoing	SMART, Region 10

OBJECTIVE 2: Increase use of electric vehicles

ACTION	GHG REDUCTION POTENTIAL					с	O-BENEFIT	TIMELINE	PARTNERS		
Improve tracking and analysis of EV station use.	1/2	1/2	1/2	1/2	=	\$		+	*	1-3	SMPA
Increase number and location of EV charging stations.	1/2	1/2	1/2	1/2		\$		+	¥	1-3	Municipal building departments
Electrify fleet vehicles when viable.	1/2	1/2	1/2	1/2		\$		+	Ť	5	SMART, SMPA
Require new construction to be EV ready.	1/2	1/2	1/2	1/2		\$		+	¥	Ongoing	Municipal building departments
Develop EV readiness plan for region including alternative fuel and transport options.	1/2	1/2	1/2	1/2		\$		+	¥	1-3	SMPA, all regional governments

KEY

\$ Economic Sustainability

Regional EV Adoption & Charging Infrastructure

In 2020, there were 42 EVs registered in San Miguel County and 114 hybrid vehicles. Ouray County registration numbers included 31 EVs and 80 hybrids.

As of July 2023, San Miguel County had 50 registered EVs and Ouray County had 38 registered EVs according to each county's Department of Motor Vehicles. It is expected that EV adoption will begin to increase exponentially with better EVSE access, and our region will need to install additional charging infrastructure to achieve its climate action goals.



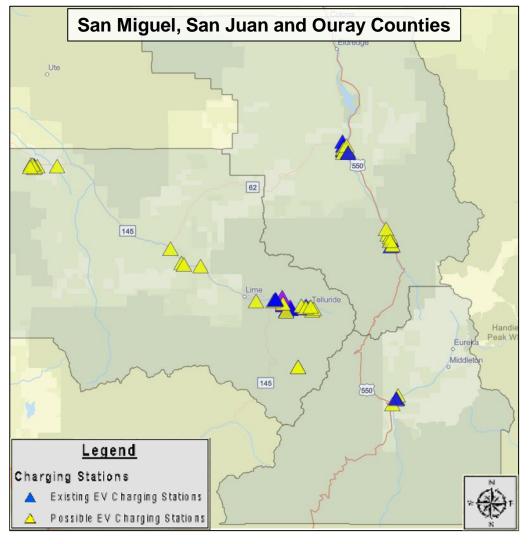


Figure 7: Regional EVSE Map

Electric Vehicle Background



Electric Vehicle Terminology

The term EVs refer to all vehicles which operate on battery power and recharge from the electrical grid. This plan will distinguish between three types of vehicles:

- Battery Electric Vehicles (BEVs)
- Plug-in Hybrid Electric Vehicles (PHEVs)
- Traditional gas-powered vehicles are known as Internal Combustion Engines or (ICEs).

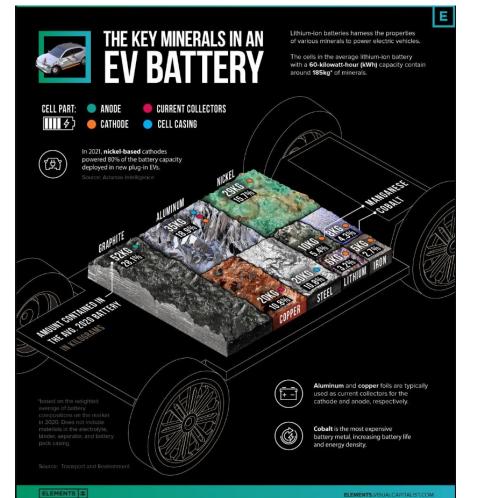


Battery Electric Vehicles (BEVs) vs Internal Combustion Engines (ICEs)

BEVs run solely on electricity stored in batteries inside the vehicle and operate off an electric motor. BEVs can utilize all levels of charging equipment from Level 1 to Level 3, also known as DC Fast Charging. BEVs have zero tailpipe emissions unlike gas powered vehicles, which leads to improved local air quality for communities. The two main sources of EV emissions come from the creation of lithium-ion battery cells, and the production of electricity to power the battery. The mining process includes extraction of lithium, cobalt, and nickel, which are crucial for modern EV batteries. While ICEs are getting more efficient, EVs are likely to be a greener alternative as electricity providers continue to decarbonize the grid with renewable energy sources.

EVs & Batteries – Environmental Impacts

Our regional community has expressed concern regarding the environmental impacts of EV batteries. The impacts of surface mining, ocean / deep sea mining, water use, manufacturing processes, recycling, and proper disposal are all relevant environmental concerns.



The processes used to surface mine for rare earth metals that are used to make EV batteries are typically water-intensive and harmful to the environment. wildlife. and people. Mining materials these raw and manufacturing the batteries typically produces more emissions than the production of a gasoline-powered car. Some companies have been exploring and investing in equipment to mine rare metals from the ocean that are produced by earth processes at a slower rate than fuels, using fossil large machinery that would wreak an unpredictable amount of havoc on our oceans and the wildlife within them. However. technology is advancing rapidly, and is eliminating the need for further damaging minina processes.

According to Time Magazine, Oct 25, 2022, "New longerlasting car batteries are becoming available that don't need deep sea minerals. including batteries based on aluminum-ion. graphene lithium-iron phosphate, ironflow. and solid-state technologies. We also have the option of low-cost, no-impact extraction of battery materials, such as lithium and cobalt. directly from seawater. And importantly, a circular economy prioritizes that reducina. reusing, and recycling critical minerals can power the clean energy transition without deepsea mining-and at a lower cost. Car battery recycling is already a rapidly growing industry."

Figure 8: EV Battery Infographic

EVs and Batteries – Environmental Impacts

Continued...

In addition, multiple studies show that over the lifetime of a vehicle, the GHG emissions from manufacturing, charging, and driving an EV are far less than when compared to their counterpart gas vehicles. Over the lifetime of a gas vehicle emissions increase per mile driven, while an EV maintains an emission level dependent upon the mixture of electricity sources used to charge it and has zero tailpipe emissions. The image below demonstrates this comparison with different EV battery scenarios.

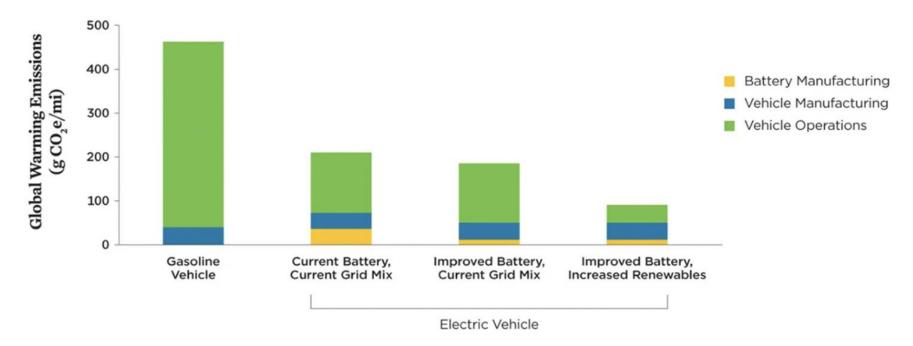


Image: The Union of Concerned Scientists

Figure 9: Greenhouse gas emissions comparison of vehicle types

Considerations for driving EVs in the Mountains



Cold Temperatures

Electric Vehicles differ from Internal Combustion Engine (ICE) vehicles when it comes to driving in cooler temperatures. When the temperature drops, so does the driving range for EVs. EVs can lose about 40% of their range when the temperature drops from 75 degrees to 20 degrees Fahrenheit. For example, an EV with a rated range of 250 miles would have only 150 miles of range when it's 20 degrees outside. Most of the loss of efficiency comes from the need to heat the cabin, which is much easier in a conventional gas vehicle. As manufactures continue to increase the range of EVs this factor will become less of an issue.

There are precautions that can be taken to limit the negative effects of freezing weather. One technique is using 'preheating' which is starting the vehicle while it's still plugged in to allow the battery to warm up as well as the cabin. This is only an option if you have access to charging prior to driving your EV. Another technique is to use more efficient drive modes that are universal on newer EVs. This will extend the range of the battery, but some performance will be lost.

2.

Performance in Ice and Snow

Due to a lower center of gravity and weight distribution of a heavy lithium battery, Electric Vehicles typically perform well in snowy conditions. The batteries are often oriented on the underside of the vehicle which helps keep the weight on the road. In more extreme conditions drivers may want to consider all-wheel drive options. As of February 2023, the United States currently has over 20 all-wheel drive EVs, some of which have a price tag under 40k.

3.

Altitude & Driving in the Mountains

EVs provide instant torque which means they can accelerate faster than traditional ICEs and climb steep grades, so they perform well in the mountains. When driving at higher elevations, ICEs typically lose horsepower due to lower oxygen levels, which isn't the case with EVs. While driving uphill uses more energy, the energy recovered from regenerative braking allows an EV to regain much of the lost power.

