State of Nevada

Comprehensive Climate Analysis for Nevada (CCAN)

Prepared for
Nevada Department
of Environmental Protection

Prepared by
Sustainability
Solutions Group

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NEVADA DIVISION OF ENVIRONMENTAL PROTECTION

Nevada Department of CONSERVATION & NATURAL RESOURCES

NEVADA GOVERNOR'S OFFICE OF ENERGY

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Acronyms and Abbreviations

BAP	Business-as-Planned
BAU	Business-as-Usual
CAP	Criteria Air Pollutant
CCAN	Comprehensive Climate Analysis for Nevada
CD	Community Driven (Scenario)
CO	Carbon Monoxide
CO_2	Carbon Dioxide
CO_2e	Carbon Dioxide equivalent
COP	Conference of the Parties (United Nations meeting on climate change)
CPRG	Climate Pollution Reduction Grant
EPA	Environmental Protection Agency
EUI	Energy Use Intensity
EV	Electric Vehicle
GDP	Gross Domestic Product
GHG	Greenhouse gas
GOE	(Nevada) Governor's Office of Energy
HAP	Hazardous Air Pollutant
IAP2	International Association for Public Participation
IPCC	Intergovernmental Panel on Climate Change
IRA	Inflation Reduction Act
LC	Low Carbon (Scenario)
MF	Mixed Fuel (Scenario)
MMBtu	Metric Million British Thermal Unit
$MMTCO_2e$	Million Metric Tons of Carbon Dioxide Equivalent
NOx	Nitrogen Oxides
NDC	Nationally determined contribution

NDEP	Nevada Division of Environmental Protection
PCAP	Priority Climate Action Plan
PM2.5	Particulate Matter smaller than 2.5 micrometers
PUCN	Public Utilities Commission of Nevada
UNFCCC	United Nations Framework Convention on Climate Change
VMT	Vehicle Miles Traveled
VOC	Volatile Organic Compound
ZEV	Zero Emissions Vehicles

How to Read This Document

Funded by the U.S. Environmental Protection Agency's (EPA) Climate Pollution Reduction Grant (CPRG) Program, the Comprehensive Climate Analysis for Nevada (CCAN) assesses current sources of greenhouse gas (GHG) emissions and evaluates possible pathways to reduce emissions.

Why This Analysis Matters

This analysis is part of a nationwide effort to reduce pollution and improve quality of life. It is built on local data, shaped by feedback from interested and affected parties, and intended to outline potential pathways where the benefits of climate measures are widely shared — including in communities that face higher environmental and economic challenges (referred to here as low-income and at-risk communities).

What You Will Find in This Document

- **Engagement Findings (Section 2):** How residents, organizations and partners helped shape the analysis.
- **Greenhouse Gas Inventory (Section 3):** A summary of where emissions come from (such as vehicles, buildings and industry).
- **Reference Scenarios (Section 4):** What emissions could look like under the "business-as-usual" and "business-as-planned" scenario, where no additional climate actions are undertaken.
- **Targets (Section 5)**: Emissions reduction goals for Nevada in 2030 and 2050.
- **Reduction Measures and Emission Projections (Section 6)**: Overview of the proposed scenarios and specific measures to cut emissions — such as expanding public transit or investing in clean energy systems.
- **Implementation Strategies (Section 7):** How measures move from vision to reality with specific entities, funding sources, and timelines defined.
- **Co-Benefits (Section 8)**: An overview of impacts like cleaner air, cost savings and job creation, including expected benefits in low income and at-risk communities.
- **Workforce Planning (Section 9)**: A look at the jobs and training needed to carry out the proposed measures.

How to Use This Document

- Start with the Executive Summary for a quick overview of the key points of analysis.
- Use the tables, figures and maps to help make the technical data easier to understand.
- Each section builds on the last — read in order for full context or skip to topics that interest you most.
- Search the glossary and appendices for more detail if needed.

Who This Analysis Is For

This analysis is intended for everyone — residents, governments, businesses, utilities and other partners — and describes the potential roles of interested and affected parties if they were to implement the emission reduction pathways evaluated in this analysis. It also outlines how climate measures could generate co-benefits such as improved air quality and public health outcomes alongside increased economic development and recognizes that coordinated action across sectors would be necessary to implement these pathways.

Executive Summary

E1. Introduction

The Comprehensive Climate Analysis for Nevada (CCAN) studies potential low emissions pathways that could be implemented to reduce greenhouse gas emissions in Nevada. The results show examples of how measures could be implemented for Nevada to achieve net-zero emissions by 2050 while potentially creating other societal benefits, like creating thousands of jobs, lowering energy costs for families, reducing air pollution, improving the health of residents, and building a resilient economy.

As required by the EPA`s Climate Pollution Reduction Grant (CPRG) program, the CCAN quantifies GHG reductions from specific measures, identifies strategies and considerations for implementation including funding, legal authority, workforce development, and tracking progress. It also assesses co-benefits including health impacts and cost savings, providing a focused analysis of energy poverty and at-risk communities.

The CCAN covers the State of Nevada, including urban centers, rural communities, and Tribal lands. It addresses emissions from energy systems, buildings, transportation, industry, waste, agriculture, and working and natural lands.

E2. The Approach

At the core of the CCAN is a baseline inventory of greenhouse gas emissions from Nevada for 2021 and projections that evaluate five hypothetical emissions reductions scenarios out to the year 2050. Based on the inventory and projections, further analysis was conducted to estimate the costs and benefits of the implementation of each measure, identifying what entities might play a key role if the measures were to be implemented, and evaluating what legal authority exists or may be needed to implement the measure, and potential funding sources.

The first two scenarios provide projections for the Business-as-Usual (BAU) and Business-as-Planned (BAP), that assume only the emissions reductions associated with programs or requirements that are already in effect, and those in effect and on the books to go into effect, respectively.

The remaining three scenarios project what the state-wide GHG emissions might look like in 2050 if a variety of emissions reduction measures were to be implemented. These scenarios are referred to as the Low Carbon (LC), Mixed Fuel (MF), and Community-Driven (CD). Each scenario assumes a different strategy that could be used in implementing the emissions reduction measures to try to achieve the goals established in Senate Bill 254 (2019) of net zero emissions by 2050. The LC scenario assumes ambitious timelines for emissions reductions that prioritizes

achieving more rapid emissions reductions, the MF scenario prioritizes maintaining a more diverse mixture of fuel and energy technologies, and the CD scenario prioritizes measures that more directly benefit communities, such as reducing household energy costs.

E2.1 Use and Limitations of the CCAN

The CCAN is not intended to be a roadmap of how greenhouse gas emissions should be reduced in Nevada, but rather as a resource to help inform implementation of measures at a variety of scales, whether it be statewide governmental program, a business minimizing their environmental impacts, or an individual person making their home more energy efficient. However, it is important to note that there are some limitations to the CCAN. It is not practical to model and evaluate the impacts at every scale and account for all of the variables that would affect a specific implementation of the measure, so simplifying assumptions must be made to account for the more general case. For example, a specific implementation of a landfill gas capture and utilization system for a large landfill that serves 1 million people may be more cost effective than the general case, while it may be significantly less cost effective than the general case for a landfill that serves 5,000 people.

E3. The Pathways

E3.1 The Starting Point

The GHG inventory for Nevada in 2021 shows total emissions of 42 million metric tons ($mmtCO_2e$) (excluding sequestration), or 35 $mmtCO_2e$ (net total, including sequestration from natural lands). With 3.15 million residents, this equates to per capita emissions of 13.6 mtCO2e—just below the national average of 14.8 metric tons.[1]

E3.2 Future Scenarios

Five scenarios were analyzed, including two reference scenarios, Business As Usual (BAU) and Business As Planned (BAP) and three low carbon scenarios, Low Carbon (LC), Mixed Fuel (MF) and Community Driven (CD). The transition towards cleaner energy generation and uses, an analysis of Nevada`s unique capabilities, and a community engagement process shaped the development of the low carbon scenarios.

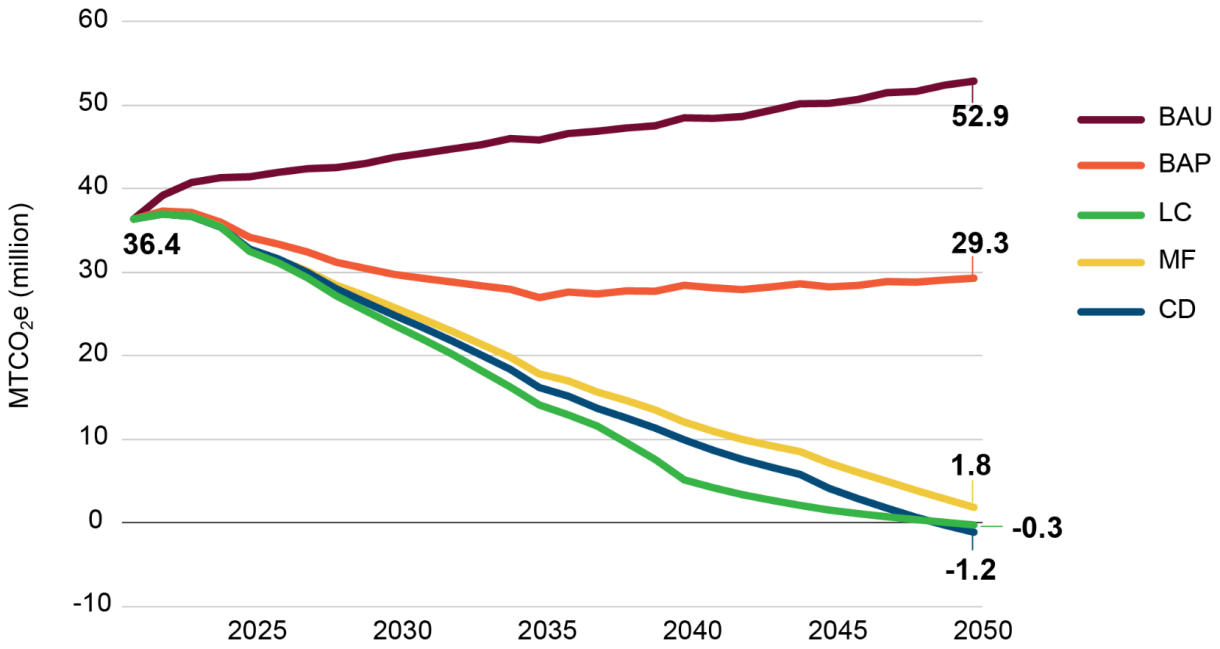
[1] "Data Page: Per capita CO_2 emissions", part of the following publication: Hannah Ritchie, Pablo Rosado, and Max Roser (2023) - "CO_2 and Greenhouse Gas Emissions". Data adapted from Global Carbon Project, Various sources. Retrieved from https://ourworldindata.org/grapher/co-emissions-per-capita [online resource]

Table E.1 The Scenarios

	BAU Business-as-Usual	Continuation of current trends including population growth and economic growth with no additional policies. Limited efficiency improvements and modest growth in renewable energy.
	BAP Business-as-Planned	Full implementation of current and on the books policies and programs.
	LC The Low Carbon Scenario	An accelerated transition to a clean electricity grid, rapid deployment of net-zero building codes, aggressive building retrofits, widespread adoption of zero-emission vehicles, and deep decarbonization of industrial processes.
	MF The Mixed Fuel Scenario	Increased reliance on alternative fuels like hydrogen and renewable natural gas, and a more gradual rollout of clean technologies across sectors.
	CD The Community-Driven Scenario	Prioritizes broadening access to clean energy, expanding active and public transportation, and ensuring at-risk communities are the first to see improvements in air quality, mobility, and energy efficiency.

In the BAU, GHG emissions plateau near 52 $MMtCO_2e$ through 2050 as population growth offsets efficiency gains. The BAP scenario—which assumes full implementation of adopted renewable portfolio standards, federal light-duty electric vehicle standards, and municipal climate ordinances—yields an 11 percent reduction by 2050. With additional climate action measures, all three low carbon scenarios (LC, MF and CD) achieve emissions reductions of 90% over 2021 or more by 2050 (including sequestration), with the deepest overall reductions occurring in the LC scenario.

Figure E.1 Projected net GHG emissions in the BAU, BAP, LC, MF, and CD scenarios, 2021-2050 (including sequestration).



E3.3 The Opportunity Areas

The CCAN identifies dozens of emissions reduction measures that could be implemented individually. These emissions reduction measures could also be combined and implemented as part of a larger-scaled action addressing a wider range of emissions sources. For illustrative purposes, individual measures are organized into eleven “Opportunity Areas” that include related measures that could be implemented together to more wholistically address key sources of emissions in Nevada. The eleven Opportunity Areas are:

1. Power Nevada with Clean Energy
2. Build Net-Zero New Buildings
3. Transform Existing Buildings
4. Move with Active and Public Transit
5. Accelerate Adoption of Zero Emission Vehicles for All
6. Drive Sustainable Transport of Goods
7. Decarbonize Industry
8. Divert and Reuse Waste

9. Harness Landfill Gas
10. Grow Nature-Based Solutions
11. Make Farming More Sustainable

Each Opportunity Area represents one of many ways measures could be implemented as part of a larger action to reduce carbon emissions, while delivering economic and health benefits.

E.4 The Impacts

E4.1 Co-benefits

Beyond reducing GHG emissions, the low carbon scenarios deliver many other potential benefits to households, businesses and governments in Nevada, examples of which are highlighted in Table E2.