EV Ready Building Code Requirements

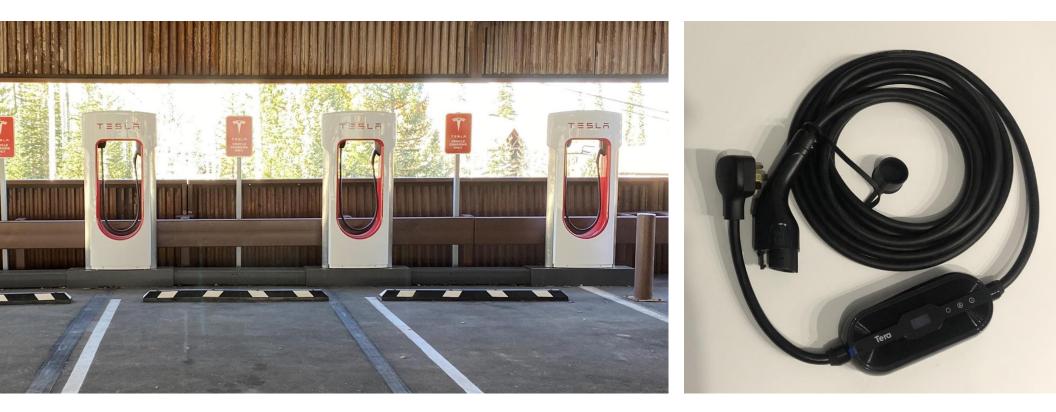
- As part of Colorado state policies to achieve goals in the 2020 Colorado Greenhouse Gas Pollution Reduction Roadmap, the Colorado General Assembly passed the <u>Building Energy Codes</u> law (HB22-1362 Building Greenhouse Gas Emissions) in May of 2022 to improve energy use and efficiency in buildings. An updated energy code is an important tool to increase building efficiency and meet the state's economy-wide greenhouse gas emissions reduction target of 50% by 2030, from a 2005 baseline. Adopting energy codes that support the integration of EV ready infrastructure is an important step in facilitating statewide and local action to reach regional GHG reduction goals.
- Colorado's model <u>Electric Ready and Solar Ready Code</u>, published June 1, 2023, includes minimum energy requirements that meet the legislative requirements for solar, electric vehicle and building electrification pre-wiring in the near term, and maximized carbon reductions consistent with maintaining housing affordability in the longer term. Jurisdictions have until June 30, 2026 to adopt the model code and the 2021 IECC, requiring new construction and remodels to be EV-ready.



EV Background

EV Charging Types

A charging station, also known as Electric Vehicle Supply Equipment (EVSE) supplies the electricity to the electric vehicle's battery. EV charging stations come in many designs but are mainly sorted by the capacity of electricity that they provide. Usually, the more electricity a charging station can provide, the more expensive it is to install and may require additional upgrades to the electrical system. There are three main categories to describe EV charging.



EV Charging Types

Continued...

KNOW YOUR EV CHARGING STATIONS



VOLTAGE 120V 1-Phase AC

AMPS 12–16 Amps

CHARGING LOAD 1.4–1.9 kW

CHARGING TIME 3–5 Miles per Hour



VOLTAGE 208V or 240V 1-Phase AC

AMPS 12-80 Amps (Typ. 32 Amps)

CHARGING LOAD 2.5–19.2 kW (Typ. 6.6 kW)

CHARGING TIME 12–60 Miles per Hour



VOLTAGE 208V or 480V 3-Phase AC

AMPS >100 Amps

CHARGING LOAD 50-350 kW

CHARGING TIME 60-80 Miles in 20 Minutes

Figure 10: Graphic depicting EV charging station requirements and capacities. Source: <u>https://www.carolinacountry.com/your-energy/energytech/know-charging-options-to-keep-your-ev-rolling</u>

EV Charging Types

Continued...

Level 1 Charging - Residential

Level 1 charging stations are inexpensive and the most basic method of EV charging. Essentially, Level 1 charging uses a standard 120-volt electrical plug to supply electricity to the vehicle, so EV owners can plug right into an existing wall connection. Because it uses such little electricity, it takes significantly longer to charge when compared to the next two levels. Level 1 charging provides 3-5 miles of range per hour of charging, which works for some residential situations.

Level 2 Charging – Residential, Workplace & Public

Level 2 charging uses double the voltage of a level 1 charger at with 240 volts. Level 2 chargers require a purchase and dedicated installation of charging equipment, which is the same as the port that powers a home washer and dryer. Level 2 chargers provide 10-20 miles of range per hour of charging. This level of charging is the most popular for public charging, and can also be found in the home setting, workplace, and municipal setting. SMPA members can receive up to \$1,000 or 50% cost match for a Level 2 residential/private charger and electric service installation, and up to \$2,000 or 50% cost match for a Level 2 public charger and electric service installation.

Level 3/DC Fast Charging - Public

Level 3 charging is the fastest method of charging an electric vehicle. This level of charging requires between 440 and 480 volts which delivers 40 to 100 kW of power using a direct current to an EV battery. Tesla offers a supercharger, which requires a Tesla adapter for non-Tesla vehicles These stations are typically found in the public setting along major highways or major destinations. DC fast chargers add 50-70 miles per 20 to 30 minutes of charging. While they provide the fastest charging time, they are significantly more expensive to install compared to the previous levels of charging. DC fast charging stations might be recommended for service vehicles such as those used by emergency first responders and police, as well as for road maintenance or snowplows that might need a faster charge to reduce vehicle plug in time.

Cost Ranges for Level 2 EVSE

Level 2 EVSE are the most common chargers to install, with many options at different price tiers.

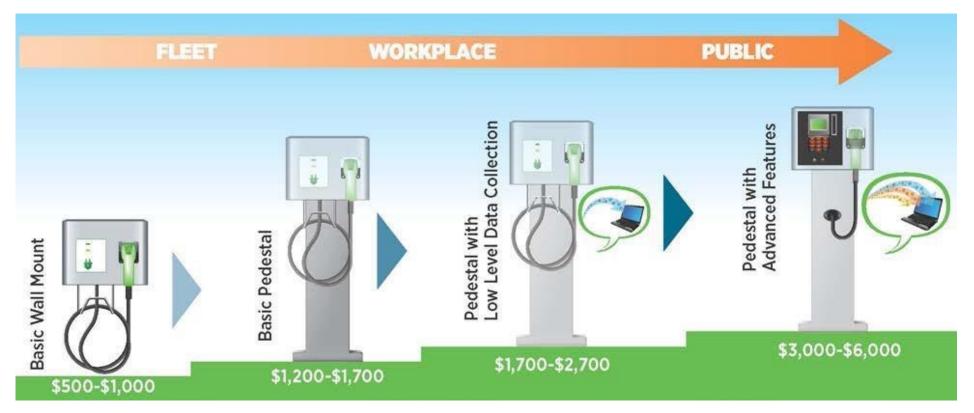


Figure 11: Cost ranges for different tiers of Level 2 EVSE units.

These installation costs are estimates for new EVSE, not for costs associated with retrofit installations which are significantly more expensive.

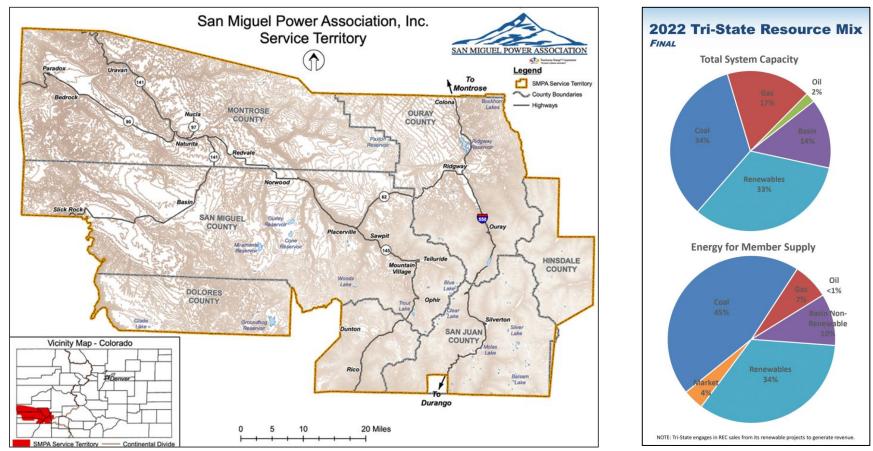
Source: Department of Energy AFD

Utility & Existing Conditions



Local Utility San Miguel Power Association

San Miguel Power Association, Inc. (SMPA) serves San Miguel, Ouray, and San Juan counties and parts of Montrose, Mesa, Hinsdale, and Dolores counties in western Colorado. The service territory covers approximately 3,600 square miles and maintains 1,800 miles of line. SMPA, a Touchstone Energy Cooperative, is a member of Colorado's Electric Cooperatives, and currently receives its electricity supply from Tri State Energy Generation & Transmission.