Table E2. Benefits of the Low Carbon Scenarios

Benefit	Description
Improved health	Air contaminants are reduced nearly to zero as a result of phasing out the combustion of fossil fuels. Air pollution damages the lungs, heart, brain, skin and other organs, and causes disease, disability[2] and death.[3] Air pollution from fossil fuels has been linked to the development of neurological disorders, including Parkinson's disease, Alzheimer's disease and other dementias;[4] acute bronchitis in children; asthma and other respiratory illnesses; heart disease; stroke; and an increased risk of cancer, among other impacts.[5] Indoor air quality is also improved as a result of the building retrofits and the electrification of appliances with similar benefits.[6]

[2] Gao, Jiaqi, Carlos F. Mendes de Leon, Boya Zhang, Jennifer Weuve, Kenneth M. Langa, Jennifer D'Souza, Adam Szpiro et al. "Long-term air pollution exposure and incident physical disability in older US adults: a cohort study." The Lancet Healthy Longevity 5, no. 10 (2024).
[3] Buonocore, J. J., Reka, S., Y., D., Chang, C., Roy, A., Thompson, T., ... & Arunachalam, S. (2023). Air pollution and health impacts of oil & gas production in the United States. Environmental Research: Health, 1(2), 021006.
[4] Kalenik, Sebastian, Agnieszka Zaczek, and Aleksandra Rodacka. "Air pollution-induced neurotoxicity: the relationship between air pollution, epigenetic changes, and neurological disorders." International Journal of Molecular Sciences 26, no. 7 (2025): 3402.
[5] Manisalidis, Ioannis, Elisavet Stavropoulou, Agathangelos Stavropoulos, and Eugenia Bezirtzoglou. "Environmental and health impacts of air pollution: a review." Frontiers in public health 8 (2020): 14.
[6] Nassikas, N. J., McCormack, M. C., Ewart, G..almes, J. R., Bond, T. C., Brigham, E., ... & Kipen, H. M. (2024). Indoor air sources of outdoor air pollution: health consequences, policy, and recommendations: an official American Thoracic Society workshop report. Annals of the American Thoracic Society, 21(3), 365-376.

Benefit	Description
Increased affordability	Household costs associated with travel and energy are expected to decrease by 70% between 2021 and 2050. This translates into a reduction from an average of $6,814 in annual household expenses 2021 to $3,700 in 2035 to $1,800 by 2050. These decreases are the result of more efficient equipment. Decreasing energy costs is critical to addressing energy poverty
Increased resilience	The measures reduce exposure to extreme heat by mitigating the heat island effect and better protecting people in their homes by improving the thermal envelope and ensuring universal access to air conditioning. The energy system as a whole is more resilient to global economic shocks and extreme weather events as generation is more geographically distributed and localized.
Job opportunities	The measures in the low carbon scenarios require capital investments, which stimulate jobs across a range of sectors, averaging between 4,400 and 5,500 each year. Some of these jobs are highly skilled, while others are broadly accessible in activities such as building retrofits.

E4.2 Economic Impacts

Of the three scenarios, the LC scenario delivers the greatest public benefit, in terms of avoided energy costs and avoided climate damages, with a net benefit of just over $40 billion over the 25 year period (present value). The average annual investment (CAPEX) ranges from $5.4 to $5.8 billion per year (undiscounted); this is equivalent to 2.1-2.2% of Nevada's 2024 GDP.[7] The investments result in average annual energy savings of between $3.4 billion (CD scenario) and $4.4 billion (LC scenario), excluding climate damages.

E4.3 A Role for Everyone

While the CCAN identifies "Opportunity Areas", emissions can be reduced at any scale, from large statewide changes, to the changes of a single individual. Even small actions can make a big difference. Below are actions that could be implemented across a wide range of scales.

- **State & Local Government:** Align energy and land-use policies, building codes and transportation investments with CCAN Opportunity Areas..
- **Utilities & Regulators:** Accelerate transmission upgrades and integrated resource planning for 100 percent clean power.

[7] In 2024, Nevada's GDP was $261 billion. Federal Reserve Bank of St. Louis, 2025, Gross Domestic Product: All Industry Total in Nevada. https://fred.stlouisfed.org/series/NVNGSP

- **Banks & Investors:** Provide financing mechanisms and pool investments for economies of scale.
- **Tribal Nations:** Lead renewable development on Tribal lands and co-manage sagebrush restoration.
- **Industry & Labor:** Upskill workers for geothermal drilling, heat-pump installation and energy-efficient construction. Advance efforts to decarbonize industrial processes.
- **Residents & Businesses:** Adopt energy-efficient technologies, shift travel choices, and participate in community solar programs.

E4.4 Conclusion

The CCAN can help inform potential pathways for a clean energy future that builds a healthier, more prosperous, and energy-independent Nevada. The CCAN provides examples of how Nevada's adopted clean energy goals could be achieved and how it could transform the State from an importer of energy to a clean energy exporter. The scenarios demonstrate that Nevada can achieve net-zero emissions by 2050 while creating thousands of jobs, reducing energy costs, and increasing the quality of life for all Nevadans. The CCAN represents a culmination of years of technical development and stakeholder engagement led by NDEP, in order to provide valuable information and recommendations to help Nevada take the next steps toward reducing emissions while improving human health and generating significant economic benefits for Nevadans.

1 | Introduction

1.1 CPRG Overview

The Climate Pollution Reduction Grants (CPRG) program, established through the 2022 Inflation Reduction Act (IRA), is a federal framework for supporting ambitious local and state efforts to cut greenhouse gas emissions. Administered by the U.S. Environmental Protection Agency (EPA), the CPRG program and other IRA programs have three broad objectives:

- Tackle damaging climate pollution while supporting the creation of good jobs and lowering energy costs for families;
- Accelerate work to empower community-driven solutions in overburdened neighborhoods; and
- Deliver cleaner air by reducing harmful air pollution in places where people live, work, play, and go to school.

The program is structured into two phases aimed at supporting state, territory, local, and Tribal governments in tailoring climate measures to their jurisdiction's unique context. Phase 1 provided planning grants to develop data-driven climate strategies, while Phase 2 offered implementation grants to shovel-ready measures identified through that planning.

The Nevada Division of Environmental Protection (NDEP) received $3 million in funding for Phase 1 of the CPRG. With this funding, Nevada is required to create a Priority Climate Action Plan (PCAP), the Comprehensive Climate Action Plan (CCAP), and the Status Report. The Comprehensive Climate Analysis for Nevada (CCAN) was developed to meet the CCAP requirement.

Nevada's PCAP, published in February 2024, identified near-term, high-impact strategies to reduce emissions across key sectors. Building on this, the Comprehensive Climate Analysis for Nevada (CCAN) provides a robust analysis of potential emissions reduction measures, economic impacts, and other co-benefits. It includes detailed GHG modeling and projections through 2050, scenario analysis, and policy evaluation to support informed climate decision-making.