Time of Use & Electric Vehicles

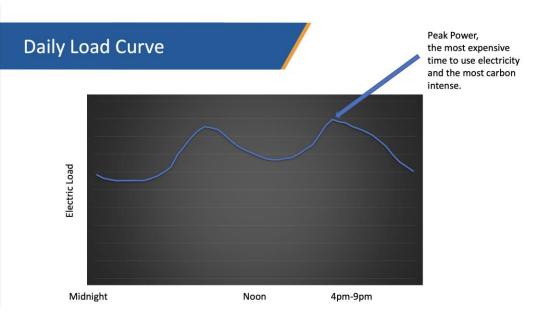


Figure 14: Daily Load Curve Chart courtesy of SMPA

> Time-of-use rates could encourage consumers to use electricity during daytime hours when solar production is highest, maximizing the use of solar and lowering carbon emissions

Time of use (TOU) charging for electric vehicles (EVs) is important for utility companies for several reasons:

First, TOU pricing encourages EV owners to charge their vehicles during off-peak hours when electricity demand is low. This helps the utility companies to balance the load on the grid, reducing the need for expensive peaker power plants that rely on the burning of fossil fuels to meet peak energy demands. In addition, TOU pricing can incentivize EV owners to charge their vehicles at times when renewable energy sources, such as solar or wind power, are generating excess energy. This can help to reduce the need for fossil fuel-powered plants, reducing greenhouse gas emissions and supporting the transition to a cleaner energy system.

Second, TOU pricing can help to manage the impact of EV charging on the grid. EVs have the potential to put significant strain on the grid, particularly during periods of high demand. TOU pricing can encourage EV owners to charge their vehicles at times when the grid is better able to handle the additional load. This can help to prevent blackouts and brownouts, ensuring that the grid remains stable and reliable. Overall, TOU pricing is an important tool for utility companies to manage the impact of EV charging on the grid and support the transition to a more sustainable energy system.

Vehicle-to-Grid (V2G)

Future of Vehicle to Grid

Vehicle-to-grid (V2G) technology has the potential to provide significant benefits for the resiliency of communities.

What Is V2G?

By allowing electric vehicles (EVs) to not only draw power from the grid but also to supply power back to the grid, V2G technology can help to balance the load on the grid during times of high demand or when there are grid disruptions. In the event of a power outage, EVs with V2G capabilities can be used as a backup power source for homes, businesses, and critical infrastructure, such as hospitals or emergency services. This can help to ensure that essential services remain operational during emergencies, improving the resilience of the community.

V2G technology can help to support the integration of renewable energy sources, such as solar and wind power, into the grid. By allowing EVs to discharge stored energy back to the grid during times of peak demand, V2G can help to reduce the need for fossil fuel-powered plants. This can also improve the resiliency of the grid by reducing the risk of power outages caused by disruptions to fossil fuel supply chains.

Overall, V2G technology has the potential to play an important role in improving the resilience of communities, by providing backup power during emergencies and supporting the integration of renewable energy sources into the grid.

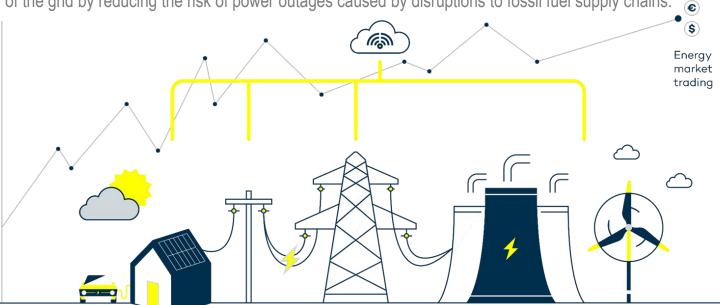


Figure 15 Source: virta.global Energy consumption & Building level co-optimisation and control DSO & TSO system balancing

Energy production

Current Initiatives



To support regional Electric Vehicle (EV) adoption, local, state, and federal funding opportunities are available. These financial programs can provide funding opportunities that support the purchase of an EV, charging stations for public and private use, and even state representatives or coaches to help facilitate these resources.

The Information below represents current financial programs that are available for Colorado residents, businesses, and government entities. Simplifying information pertaining to tax credits and rebates will help the transition to EVs, as understanding rebates is a barrier to adoption.

Federal Programs

Rebate Program

+ Federal Tax Credit for New, Used Electric & Plug-In Vehicles Stackable with Colorado EV Tax Credit

- Trucks, SUVs, Vans Under \$80,000
- Cars Under \$55,000
- Used EVs Under \$25,000

Find out more »

Clean School Bus Program (EPA)

+ Federal Rebate for Clean & Zero Emission (ZE) Busses

Find out more »

Alternative Fuels Infrastructure Rebate (USDOE)

+ Federal Rebate for EV charging stations

Find out more »

State Programs

Grants (PEV, Clean Fleets, EVSE)

- + Electric Vehicle Tax Credits (Stackable with Federal Tax Credit) Find out more »
- +Vehicle Exchange Colorado (VXC)

Find out more »

+ Charge Ahead Colorado Program

Find out more »

- + DC Fast Charging Plaza Grant Program Find out more »
- + Fleet Zero-Emission Resource Opportunity (Fleet-ZERO)

Find out more »

+ ALT Fuels Colorado Program

Find out more »

+Transit Bus Replacement Program Find out more »

Utility Programs

San Miguel Power Association + Rebates ranging from \$250 to \$1,500 (EV, PEV, NEV, Electric Forklifts)

Find out more »

Incentive Funding Resources: IRA Breakdown in Relation to EVs

Inflation Reduction Act Impact on Electric Vehicles

According to Energy Innovation Policy and Technology, the Inflation Reduction Act (IRA) is the most significant climate legislation in United States history. It is estimated that the IRA's investments of \$370 billion in climate and clean energy could lead to a reduction of up to 43% in U.S. greenhouse gas (GHG) emissions below 2005 levels by 2030.

Additionally, when combined with existing state actions and upcoming federal regulations, the IRA could help the United States achieve its Paris Agreement commitment to reduce emissions by 50% to 52% by 2030. The implementation of the IRA could also strengthen the U.S. economy by creating approximately 1.3 million new jobs, while reducing air pollution.

Light Duty EV Tax Credit

Up to \$7,500 though 2032 Income Cap of \$75,000 for single, \$150,000 if filled jointly MSRP Cap Find out more »

Used EV Tax Credit

Up to \$4,000 though 2032 Sales Price must be less than \$25,000 Model year less than 2 years old Find out more »

Commercial EV Tax Credit

Businesses and tax-exempt organizations qualify Maximum credit is \$7,500 for qualified vehicles with gross vehicle weight ratings (GVWRs) of under 14,000 pounds and \$40,000 for all other vehicles.

Find out more »

EV Charging Equipment Tax Credit

Additional Information: Electrification Coalition
https://electrificationcoalition.org/ev-funding-finder/

State Initiatives, Executive Orders & EV Code Requirements

In the last half decade, Colorado Governors and Legislators have signed numerous Executive Orders (EOs) and bills setting goals for EV adoption.

House Bill 22-1362

In 2022, the General Assembly of the State of Colorado passed House Bill 22-13621 (House Bill or state statute), requiring the Colorado Energy Office (CEO) and Department of Local Affairs (DOLA) to appoint an energy code board (the board) charged with developing a model electric and solar ready code (model code) for adoption by counties, municipalities, and state agencies in Colorado.

The board is composed of representatives from key stakeholder groups from across the State and throughout the building and design process, including building engineers, building code experts, renewable energy and energy efficiency experts, environmental advocates, home builders, trades representatives, affordable housing experts, and jurisdictional representatives from urban and rural communities. An executive committee was also appointed by CEO and DOLA per the requirements of the House Bill.

The model code sets the minimum requirements for each element within the model code. Jurisdictions can adopt and enforce the model code or any alternative code that achieves equivalent or better performance than the model code.

HOUSE BILL CODE ELEMENT REQUIREMENTS

The House Bill also outlined requirements for the three primary sections of the model code: electric ready, solar ready, and electric vehicle (EV) ready. The board was charged with articulating the specifics regarding the code elements within these three main sections and developing a process for certain buildings to apply for waivers from the code requirements.

ELECTRIC VEHICLE READY CODE REQUIREMENTS

The House Bill required all residential homes be built EV ready or EV capable, leaving the board with the responsibility to determine which would be appropriate for Coloradans. For commercial and multifamily buildings of all sizes, the House Bill required parking facilities to supply EV ready, EV capable, & EVSE installed spaces with provisions for electrical service capacity in 20% or more of the vehicle parking spaces.

State Initiatives, Executive Orders & EV Code Requirements

Executive Order B 2018 006

Maintaining Progress on Clean Vehicles

In 2018, Governor Hickenlooper signed Executive Order B 2018 006, maintaining progress on clean vehicles. It directed the Colorado Air Quality Control Commission (AQCC) to consider adopting a California Low Emission Vehicle (LEV) Standard. The AQCC passed Regulation 20 and the Colorado Low Emission Automobile Regulation (CLEAR) on November 16, 2018.

Executive Order B 2019 002

Transitioning to Zero Emission Vehicles

In 2020, Executive Order B 2019 002 was issued, which supports a Transition to Zero Emission Vehicles to accelerate the mass electrification of cars, buses, and trucks. In 2018, the first Colorado electric vehicle (EV) plan was created to set goals, actions, and strategies to create charging corridors across the state. In 2020, the plan was updated.