1.2 CCAN Purpose and Scope

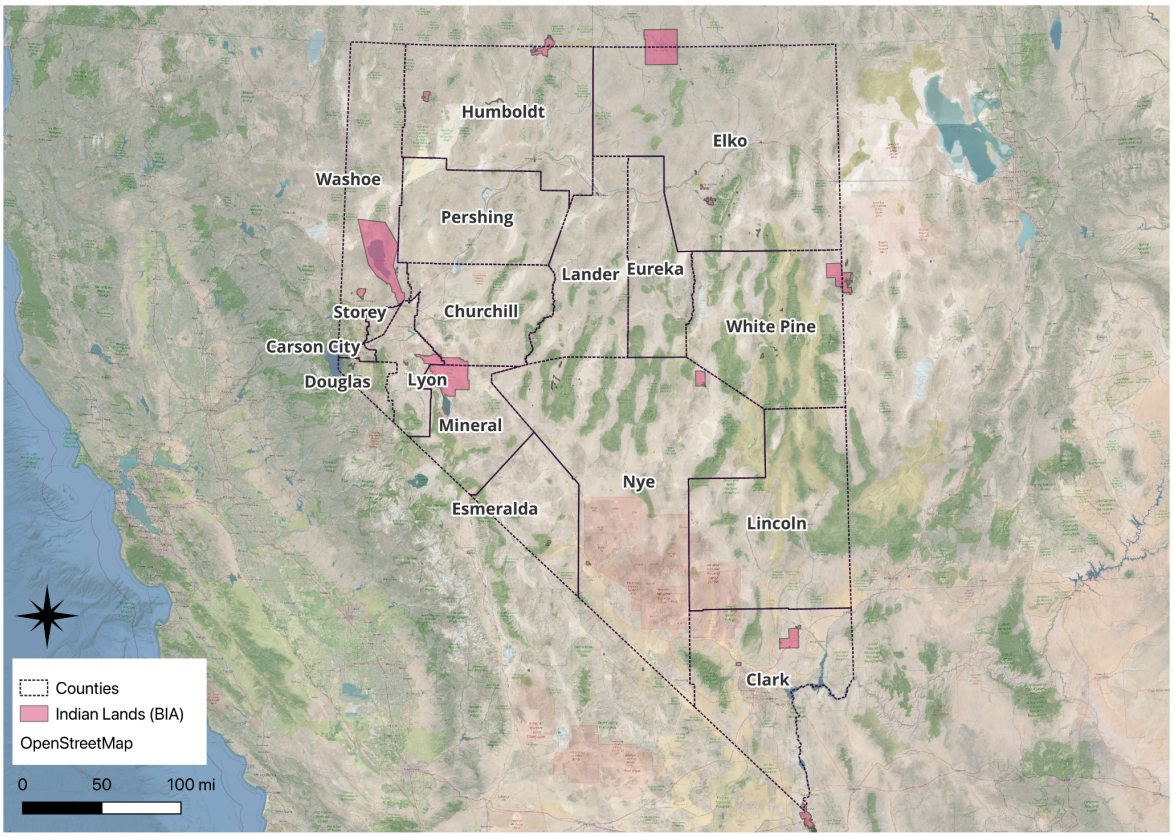
Nevada committed to bold, economy-wide greenhouse gas (GHG) reduction targets — 28% below 2005 levels by 2025, 45% by 2030, and net-zero by 2050 — when it adopted Senate Bill 254 in 2019. These targets work alongside clean energy policies, including a Renewable Portfolio Standard requiring 50% renewable electricity by 2030, and Executive Order 2023-07, which commits Nevada to meet its own electricity needs and become a regional exporter of renewable energy.

The CCAN outlines quantified reduction measures and strategies for measure implementation including funding, legal authority, workforce development, and monitoring progress. It also assesses co-benefits like health and cost savings, and includes a focused analysis of benefits for low-income and at-risk communities.

The CCAN covers the entire State of Nevada, including urban centers, rural communities, and Tribal lands. The Clark County Department of Environment and Sustainability has also received CPRG grant funding to develop a PCAP and CCAP specific to the Las Vegas-Henderson-Paradise Metropolitan Statistical Area. This project is distinct from the region-specific plans and is not directly tied to the County's work.

The CCAN addresses emissions from energy systems, buildings, transportation, industry, waste, agriculture, and working and natural lands. The analysis covers the period from 2021 to 2050, with 2021 selected as the base year based on data availability.

Figure 1.1 Map showing the geographic scope for the CCAN.



1.3 Approach to Developing the CCAN

The development of the CCAN included four streams of activities: coordination, engagement, technical analysis, and outcomes.

- **Coordination:** NDEP, GOE, and project consultants met on a bi-weekly basis throughout the development of the CCAN to manage the project deadlines, track progress, discuss analysis and findings, and strategize on CCAN development.

- **Engagement:** A targeted engagement process aimed at understanding the priorities of interested and affected parties, including residents, businesses, community-based organizations, and low-income and at risk communities, and exploring how climate measures could address their needs. Different communities and stakeholder groups were engaged to identify implementation approaches that are locally relevant, feasible and benefitting everyone, ensuring the CCAN reflects both resident aspirations and practical pathways to implementing climate measures.

- **Technical Analysis:** Key technical activities in the development of the CCAN included collecting and synthesizing local, state, and federal data to compile an updated GHG inventory, followed by calibration and modeling of Business-as-Usual (BAU) and Business-as-Planned (BAP) scenarios. Building on engagement inputs, low-carbon scenarios were modeled to assess the impact of ambitious measures. These scenarios were further analyzed to quantify co-benefits such as avoided costs, reductions in co-pollutants, community health improvements, and job creation.

- **Outcomes:** Throughout the development of the CCAN, outcomes were developed by the project team to inform the final CCAN. Key outcomes include an updated GHG inventory, BAU and BAP projection scenarios, review of economy-wide targets, analysis of measures for reducing emissions, evaluation of low carbon, mixed fuel, and community driven scenarios, assessment of financial, co-pollutant, and workforce projections, and preparation of the final CCAN.

1.3.1 Engagement Process

The community engagement process for CCAN was designed to inform the general public about the process, and to enable input from a wide range of perspectives and sectors. Outreach efforts invited participation from a cross-section of interested and affected parties, including local decision-makers, business and industry representatives, non-profit leaders, climate action experts, and residents. Engagement activities aimed to build awareness of the CCAN, surface lived experiences and local concerns, and identify both barriers and opportunities to climate measures.

A key objective of this process was to understand the values and priorities of low-income and at-risk communities, and ensure these perspectives are reflected in the CCAN. Engagement activities included pre-engagement interviews, Technical Working Group workshops, focus groups and interviews, and Tribal Nations engagement. Communications included an easy to access website and newsletters to a contact list of over 300 people. More details on engagement approaches and outcomes can be found in Section 2 - Engagement Findings.

1.3.2 Technical Approach

A baseline and inventory of Nevada's community-wide greenhouse gas (GHG) emissions was calibrated with the most recent (2021) and complete data available from local, state, and federal sources in SSG's Scena Model. Building on this foundation, future emissions were modeled from 2021 to 2050 for five scenarios, each created to test a different pathway for growth and climate measures:

1. **Business-as-Usual (BAU):** Reflects projected growth in population, employment, and households without any new emissions-reduction measures. Energy systems, transportation patterns, and land use remain unchanged from current conditions.

2. **Business-as-Planned (BAP):** Builds on the BAU scenario by incorporating adopted policies, legislation, and targets that influence emissions—such as renewable energy standards, transportation investments, and local climate plans.

3. **Low Carbon (LC):** Models an emissions reduction pathway aimed at accelerating climate action to minimize cumulative emissions over the period.

4. **Mixed Fuel (MF):** Models measures that include more fuel types and energy technologies, such as hydrogen and landfill gas capture.

5. **Community-Driven (CD):** Models community-specific strategies and measures that significantly lower energy use and GHG emissions across all sectors.

These scenarios present varied emissions trajectories and evaluate the impact of a menu of policies, measures, and investment choices. Additional technical modeling details have been provided in Appendix B.

1.3.3 Economic Development Lens

In addition to achieving GHG emissions reductions, the measures are also a catalyst for economic development. Setting targets and reducing emissions across various sectors sparks innovation, driving new investments in technologies, business models, and practices, and creating more entrepreneurial opportunities.