House Bill 19-1261

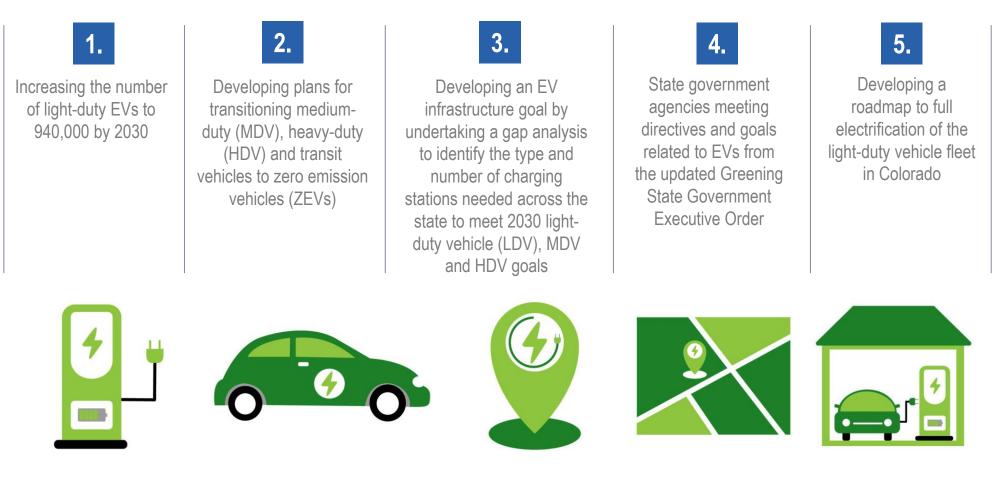
In 2019 this policy states that Colorado will have goals to reduce total GHG by 26% by the year 2025, 50% by 2030, and 90% by 2050. The transportation sector represents 22% of total GHG in Colorado.

Source: CEO Website

From Colorado's Energy Office website, "Large-scale transition of Colorado's transportation system to zero emission vehicles, with a long-term goal of 100% of light-duty vehicles being electric and 100% of medium- and heavy-duty vehicles being zero emission."

State Initiatives, Executive Orders & EV Code Requirements

The state of Colorado is taking action to accomplish the following five goals:



ChargePoint EV Fast-Charging Corridors

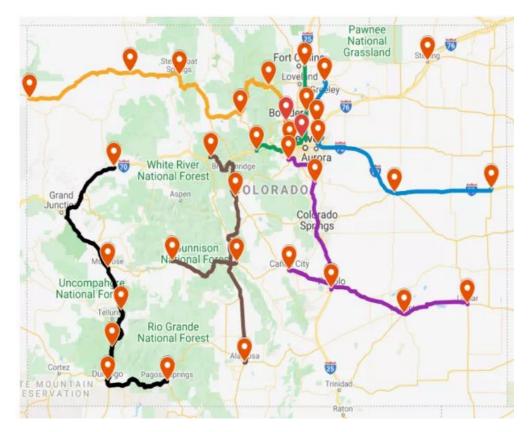


Figure 16: Colorado Energy Office EV Fast Charging Corridors

In early 2018, the Colorado Energy Office released plans for an Electric Vehicle (EV) Fast Charging Corridor program. This program specifically addresses the first action item listed in the state of Colorado EV Plan, which is to build numerous fast charging corridors through private-public partnerships. This plan will ultimately ensure stable fast charging stations throughout major highways in Colorado.

Governor Hickenlooper and Colorado Energy Office awarded a \$10.33 million grant to ChargePoint to build electric vehicle fastcharging stations across the state. The fast-charging stations will be in communities at 34 sites across six corridors comprising Interstate, State and U.S. Highways. Once complete, these stations connect Coloradans to drive anywhere in the state in an electric vehicle.

Work done on the state level to mitigate range-anxiety is being continued by regional efforts to increase public EVSE access in San Miguel, Ouray and San Juan Counties. Many communities in the region are rural and remote, with only one major road in and out. Regional highways and roads branch off the major highways designated in the state plan, so additional infrastructure will be needed to fill in the gaps. Additionally, each county experiences fluctuations in carrying capacity due to tourism and anticipates the demand for public EV infrastructure to increase or the lack thereof to be a deterrent to tourism in the upcoming decade(s).

Acknowledgments

The San Miguel, San Juan, and Ouray County Electric Vehicle Readiness Plan

was prepared by EcoAction Partners with input from the EV Taskforce. It would not be possible without the expertise, time, and dedication of regional stakeholders and taskforce members. We would like to express our thanks to each of them. **EcoAction Partners Preparer Contact:**

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Organization	Person	Title
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Ouray County	Lynn Padgett	County Commissioner
Ouray County	Jake Niece	County Commissioner
San Miguel County	Lance Waring	County Commissioner, EAP Board
San Miguel County	Starr Jamison	Natural Resources & Special Projects Director
Town of Mountain Village	J.D. Wise	Economic Development and Sustainability Director
Town of Mountain Village	Lauren Kirn	Environmental Efficiencies and Grant Coordinator
Town of Ophir	John Wontrobski	Ophir Town Manager
Town of Ridgway	John Clark	Town Mayor
Town of Ridgway	Preston Neill	Ridgway Town Manager
Town of Ridgway	JT Thomas	Ridgway Town Council
Town of Telluride	Karen Guglielmone	Environmental & Engineering Division Manager
Town of Telluride	Zoe Dohnal	Deputy Town Manager
Town of Telluride	Darin Graber	Sustainability and Grant Administrator
Town of Norwood	Amanda Pierce	Town Clerk
Town of Silverton	Lucy Mulvihill	Community Development Coordinator
San Miguel Power Association	Alex Shelley	Communications Executive
San Miguel Power Association	Phil Zimmer	Energy Services Executive
San Miguel Power Association	Wiley Freeman	Manager of Member Services & Marketing
San Miguel Authority for Regional Transportation	David Averill	Executive Director
Ridgway Ouray Community Council	Dave Jones	ROCC Clean Energy Committee

Contributing Stakeholders:

Organization	Person	Title
4CORE	Jenny Hill	Executive Director
CLEER	Martín Bonzi	Transportation Program Manager
City of Aspen	Tim Karfs	Sustainability Programs Administrator

Appendix A:

EV's: Barriers, Attitudes & Policy

EcoAction Partners created the EV Community Survey which provides valuable insights into the current and future needs of the community with regards to electric vehicles and related EV infrastructure in San Miguel and Ouray County. This information can help inform this regional EV readiness plan by identifying barriers to EV adoption, understanding driving patterns, and how incentive programs and education would help encourage adoption. This survey was conducted in January and February of 2023.

Highlights

- More than 70 responses from residents and tourists.
- 81% of tourist responses prefer an EV shuttle compared to diesel or gas.
- 51% of San Miguel and Ouray County Residents will purchase an EV or hybrid in the next 5 years.
- Installation of EV chargers at the workplace would increase likelihood to buy an EV by 61%.
- The largest barriers to adoption in the region include:
 - Initial Purchase Price (51%)
 - Lack of Public Charging Stations (44%)
 - Insufficient Home Charging Infrastructure (39%)

EVs: Barriers, Attitudes & Policy

Those Surveyed:

Who currently own or lease a plug-in EV or hybrid: 21%

Who plan on or are considering a plug-in EV or hybrid for their next vehicle purchase or lease: 73%

Who believe widespread EV use will help reduce air or climate pollution:

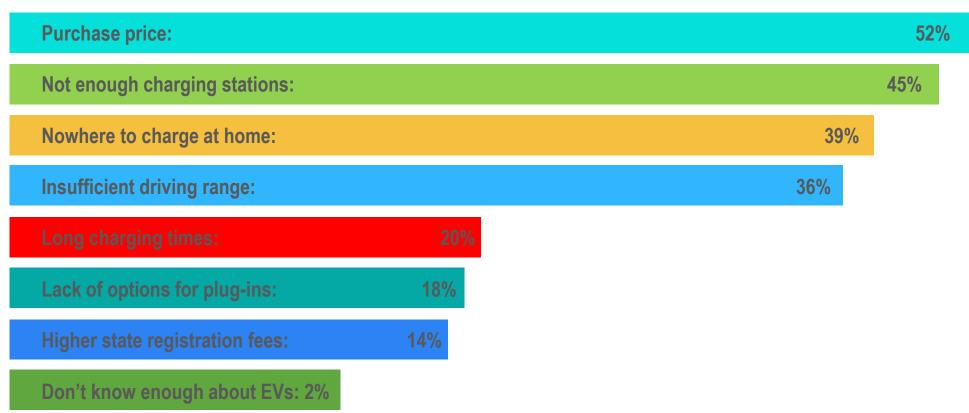
76%

Those interested - who do not own - but intend to purchase an EV the next 1-10 years:

89%

EVs: Barriers, Attitudes & Policy [continued...]