Moreover, these measures can lead to significant cost savings for both residents and businesses, freeing up financial resources that can be reinvested into the local economy. These savings boost consumer spending, stimulate demand for goods and services, and help foster a more resilient economy.

Investments in climate solutions require a skilled and adaptable workforce capable of installing clean energy systems, retrofitting existing buildings, and repairing electric vehicles. As the demand for these services grows, there is an increasing need for workers trained in advanced technologies which will create higher paying, quality jobs in Nevada.

Considering these factors, a key goal for this project was to consider how the CCAN can not only examine emission reductions, but also be a blueprint for sustainable, resilient economic growth.

2 | Engagement Findings

2.1 Introduction

This section describes the results of the engagement process which supported the development of the CCAN.

The insights and findings which follow reflect the voices and insights shared by interested and affected parties from September 2024 to May 2025. Aspirations, challenges and solutions are identified for each sector. This input was distilled into findings that inform the technical process of the CCAN, including the list of measures included.

Additional engagement activities in the fall will gather feedback on measures and co-benefits to finalize the CCAN.

2.1.1 Engagement Strategy

Engagement is any process that involves the public in problem-solving or decision-making and uses input from key internal and external interested or affected groups. An Engagement Strategy was developed for the CCAN using the International Association of Public Participation (IAP2) methodology. The intent of the Engagement Strategy was to ensure that interested and affected parties had appropriate and useful opportunities to inform and provide feedback at key stages of the CCAN process.

At the outset, SSG and Ericka Aviles Consulting developed an intentional Engagement Strategy based on the specific needs and context of climate action planning in Nevada communities, in particular low-income and at-risk communities. The Engagement Strategy was informed by pre-engagement interviews with key interested and affected parties, leaders and community influencers from several groups to assess how they would like to be engaged and who should be engaged. These interviews helped the consulting team identify baseline knowledge about climate planning among relevant populations, preferences for engagement, impacted groups that might otherwise be missed and other potential issues and opportunities for the engagement process.

Tribal Nations

Governments have a duty to engage in meaningful Indigenous engagement whenever there is reason to believe that its policies or measures, directly or indirectly, may infringe upon actual or claimed Indigenous interests, rights or title. NDEP is responsible for understanding their potential responsibilities under existing laws, treaties, acts, orders, agreements and/or court decisions that guide consultation with Tribes and Native American communities.

Nevada has 28 federally recognized tribes, bands and communities located on 31 Indian reservations and colonies. The state is home to the Great Basin Tribes of the Numu (Northern Paiute), Newe (Western Shoshone), Nuwu (Southern Paiute) and Wašiw (Washoe) as well as the Mojave Peoples which includes Ft. Mojave and the Pipa Aha Macav.

Native Americans in Nevada live primarily on Tribal reservation lands, although 62,000 people with Native American ancestry live in urban areas. People from different Tribal Nations live across the state, and numerous organizations reflect pan-Indigenous identities.

Engagement with Tribes was guided by a distinct set of principles and objectives that centre reconciliation. Meaningful relationships, mutual learning, and tangible benefits are at the forefront, building ongoing cooperation that will go beyond any specific plan. NDEP is in the process of developing its relationship with Tribal communities, and has been mindful that engagement will only progress with trust. NDEP has consulted with the Inter Tribal Council of Nevada representative, which provides resources, support and services to Tribal communities throughout Nevada. They are included in the Technical Working Group (described below) as well as the Nevada Indian Commission and the Upper Snake Tribes Foundation.

Secondary engagement and other resources were also used. The Nevada Clean Energy Fund provides programs to a number of Tribal Nations in Nevada, and has built meaningful, reciprocal relationships with Indigenous partners, including a Tribal Advisory Board. Douglas and Washoe Counties also conduct outreach with Tribes.

The Paiute-Shoshone Tribe of the Fallon Reservation and Colony is developing a CCAP under the CPRG program. A number of other Tribes are also involved in climate change adaptation efforts. The Walker River Paiute Tribe is undertaking energy-efficient upgrades to 150 homes, and building a resiliency hub. Additionally, there are national organizations advocating for broader Tribal perspectives and opportunities related to emission reduction that are relevant to Nevada. All these sources have provided insights that are reflected in the Major Findings, and throughout the relevant CCAN measures.

2.1.2 Involved Parties

The public refers to any individual, group of individuals, organizations, or political entities within or connected to the State of Nevada. Similarly, interested and affected parties are any person(s), group of individuals, or organization interested in or affected by the measures proposed or defined in the CCAN. For the purposes of this process, interested and affected parties are part of the public, even if they are part of governmental agencies or bodies.

For this engagement strategy, interested and affected parties are grouped into the following categories:

- North, south and rural Nevada
- Businesses, industry and economic development communities
- Government agencies
- Nonprofits and community groups
- Low income and at risk communities

Technical Working Group

The purpose of the Technical Working Group (TWG) is to provide feedback and advice to the project team regarding preferred approaches, concerns and criteria of proposed climate measures and other relevant material. It is composed of subject matter experts and/or representatives of interested and affected parties. A Terms of Reference lays out the framework for the group. The TWG did not have formal decision-making powers; however, feedback from working group members was collected to support the decision-making by project team staff. The TWG included representatives from the following types of organizations:

- Health promotion
- Environmental conservations
- Local governments, authorities and commissions
- State departments or divisions
- Tribal groups
- Renewable energy promotion

2.2 What Happened

The “What Happened” section provides a record of the activities that took place, how many people participated, and what each activity involved. Outcomes are described in Section 3.

2.2.1 Engagement Activities

A range of activities and different techniques were used in order to communicate information and gather input from people with varied preferences for engagement.

Table 2.1 Summary of engagement activities.

Activity	Participants	When	Where
TWG Meeting 1	Subject matter experts	Oct. 2024	Online
TWG Meeting 2	Subject matter experts	May 2025	Online
TWG Meeting 3	Subject matter experts	July 2025	Online
Newsletter 1	All contacts	Nov. 2024	Online
Newsletter 2	All contacts	June 2025	Online
Newsletter 3	All contacts	Sept. 2025	Online
Interviews	Community benefit experts	Ongoing	Online
Focus Group	Community benefit experts	June 2025	Online
Community Meetings	All contacts / general public	Sept. 2025	Online / Hybrid
Open Comment	All contacts / general public	Sept. 2025	Online
Final Draft Presentation	All contacts / general public	November 2025	Online

TWG Meeting 1

The consulting team provided an overview of the CCAN, the modeling approach, and the BAU and BAP scenarios. The group then discussed key concepts to consider in the future emissions modeled scenarios.

TWG Meeting 2

The consulting team provided an overview of three emission reduction scenarios. The group then discussed the assumptions in the scenarios, considerations for financial and co-benefits analysis, and priority measures among participants.

TWG Meeting 3

This meeting will cover the financial and co-benefits analysis.

Newsletter 1

An introduction to the modelling approach and key facts about emissions in Nevada was distributed to a list of 335 contacts, including Tribal Nations and low income and at-risk communities. It had an open rate of 50.5%

Newsletter 2

An overview of the emission reduction scenarios and update on the CCAN process, was distributed to the list of 320 contacts.

Newsletter 3
A brief summary of the draft CCAN and a description of the draft review consultation opportunities, will be distributed to the list of contacts.

Interviews
Interviews were undertaken with representatives from community organizations to gather input on social considerations and community benefits of measures.

Focus Group
This focus group among community organizations and service providers will gather input on community priorities and benefits of measures.

Community Meetings
Community meetings will gather feedback on the draft CCAN.

Open Comment
The open comment period will gather feedback on the draft CCAN.

Final Draft Presentation
The final CCAN is presented online for public information, and to wrap-up engagement.

2.2.2 Low-Income and At-Risk Communities

As described in Section 8 Benefits Analysis, low-income and at-risk communities are disproportionately impacted by climate change, and also experience the most significant barriers to participation in emission reduction measures.

Engagement with these communities began at the outset of the planning process, identifying key community organizations and leaders to ask for insights about how they and the communities they serve like to be engaged. Interviews were conducted with representatives from a range of organizations. Direction from these individuals at the outset of the CCAN helped to tailor the process to their needs.

The team also took time upfront to understand important community attributes, such as NDEP's current relationships with these communities, and past and current occurrences with them. They explored boundaries and expectations around participation. The team established ongoing communication via an email distribution list for updates and newsletters. Based on the pre-engagement insights, we undertook the activities detailed in Table 2.1. Outcomes are included in the Major Findings.

2.3 Findings from the Engagement Process

This section provides a brief synthesis of the insights gathered during the engagement process. Section 2.3.1 categorizes the main topics or issues raised. Sections 2.3.2-2.3.6 highlight the aspirations, challenges and solutions by sector. These sections also identify any areas of consensus or disagreement.

Overall themes that emerged through engagement with community members are listed below. The takeaways are important insights that influence other aspects of the CCAN, provide specific measures and factors for success, or represent concerns and opportunities where additional conversation among interested and affected parties will be required.

2.3.1 High Level Themes

Table 2.2. Summary of key themes across findings and sectors.

Theme	Takeaways for Measures and Future Planning
Big Picture and Underlying Conditions	
	• Maintain communication with interested and affected parties.
	• Promote and celebrate emission reduction successes throughout the state.
Affordability	
	• Many households can only adopt emission reduction measures that have no upfront costs.
	• Many of the people who are most impacted by effects of climate change also face additional barriers to taking measures.
	• Many households describe lower utility costs as their top-of-mind issue and a source of financial stress.
Community-Owned Energy	
	• Increase access to ownership and supply of renewable energy (i.e. electricity co-ops, Tribal Nations).
Connected Communities	
	• The urban environment needs to be conducive for active modes and transit (i.e. shade cover, sidewalks).
	• Local and regional public transit that is reliable, comfortable and fast public transportation is a higher priority for many than ZEVs.
Ongoing Engagement	
	• Advance tangible opportunities for implementation (i.e. policies, funding).

Theme	Takeaways for Measures and Future Planning
	● Develop programs that consider the interconnection of household emission reduction with other systems that influence participation (i.e. other priorities, taxes, technical, eligibility).
Public Health	
	● Reduced respiratory illness and overall improved health are core outcomes of reduced emissions.

2.3.2 Findings on Buildings

Priorities

- Standards for energy efficient, electrified buildings for new construction.
- Weatherization and building envelope upgrade programs with incentives to support the upfront costs.

Challenges

In some rural areas people are leary of a transition to heat pumps due to power grid instability. The high cost of building and energy system upgrades, difficulty accessing incentives, and lack of authority or agency for renters. Participants also identified that Clark County recently passed building codes that do not have requirements for efficiency or future electrification.

Solutions

Numerous solutions for buildings were suggested throughout the engagement process. Participants suggested that governments take the lead by building new public buildings to a high standard of efficiency, to demonstrate construction techniques and building performance. Other key topics included:

- Converting propane air conditioners to heat pumps for cooling.
- Expanding training programs for trades and building retrofits.
- Considering emissions associated with building materials and construction processes throughout the design, construction and operation of a building (e.g. embodied carbon).

Some participants emphasized co-benefits for adaptations, including:

- Deploying home battery backup storage to reduce vulnerability to power outages.
- Developing community resilience hubs that would provide a place for heating, cooling, and cold storage during power outages.
- Developing retrofit programs similar to the way in which hard landscape surfaces have been deployed to conserve water.

2.3.3 Findings on Transportation

Priorities

- Efficient and reliable public transit, with shade and drinking water fountains at stops support using transit in hot conditions.
- A public transit and land use system that enables quality of life, and makes it possible for people without vehicles to get to jobs, shopping, healthcare, and all the things that they need, without the financial burden of a vehicle.Electrified vehicles reduce street level air pollutants, and are a reliable, easy-to-use option.

Challenges

Active transportation modes can be uncomfortable or dangerous to use during extreme heat, and unreliable schedules and inefficient travel times deter use. Participants reported that most regional transportation commissions are facing significant financial challenges, and there is no sustained state-level funding for regional public transportation. Additionally, they reported that many lower-income neighborhoods are disproportionately situated near busy highways and roadways and the impacts of vehicle pollution, and that rentals and property values are highest in areas that are walkable or have short driving distances to amenities.

Solutions

Solutions highlighted included:

- Deploying shade cover structures over sidewalks, and providing incentives for heat protection gear.
- Modernizing and expanding the public transportation system, and enabling transit oriented and mixed-use development
- Electrifying government fleets to support development of broader system networks to support vehicle electrification including trained mechanics, charging stations, public familiarity.
- Use the Regional Rail Transit Study Commission to build awareness about public transit.
- Also consider the impacts of indoor air pollution from natural gas appliances.

2.3.4 Findings on Energy

Priorities

- Nevada continues to be a leader in renewable energy generation, maximizing benefits, resiliency and value for households.
- More solar power generation is owned by communities and serves their interests.

Challenges

Many households and businesses are not able to cover the upfront cost of onsite solar panel installation. Some communities have hesitated to pursue solar power because of concerns about how the panels would be disposed of at end of life. The administrative task of pursuing renewable energy exceeds capacity.

Grid instability and power outages are a challenge for some rural communities, including Tribes, with participants reporting outages at least once a month for up to 12 hours in duration. In an unstable grid, communities are leery of electrifying heating, cooling and other essential services.

Nevada Energy's grid infrastructure and substations are sometimes limited in rural communities and Tribal Nations, and upgrades to transformers are needed in order to handle increased power if households are switching to electric.

Solutions

Solutions highlighted included:

- Developing marketing campaigns to raise awareness and provide access to information and resources for energy efficiency. The Southern Nevada Water District's grass removal campaigns and programs have been effective, as an example.
- Supporting the development of distributed energy, community-owned and utility-scale generation, including leadership by Tribal Nations, school districts, and small rural communities.
- Supporting education and training in trades for the energy sector.
- Undertaking grid modernization by supporting the existing 14 rural electric cooperatives. The cooperatives support the responsible development and use of cost-effective clean energy resources, and advocate for increased transmission access to make renewable generation more feasible for their owners-members.
- Increasing utility data transparency in the Integrated Resource Plan process.

2.3.5 Findings on Agriculture and Nature-Based Solutions

Priorities

Ranchers graze livestock in a way that reduces wildfire risk from overgrown vegetation.

Challenges

Water shortages and wildfires are pressing crises for the agricultural sector.