Those surveyed: Of the following attributes, what are keeping potential buyers from purchasing or leasing a plug-in EV for their next vehicle?



EV: Charging Infrastructure & Workplace Charging

Those Surveyed:

Would the ability to install a charging station at residence increase the probability of purchasing an EV or plug-in hybrid EV in the future?

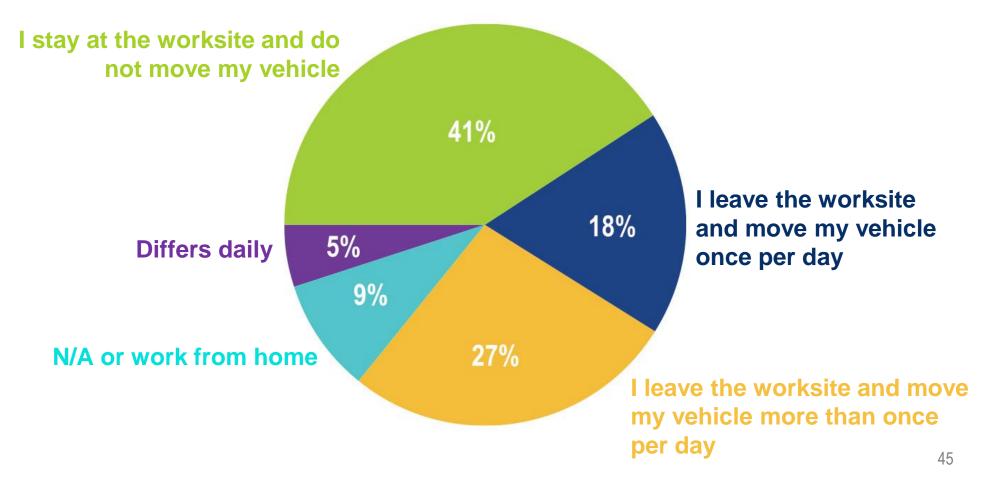
30% said yes

Would access to EV charging station at workplace increase the probability of purchasing an EV or plug-in hybrid EV in the future?

63% said yes

EV: Charging Infrastructure & Workplace Charging [continued...]

Those surveyed: Throughout the workday, what is your usual travel pattern?



Appendix B:

High Priority Locations for New EV Infrastructure

When selecting potential EV charging locations, they should be easily accessible and convenient for EV drivers, and thus located in areas such as parking lots, shopping centers, and along highways, preferably with restrooms nearby. Additionally, the locations should be safe and secure, with proper lighting and security measures in place.

The following list of potential EV charging locations is not comprehensive. Additional EVSE locations may become apparent and unexpected barriers may prevent installations of charging equipment at some of these locations. Additionally, the EV Task Force recognizes that, in time, many homes and workplaces will likely add Level 2 EV charging capability as EVs increase in popularity.



EV Infrastructure

Appendix B1:

San Miguel County - EV Infrastructure Needs Per Jurisdiction

Introduction

San Miguel County is in southwest Colorado, with a population of 8,070 in 2020. San Miguel County is 1,289 square miles in size and is home to Telluride (county seat), Mountain Village, Norwood, Ophir, Sawpit, and Placerville. San Miguel County also includes unincorporated communities such as Ames, Egnar, Pandora, and Slick Rock. San Miguel County attracts roughly 480,000 visitors per year, with one of the primary drivers of visitation being Telluride Ski and Golf Resort which offers winter and summer recreating opportunities. San Miguel County has a goal of installing a DCFC in Ilium for public use.



San Miguel County – Existing EVSE Locations

TELLURIDE CHARGING LOCATIONS

Public

- Silver Jack Parking Garage: 155 W Pacific Ave (x6 L2) J1772 Plug, Non-networked
- Clarks Market: 700 W Colorado Ave 81435 (x1 L2, x2 Tesla)
- Conoco Gas Station: 100 Society Dr (x2 CHAdeMO L3, x2 CCS/SAE L3)
- Lawson Hill Intercept Lot: 104 Society Drive (x2 L2) J1772 Plug ChargePoint
 Private
- Element 52 Auberge Residences: 398 S Davis St (x2 Tesla)
- Sunnyside Affordable Housing: 2001 West Highway 145 Spur (x2 L2)

MOUNTAIN VILLAGE CHARGING LOCATIONS

Government

- Mountain Village Maintenance Shop: 317 Adams Ranch Road (L2 x2)
- Mountain Village Municipal Building: 411 Mountain Village Blvd (L2 x2)
 Public
- Gondola Parking Garage: 455 Mountain Village Blvd, (x8 tesla superchargers, x2 L2)
- Meadows Parking Lot: 327 Adams Ranch Rd, (x2) J1772 Plug, ChargePoint
- Heritage Parking Garage: 606-608 Mountain Village Blvd (x2) J1772 Plug, ChargePoint

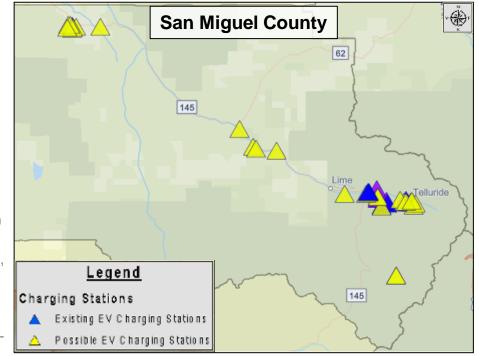
Private

- Mountain Lodge: 457 Mountain Village Blvd (x1 L2, x2 Tesla) J-1772 ChargePoint
- Peaks Resort and Spa: 136 Country Club Dr, (x1 L2), x4 Tesla) J-1772 non-networked
- Lumiere Hotel: 118 Lost Creek Lane (x3 Tesla)

NORWOOD

Public

Clark's Market: 1435 E Grand Ave (x1 L2) J-1772 non-networked



San Miguel County





SAN MIGUEL COUNTY - POSSIBLE NEW EV CHARGING LOCATIONS Government

- Miramonte/Courthouse: 333 W Colorado, Telluride Level 2 charging for government staff
- San Miguel Sheriff's Office: 684 Country Road 63L, Ilium
 Phase 3 available
- Norwood Fairground Event Center: 1165 Summit St, Norwood Fleet vehicles and public use

Public

- Placerville Schoolhouse: Front Street, Placerville
- Placerville Down Valley Park: 22632 CO-145, Placerville Phase 3 available.
- Sawpit Mercantile: 20643 CO-145, Sawpit
- Bivvi Hostel: 22332 145 Highway, Placerville
- Uncompanyere Medical Center: 1350 S. Aspen Street, Norwood

SMART SPECIFIC

- SMART Bus Garage Location 1 Intercept Lot: 137 Society Drive Telluride Transformer upgraded for level 3 charging
- SMART Bus Garage Location 2: 104 Society Drive Telluride
- SMART Bus Garage Location 3: Norwood

San Miguel County – Discussion Notes

GOVERNMENT NEEDS

SMC government staff identified gaps in Electric Vehicle Supply Equipment (EVSE) in Placerville, located between Telluride and Norwood. SMC staff also expressed a need to focus on increasing workplace EV charging for county fleets and employees. As of January 2023, there are no government-specific chargers available. SMC staff identified the following ideal locations for charging stations:

- Sheriff's Office in Ilium: DCFC/L3 EVSE expansion would provide reliable and fast charging capacity for the transition of government fleets to electric vehicles.
- The Miramonte Building is another key location for county staff to charge EVs. This location would have level 2 charging for government staff

COMMUNITY NEEDS

SMC government staff understand that range-anxiety for those traveling between rural and remote communities is a barrier that needs to be mitigated through the implementation of this plan. Several options for public EV charging stations across the county have been identified and staff are actively applying for grants to support installation costs.

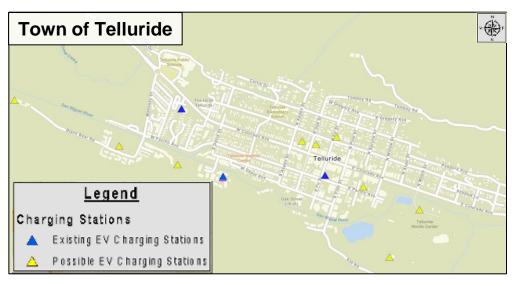
- Placerville Park: the installation of an EV ARC charging station from Beam Industries (or similar) is recommended, which is a 100% renewable, off-grid option that can be relocated during emergencies, providing a resilient option for EV emergency service vehicles during grid power failures.
- Placerville Schoolhouse is another viable charging location. Grant opportunities, such as the ChargeAhead CO Grant and Alternative Fuel Infrastructure Tax Credit, can be explored for this location.

SMART-SPECIFIC NEEDS

SMART is the San Miguel Authority for Regional Transportation. SMART is classified as a Regional Transportation Authority under Colorado law, with broad authority to finance, build and operate a regional transportation system. The creation of SMART was approved by the voters of Telluride, Mountain Village and the R-1 School District of San Miguel County in November of 2016. SMART conducted an EV feasibility study in 2022 which yielded mixed results. New diesel buses were purchased in 2023 and staff are looking into hybrid options for future fleet investment. SMART staff identified barriers to reliability, such as a lack of backup buses and the fact that bus maintenance is performed by non-local contractors.

Town of Telluride

Telluride, Colorado has a population of 2,590 residents and sits at an elevation of 8,750 ft. Telluride draws large numbers of visitors in the winter and summer months. Supporting both year-round residents and tourist fluctuations is a challenge that Telluride will take into consideration when identifying sites for EV charging infrastructure. There is a goal to install at least 1 additional DCFC charger in the Town of Telluride for public use.



Possible New EV Charging Infrastructure Government

• Old Town Hall: 135 W Columbia Ave

Employee Level 2 charging for government workers

- Public Works Building: Black Bear Rd
- Galloping Goose Bus Barn: Black Bear Rd

Public

- Shandoka Parking Lot L: Mahoney Dr
 - Potential 4 story parking garage Currently in the conceptual feasibility stage No finalized completion date
- Carhenge parking area: 700 W Pacific Ave Potential 2 level 2 chargers
- Town Park Parking Lot: 500 E Colorado Ave
- Town Park-Behind Mainstage Level 2 Charger For use by summer festivals

Private

Voodoo Lounge Affordable Housing Project: 151 S Willow

Town of Telluride – Discussion Notes

GOVERNMENT SPECIFIC NEEDS

Government Fleet

As of January 2023, there are no government-specific chargers available. Town staff have engaged with consultants to conduct an EV fleet feasibility study, with the results expected to be available in 2023/2024. Additionally, Telluride is currently considering the purchase of two potential EVs: a light-duty vehicle for the Transit Manager and a heavy-duty dump truck for snow removal in the Public Works department. Staff are also exploring the acquisition of a 4-wheel drive EV pickup truck with sufficient range to reach the Bridal Veil Falls Area. One challenge is the lack of a specific location for overnight storage of the fleet EVs, which becomes critical during winter due to battery degradation and vehicle startup concerns. The Marshals Vehicles department is likely to be the last to transition to EVs since chargers would need to be installed at the marshals' homes. A transition to light-duty vehicles for Parks and Recreation and vehicles for government officials appears to be the most feasible near-term action item.

Public Transportation

Public Transportation plays a vital role in the regional Electric Vehicle Readiness Plan. Telluride's Galloping Goose serves as a crucial transportation service within the Town of Telluride, with a fleet consisting of six buses. To facilitate the transition to electric vehicles (EVs) and promote their optimal performance, the town already has an existing Bus Barn at the Telluride Public Works building. This Bus Barn serves as a dedicated storage facility for all six buses, offering the added advantage of preserving EV batteries over time and minimizing energy waste by keeping the vehicles indoors. Leveraging this commitment to sustainable transportation, a grant application for EV buses was submitted through the Colorado Department of Transportation (CDOT). The application was successful, resulting in the town being awarded FTA Funding, which will be utilized to procure two new fully electric buses for the Telluride community.

COMMUNITY NEEDS

To address the community needs for more residential and public charging options, the regional EV Readiness Plan includes several initiatives:

- A new 4-story parking garage is planned for Shandoka (Lot L), which will be EV ready to ensure the installation of EV chargers. The exact number of chargers will be determined based on the approximate demand.
- The new Affordable Housing Project at 151 South Willow commenced construction in 2023 and will provide Level 2 charging in its parking lot as mandated by Section 2 of HB23-1233, which outlines the requirements for EV charging and parking.
- There is significant interest in placing a DCFC in Telluride to accommodate community needs and large numbers of visitors who visit the area.

Town of Mountain Village

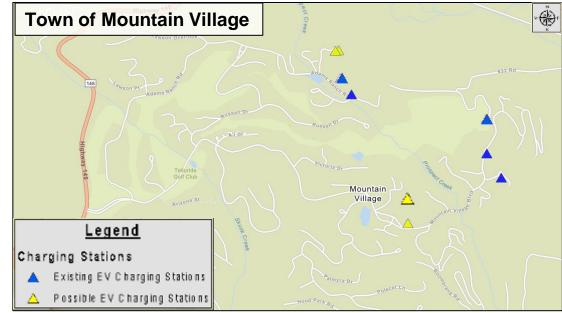
Mountain Village sits at 9,600 ft elevation and has a population of 1,240 residents. Mountain Village also experiences the ebbs and flows of tourism, something taken into account in decision making. There is a goal to install at least 1 DCFC charger in the Town of Mountain Village for public use. Mountain Village will develop a Climate Action Roadmap by 2024, which will continue to guide EV planning.

Possible New EV Charging Infrastructure Government

 VCA Shop: 415 Mtn Village Blvd Government use for fleet vehicles

Public

- Village Market: 455 Mountain Village Blvd
 - 1-hour parking already enforced in this parking lot
- Village Court Apartments: 415 Mtn Village Blvd
- Additional charging stations in public parking lots as demand warrants



Town of Mountain Village – Discussion Notes

GOVERNMENT SPECIFIC NEEDS

Mountain Village is actively considering the creation of an EV Fleet Feasibility Plan as part of their regional electric vehicle strategy. In the short term, the town is considering transitioning the Mountain Village Buses, department fleet vehicles and other equipment to EV's. Additionally, they are considering options for the long-term electrification of the Gondola Station. To support these efforts, the town secured a Charge Ahead Grant for the installation of L2 EVSE at Mountain Village Maintenance and the Mountain Village Municipal Building in 2023. Additional planned EVSE locations and the overall regional electric vehicle plan demonstrate Mountain Village's commitment to sustainable transportation and reducing emissions.

COMMUNITY SPECIFIC NEEDS

Currently, the only DCFC chargers located in Mountain Village are Tesla Supercharges, available only to Tesla drivers or those with converters. Efforts are underway to identify suitable locations for additional DCFC chargers that are open to all EVs.

Additionally, Zipcar services are available in Mountain Village as of 2023. The program began with eight gas Toyota 4Runners with four vehicles in the Meadows at Big Billie's and four vehicles at the Gondola Parking Garage. This program has a goal of transitioning to all electric vehicles in the future, which could provide zero-emission transportation options. This service has capacity to fill a gap in the limited availability of public transportation during the seasonal Gondola service interruptions. To support this program, three designated EVSE locations have been identified: Meadows Parking Lot, Gondola Parking Garage/Village Court Apartments, and Heritage Parking Garage. It is important to note that these initiatives align with the community's broader goal of achieving carbon neutrality by 2050. As near-term action items, the community aims to pursue a DCFC grant for a public charger and determine the optimal location for its installation.

Mountain Village held a Ride & Drive Event in June 2023 and will continue to support educational and outreach events with EV Taskforce support.

Town of Norwood

The Town of Norwood is a quaint farming community in San Miguel County with a population of 536 residents. Norwood adopted Colorado's previous state goals of reducing GHG emissions 20% by 2020 along with the rest of the Sneffels Energy Board.



Possible New EV Charging Stations

Government

Norwood Government Hub: 1225 Summit St

As of 2023, this is currently the location of the Norwood school. There is a likelihood that the school will move to a different location in the 5-10 years after the publication of this plan. This would be an ideal location for L2 government fleet vehicle charging as it would be a hub location for government staff and services.

• Norwood Town Hall: 1670 Naturita St

L2

• Public Works Building: 2096 County Rd Y43

L2

Public

• Pocket Park on Grand Ave (need help with address)

Most feasible location to start with public charging due to town ownership of lot and proximity to businesses

Assessment of location in late 2023 or early 2024 would be needed L2 or L3

• Norwood Public Library: 1455 Pinion St

Transformer capacity/cost was a challenge when investigated in the past

• ACE Hardware: 1920 Grand Ave

Town of Norwood – Discussion Notes

GOVERNMENT SPECIFIC NEEDS

There are only a few vehicles in the Norwood Government Fleet and their transition may start with hybrid options to build comfort with EV use. Identifying funding opportunities to transfer fleet vehicles to EVs such as rebates through SMPA and tax credits will be important to encourage government staff to initiate that transition.

COMMUNITY SPECIFIC NEEDS

Taking advantage of EVSE funding support through the Colorado Energy Office and identifying contractors familiar with the region will be crucial to support EVSE implementation in Norwood. The most compelling opportunity to incorporate EV charging infrastructure in Norwood is an upcoming Pocket Park proposal, a multifunctional community space with easy walking access to downtown Norwood. Town staff and other partners are submitting a concept paper to Great Outdoors Colorado in October 2023 for this Pocket Park proposal.

Norwood Public School K-12 intends to relocate to a newly constructed building between 2026-2027, depending on funding and community support. New construction would include a bus barn to host an EV bus and charger. This EV bus would require the support of federal grant and rebate funding and it would serve students on the pickup/drop-off route. Additionally, there is notable interest in installing Level 2 EV chargers at the new school location for staff and public use. Leadership noted that funding support will be crucial for these initiatives to succeed, but there is clear enthusiasm and strategic opportunities for EV infrastructure in Norwood.