Solutions

The solution highlighted was:

- Continuing outcome-based grazing projects with the Bureau of Land Management. The projects provide rangeland managers with the flexibility to change their grazing plan to adapt to challenges that arise in their particular landscape in any given season.

2.3.6 Findings on Waste and Industry

Aspirations and challenges were not discussed for this theme, however, one solution was highlighted:

- Deploying innovative treatment and processing facilities, such as the wastewater treatment process in the City of Northern Las Vegas. Due to energy efficiency improvements they were able to lower the price to residents, and use treated water from the facility used to water plants and trees in public spaces.

2.4 Findings from Low Income and At-Risk Communities

Engagement with low income and at-risk communities has helped us to situate the climate measures included in the analysis within the context of real-life experiences and priorities. This section describes the key themes or important distinctions that emerged. Detailed outcomes are included in relevant measures in Section 8, including minimizing risks of harm, incorporating community-driven priorities, and designing measures that directly benefit these communities.

2.4.1 Community Priorities

Participants were generally supportive of most GHG reduction measures, but interest and support are linked to, and contingent upon, direct benefit to well-being. They emphasized that in order to be effective, measures must be designed from the beginning to alleviate poverty, and that emission reduction measures must be a tool to support the stated priorities of communities. At the same time, participants reported that over the past year interest in emission reduction and efforts for fairer economies have declined, as other issues have risen in priority. Some participants described a requirement to rapidly reframe emission reduction measures entirely as energy independent, resilience, security and affordability, and no longer as climate change mitigation.

In particular, the high cost of electricity was identified as a key priority. Participants reported that many households are spending a large portion of their income on energy, and it is common for people to choose between air conditioning and other necessities. In addition to efficiency improvements, participants also described a widely held sentiment that utility rates are not fair to

consumers. It was noted that a recent bill now requires quarterly utility disconnection reporting, which will help support advocacy for cost-effective choices for ratepayers. Participants described an aspiration for access to independent, localised, distributed renewable energy available to low-income households or renters.

Overall priorities among participants included safe and affordable housing, financial security, clean air, and access to health care. The key priorities among participants that relate to emission reductions included:

- Lowering cost of living
- Improving air quality
- Reducing heat island effect
- Improving access to good employment and rights for workers
- Improving water rights and conservation
- Improving public transportation
- Improve access to healthy food
- Improving home cooling
- Improving access to stable housing
- Improving core infrastructure and service delivery

In addition to these general priorities, participants also identified a number of specific items that relate to specific aspects of emission reduction measures.

- Hire trusted messengers and local community ambassadors to share information and support participation in programs.
- Share success stories from people who have used programs or adopted new technology, and who have experienced energy savings.
- Use input to develop a plan that will lead to tangible, legislated action.
- Support collaboration among groups advocating for the rights of at-risk communities, such as the Nevada Environmental Justice Coalition.
- Efforts for clean air could be bolstered with detailed data about avoided health costs.

2.4.2 Community Insights on Benefits of Climate Action

Participants identified numerous ways in which emission reduction measures could provide benefits to the community, and help achieve progress toward their priorities. The full extent of potential benefits is detailed in Section 8 Benefits Analysis, and the following summaries reflect what participants raised throughout the engagement.

Many households are spending a significant portion of their income on energy, including electricity and gas for heating, cooling, cooking and cleaning. Measures that can reduce these costs, either through the cost of power itself or through efficiency, had support among many participants.

Improving air quality was a key priority among some participants, who identified transportation emissions as a major factor contributing to respiratory illness. Reducing traffic volumes through active transportation, electrification of vehicles, and alternative fuels for heavy duty vehicles had support in order to reduce air pollutant emissions.

Reliable, accessible and affordable public transportation is an essential service for alleviating poverty. Expanded bus and rail systems would better connect people with school, work and services that bring tangible quality of life benefits.

Tree planting programs have significant community support, such as the initiative in the City of North Las Vegas. Good faith programs that demonstrate commitment to community improvement such as providing shade for the public and active transit, build the foundation for more intensive emission reduction measures.

2.4.3 Community Concerns and Barriers to Climate Measures

Participants identified a few key concerns about emission reduction measures. Some of these concerns are deeply rooted in a history of lost confidence in government systems to meaningfully affect positive change in low income and at-risk communities, while others are more technical or logistical in nature. Strategies for overcoming these barriers are described in Section 8 and the following points reflect the concerns participants raised throughout the engagement.

- Distribution of programs and infrastructure for emission reduction measures in a manner that exacerbates existing challenges or imposes additional burdens.
- The upfront costs for household energy improvements (i.e. retrofits, solar panels) are prohibitive for most low-income households.
- Lack of bilingual marketing campaigns, resources and information.
- Low income households are disproportionately renters, limited by their lack of ownership, and the willingness of landlords to make efficiency improvements.
- Lack of awareness among community members about available programs or complexity of the programs make them difficult to navigate.
- Skepticism among community members about credibility of incentive programs and risk of scams.
- Concerns about eligibility and application requirements.

- Concerns about reliability of new technology.
- The complexity of multiple systems and intersectional burdens means that measures need multifaceted considerations in order to be effective.
- The need for system changes and policy-level emission reduction measures that cannot be achieved at an individual household level.
- Lack of transparency and data reporting from utilities.
- In some rural areas (i.e. Elko County) there are multiple small settlements where a lack of density makes it difficult to build cost-effective infrastructure for transportation and energy.
- Communities with a small tax base or historic disinvestment (e.g. some rural areas, some Tribes) have limited staff capacity to pursue measures.

3 | Greenhouse Gas Inventory

3.1 Inventory Methodology

For the purposes of the CCAN, the GHG inventory is the base year from which future projections are developed. As a result, the GHG inventory for the CCAN was calculated based on a bottom-up representation of activity in Nevada, calibrated against observed data for the calendar year 2021. The inventory includes spatial resolution and reports on GHG emissions for 149 zones in Nevada, including counties and major cities. The geographic boundary for the GHG emissions inventory in the CCAN is the state boundary. The method and data sources are described in detail in the Data, Methods and Assumptions Manual (DMA) in Appendix 2.

This methodology differs from the annual GHG inventory completed by the State because it is built up from activity data, while the State inventory calculates GHG emissions based on consumption data.[8]

GHG emissions in the base year are reported in three different views, each with a different use case (Table 3.1). Total GHG emissions are consistent across all the views.