Town of Ophir

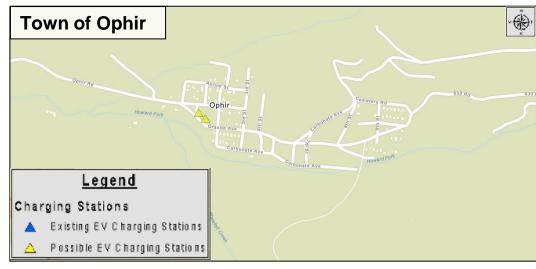
The Town of Ophir has 3 fleet vehicles, all of which are essential to snow removal during winter months. The maintenance barn in Ophir houses all 3 vehicles year-round and is already 240 V capable, making it an ideal location for level 2 charging. Also of note, 100% of Ophir's current municipal electricity use is provided by solar power, through both on-site solar panels and purchase into SMPA's community solar array in Paradox Valley, demonstrating the town's commitment to reducing GHG emissions. The town may want to consider additional solar power supply with the transition to EV's.

Possible New EV Charging Stations Government

- Ophir Maintenance Barn
 - 240V L2 available
- Town Hall

2 EV parking spots available at town hall.





Town of Ophir – Discussion Notes

GOVERNMENT SPECIFIC NEEDS

The Town of Ophir has 3 fleet vehicles, all of which are essential to snow removal during winter months. The maintenance barn in Ophir houses all 3 vehicles year-round and is already 240 V capable, making it an ideal location for level 2 charging. Also of note, 100% of Ophir's current municipal electricity use is provided by solar power, through both on-site solar panels and purchase into SMPA's community solar array in Paradox Valley, demonstrating the town's commitment to reducing GHG emissions. The town may want to consider additional solar power supply with the transition to EV's.

Town staff is currently considering 2 potential EV purchases:

Backhoe-Heavy Duty: Ophir staff is looking at the Case Industries Backhoe 580 V, which is 100% electric, has lower maintenance costs compared to current diesel model, and would be charged with charge protection in Ophir's maintenance barn.

Snowplow-Medium Duty: A snowplow installed on a full-size EV pickup meant to handle 2-5" of snow. More snow would require a real snowplow, which are not currently on the EV market.

COMMUNITY SPECIFIC NEEDS

The Town of Ophir currently has no public EV charging stations. It would be possible to locate up to 2 at Ophir Town Hall (with 1 reserved for the Town Manager as necessary). There is a strong desire by town citizens to reserve these chargers for community use only and to avoid attracting further publicity and traffic to the small mountain town.

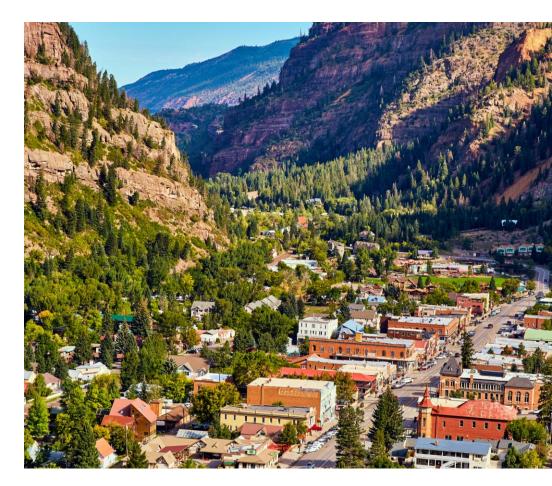
EV Infrastructure

Appendix B2:

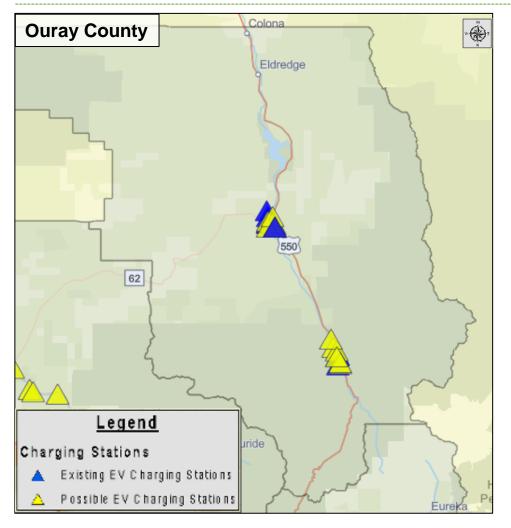
Ouray County - EV Infrastructure Needs Per Jurisdiction

Introduction

Ouray County, Colorado has a unique geography, including the high country of the San Juan Mountains, with a high number of outdoor recreation enthusiasts and tourists visiting the area. Ouray County covers 542 square miles and has a population of roughly 5,080 residents. The County includes the municipalities of the City of Ouray and the Town of Ridgway. The County's commitment to sustainable practices is reflected by its ambitious goal to reduce greenhouse gas emissions by 50% by 2030, compared to 2012 levels. This plan outlines a comprehensive strategy to support the increase of EVSE in Ouray County despite challenges such as limited space for public charging and a backlog on the availability of upgraded electrical transformers.



Ouray County



As of July 2023, there are 6 EV charging stations comprised of 13 individual plugs in Ouray County.

Ouray

- Ouray Visitor Center: 230 Main St (x2 DCFC CCS/SAE, x2 DCFC CHAdeMO ChargePoint)
- Quality Inn: 191 5th Ave (x3 L2, x1 Tesla)

Ridgway

- Base Camp 550: 20725 Highway 550 (x1 L2)
- Hartwell Park: 101 N Railroad St (x2 L2)
- San Miguel Power Association Office: 720 N Railroad St (x2 L2 ChargePoint)
- Ridgway High School: 1200 Green St

Ouray County



OURAY COUNTY - POSSIBLE NEW EV CHARGING LOCATIONS

Government

- Land Use/Road & Bridge Department Building: 111 Mall Rd, Ridgway
- Oak St Road & Bridge Facility: Oak St, Ouray
- Land Use Office: 320 6th Ave, Ouray
- Ouray Courthouse: 541 4th St, Ouray
- Ouray County 4H Events Center & Fairgrounds: 22739 US-550, Ridgway

(Public and Government Chargers should be installed)

Public

• Rotary Park: HWY 550, Ouray

Ouray County – Discussion Notes

GOVERNMENT NEEDS

Ouray County government has identified several specific steps in relation to the regional EV Readiness Plan. The first step is conducting a Facilities Update Plan. Ouray County is using American Rescue Plan funds for a consultant to conduct an assessment and study of Ouray County's existing facilities, existing needs, and future needs in order to develop a phased expansion plan to provide facility needs for the next 30+ years. This plan is assessing all County properties and departments. In relation to the regional EV Readiness Plan, the most acute need is upgrading the electrical service to the 111 Mall Road facility to 3-phase electricity. However, the Facilities Update Plan should be conducted prior to electrical upgrades to ensure the power is located where it will not interfere with future changes or expansion. The Facilities Plan should lay out multiple locations of electric chargers for light infrastructure electric equipment available. vehicles (cars & pickups) and for heavy when it becomes

Further, the Facilities Plan should identify infrastructure and charging locations at other County properties including public chargers at the Courthouse, 4H Building, Road & Bridge Oak Street property, and TBD locations of Public Health and Social Services (these are currently rentals). A Master Facilities Update Plan is crucial so that costly electric infrastructure upgrades necessary for charging stations are located in places where they will not interfere with future efforts. This planning process formally began with a work session on 8/30/2023 and is expected to be complete in 12-18 months.

Ouray County is contracting with Enterprise Fleet Management to provide most of the County's light vehicles. Ouray County requested electric options to choose from, but Enterprise has been slow to actually provide electric options they promised when the County began service with them in early 2021. Availability options within Thev supply of ΕV contracting svstem barrier. blame chain issues. our is а

COMMUNITY NEEDS

Ouray County has identified insufficient installed electrical capacity, limited space, and a backlog of transformers as barriers to EV charging site installation within the jurisdiction. There is currently a backlog on the availability of upgraded electrical transformers, causing a delay in charger installations for community and government applications. Local EV maintenance support is nonexistent in the region, posing a barrier to the maintenance needs of EV buses and fleets, especially in winter months.

PUBLIC TRANSPORTATION

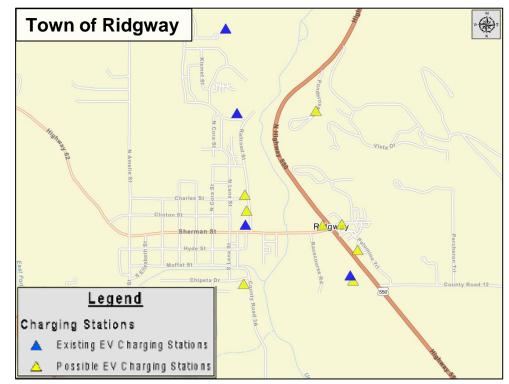
Ouray County signed a contract with All Points Transportation to provide shuttle service between Montrose, Ridgway, and Ouray. The shuttle van is gasoline. An electric option was discussed, but no large electric vans are currently available to purchase. If the initial shuttle service is successful, there is interest in either expanding service or replacing the gas van with an EV if a suitable vehicle is available.

Town of Ridgway

The Town of Ridgway has a population of 1,183 residents and is located in Ouray County. Town representatives participate in the Ridgway Ouray Community Council (ROCC) to work towards maintaining quality of life and sustainability for present and future generations. Ridgway encourages the use of carbon-free and renewable energy systems within the town and supports the goal of carbon neutrality for Colorado. There is a goal to install at least 1 DCFC charger in the Town of Ridgway for public use.

Possible New EV Charging Stations Government

- Town Hall: 201 N Railroad St, Ridgway Public
- Ridgway Library: 300 Charles Street Ridgway
- Ridgway Conoco Gas Station: 140 US-550 #62, Ridgway
- Ridgway Heritage Athletic Park: Co Rd 23, Ridgway **Private**
- Ridgway MTN Lodge Ridgway: 373 Palomino Trail, Ridgway



Town of Ridgway – Discussion Notes

GOVERNMENT NEEDS

The Town of Ridgway has prioritized replacing the current pickup truck with an EV truck, using an available \$50,000. Town staff are also interested in exploring EV tractor and front loader options. The installation of a government-specific EV charger is a necessary first step.

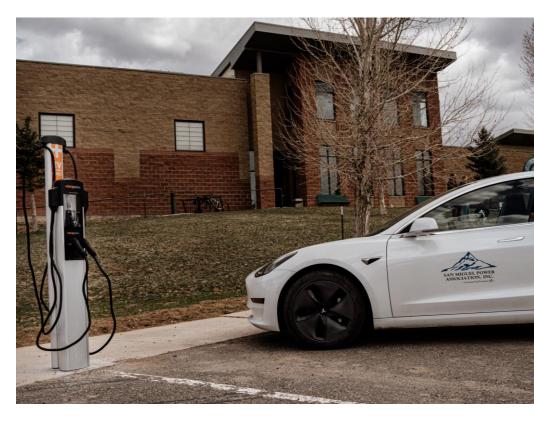
Staff has researched grants related to EVs but has limited capacity in current staff to administer and monitor grant EV grants. They are considering the creation of a contract part-time grant coordinator so the town can utilize Federal and State EV grants.

COMMUNITY NEEDS

Ridgway town staff would like to increase the human bandwidth of local businesses and staff to explore, implement, and adopt the EV transition. One goal would be to educate HOAs in Ridgway on Federal and State EVSE installation rebates and programs.

Additionally, there is significant interest in installing a DCFC in Ridgway to accommodate community and visitor needs.

Ridgway held a Ride & Drive Event in September 2023 and intends to continue to host additional educational events with EV Taskforce support.



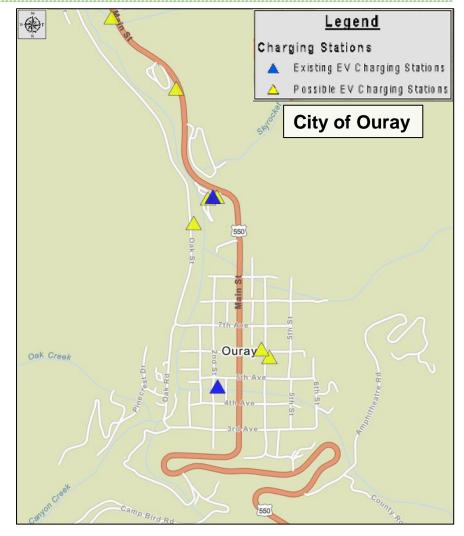
City of Ouray

The City of Ouray is home to 903 residents and is located in Ouray County. Through 2012, the City adopted an Energy Action Plan, guiding them to implement actions that reduce government energy use and they plan to continue to purchase "green power" from SMPA for all city owned electrical accounts. Additionally, the Ridgway Ouray Community Council (ROCC) works toward maintaining quality of life and sustainability for present and future generations. There is a goal to install at least 1 additional DCFC charger in the City of Ouray for public use.

Possible New EV Charging Stations Public

• Ouray Hot Springs: 1220 Main St, Ouray

Installation of 2 additional chargers for a total of 4 Current transformer on site supports 4 total •City of Ouray Public Works Building: 798 Oak St, Ouray •City of Ouray Visitor Center: 1230 Main St, Ouray •The Trading Post at Ouray Riverside Resort Gas Station: 1515 Main St, Ouray •Phillips 66: 1600 Main St, Ouray



City of Ouray – Discussion Notes

GOVERNMENT SPECIFIC NEEDS

Town staff identified a need to update the electrical transformer at City of Ouray Public Works building to support transitioning their fleet vehicles to EVs.

COMMUNITY SPECIFIC NEEDS

The City of Ouray has expressed a desire to prioritize the availability of public charging stations, as the Visitor Center indicated that the lack of public EVSE deterred tourists with an EV from visiting the City of Ouray.



EV Infrastructure

Appendix B3:

San Juan County and Silverton - EV Infrastructure Needs

San Juan County

San Juan County is located in the San Juan mountain range in southwest Colorado. It is home to 736 residents, making it the least populated county in Colorado and it has the highest mean elevation of any U.S. county at 11,240 feet. San Juan County joined the Sneffels Energy Board in 2023 and is working toward establishing their goals as they relate to the CAP and plan to formally adopt the CAP in 2024.

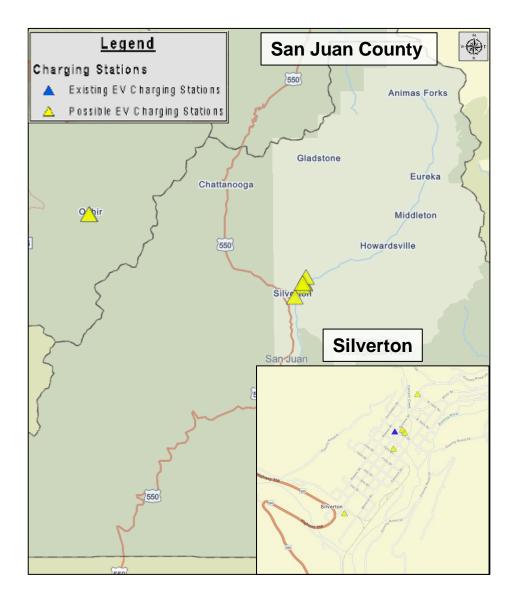
Town of Silverton

Silverton has a population of 650 residents and an elevation of 9,318 feet. Silverton is the county seat of San Juan County and joined the Sneffels Energy Board in 2023. There is a goal to install at least 1 DCFC charger in the Town of Silverton for public use.



San Juan County and Silverton– EV Infrastructure Needs

San Juan County and Silverton



Existing Charging Stations

As of December 2023, there are 2 EV charging stations in San Juan County, located at the Wyman Hotel in Silverton.

Possible New EV Charging Stations San Juan County Government

County Barn: 1512 Greene St, Silverton

Town of Silverton Government

• Town Shop: 1450 Greene St, Silverton

Public

- City Hall: 1360 Greene St, Silverton
- Memorial Park: 1800-1874 Greene St, Silverton
- Anesi Park: 1239 Blair St, Silverton
- Library: 1111 Reese St, Silverton

Above locations are being evaluated as a potential location for a DCFC in Silverton, however, an official location had not been chosen at the time on this document's publication.

San Juan County and Silverton – Discussion Notes

SAN JUAN COUNTY GOVERNMENT NEEDS

San Juan County has a history of experiencing power outages due to avalanches and other natural disasters. Pursuing a microgrid and battery backup system may be a way to address these resilience challenges.

None of the county's fleet vehicles are hybrid or EV as of 2023. Increasing county staff's comfort with and knowledge of EV options through regional EV ride & drive events and communication with staff using EV fleets across the region. Additionally, county staff need to identify which fleet vehicles will be due for replacement next and what EV options and funding sources will be available to replace them.

SAN JUAN COUNTY COMMUNITY NEEDS

Due to the county's rural and remote location, having EVSE infrastructure for visitors and locals alike will be an important draw and source of resilience going forward. Additionally, identifying ways to produce electric power locally, such as through a community solar microgrid with battery backup, will be vital to planning for the needs of the community.

SILVERTON GOVERNMENT NEEDS

In 2023, none of Silverton's government vehicles were EVs, but transitioning fleet vehicles to EVs over time is a goal for staff. Like many communities in the region, identifying which vehicles are next in line for replacement and funding opportunities available through rebates is an action item for Silverton Government staff in 2023 and 2024. Staff noted that there was a lack of permitting or regulation in Silverton regarding EVs in 2023, which might need to change in the future.

SILVERTON COMMUNITY NEEDS

Silverton's community prides itself on access to nature and its many attractions. As of 2023, only two Silverton residents own EVs, although this number is expected to grow. Additionally, Silverton hosts visitors from the north and south who seek to explore the outdoors and enjoy all that Silverton has to offer. Providing charging stations that allow them to travel through remote areas with confidence of adequate charging infrastructure is a priority for the community in the years to come. Silverton is interested in installing a DCFC in town to support charging needs of community members and visitors traveling long distances.