Table 3.1. Three different views on Nevada's GHG emissions inventory

Views	What It Shows	Categories	Use Case
1. By End-Use Sector	Emissions by sector of activity (e.g. buildings, transport, industry)	Buildings, Transportation, Industry, Waste & Materials Management, Agriculture Natural & Working Lands	Sectoral policy planning
2. By Energy Source	Emissions by energy source (e.g. natural gas, gasoline, electricity)	Coal, Diesel, Gasoline Electricity, Jet Fuel, Natural Gas, Petroleum Products, Propane, Renewable Natural Gas, Wood, Non Energy[9].	Energy transition and fuel switching
3. By Nevada GHG Inventory Sectors	Emissions from end-use sectors & electricity as its own sector	As per End-Use Sector but with Electricity split out as its own sector	Alignment with state reporting

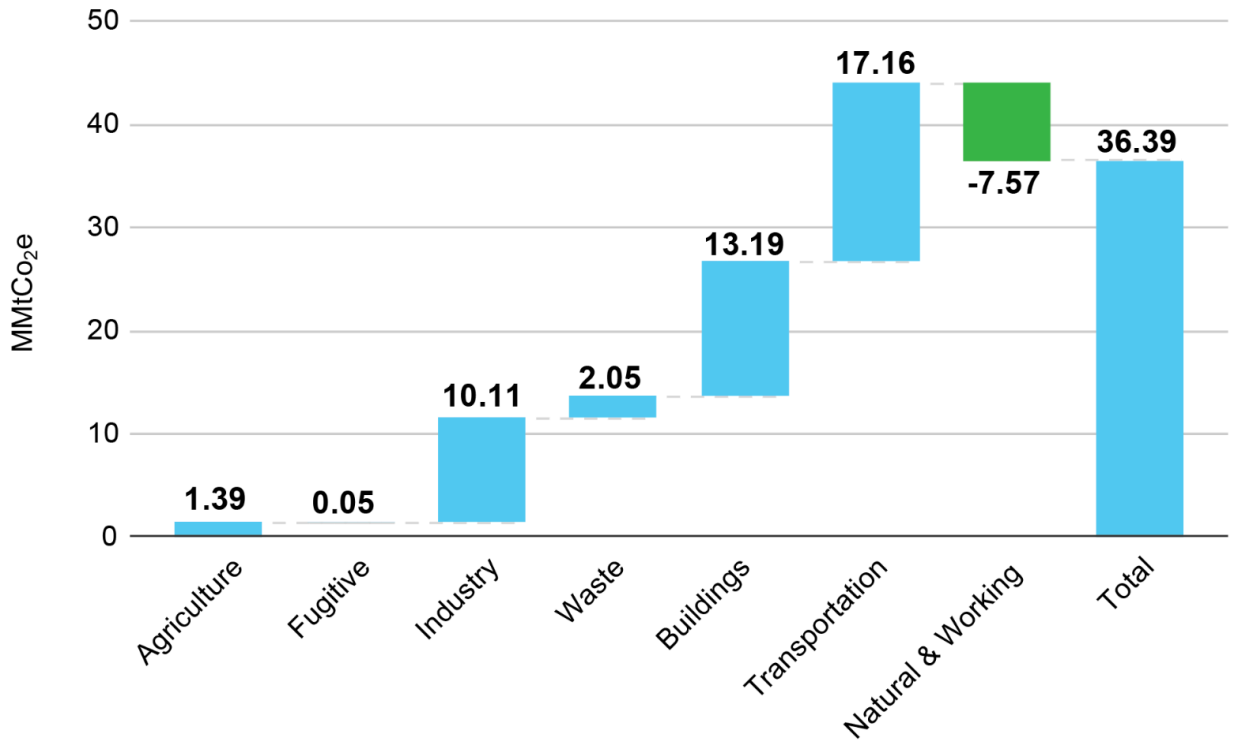
[8] Nevada Division of Environmental Protection, 2024, Nevada Statewide Greenhouse Gas Emissions Inventory and Projections, 1990-2044. https://ndep.nv.gov/uploads/air-pollutants-docs/2024_GHG_Inventory_Report.pdf
[9] Non Energy refers to GHG emissions not produced from burning fossil fuels. Instead, these come from direct releases of gases into the atmosphere, such as methane from manure management, nitrous oxide from fertilizer use, and methane from decomposition of organic waste in landfills

3.2 Inventory Results

The GHG inventory for Nevada in 2021 shows total emissions of **44 MMtCO$_2$e** (excluding sequestration), or **36.4 MMtCO$_2$e** (net total, including sequestration from Natural & Working Lands). This result varies from the State's 2021 inventory by 1%.[10]

Figure 3.1 illustrates GHG emissions by end-use sector (View 1). Transportation is the largest source of emissions (17.2 MMtCO2e), followed by buildings (13.2 MMtCO2e) and industry (10.1 MMtCO2e). The remaining sectors are waste (2 MMtCO2e), agriculture (1.4 MMtCO2e) and fugitive emissions (0.05 MMtCO2e). Carbon sequestration removes nearly 8 MMtCO2e.

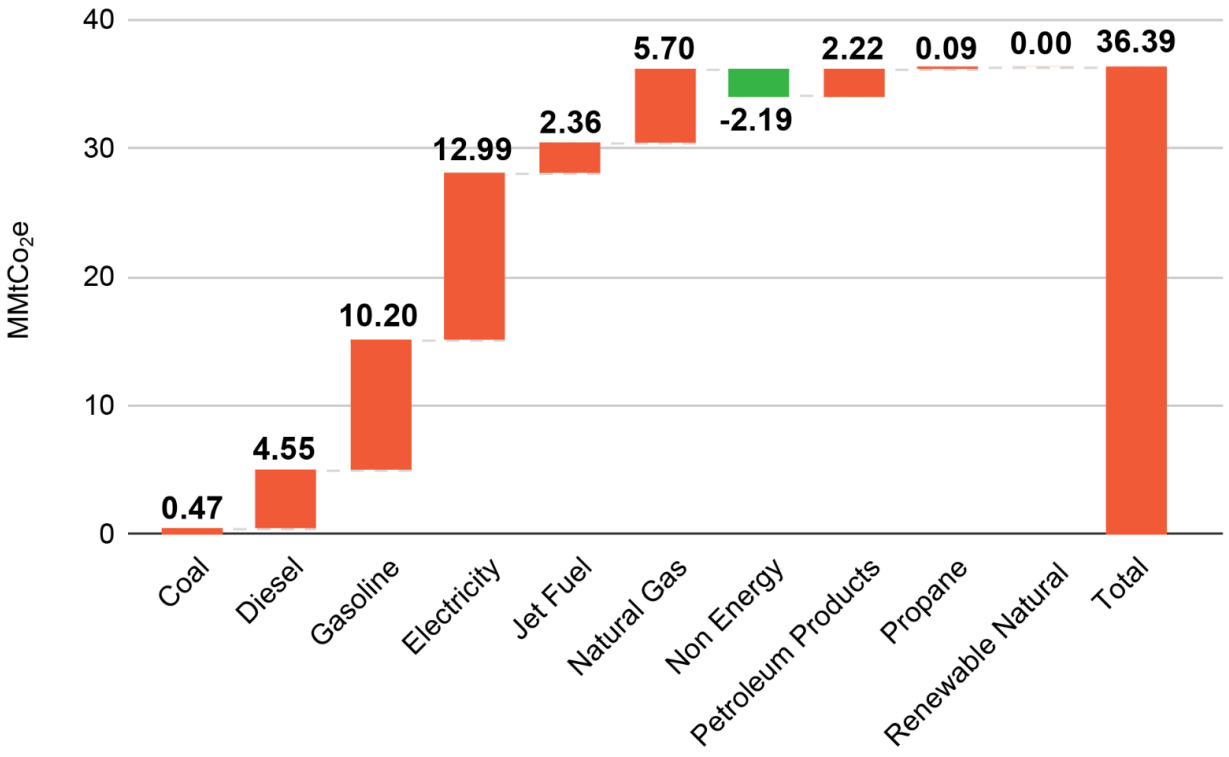
Figure 3.1. GHG Emissions by End-Use Sector (View 1), 2021



[10] The State reported total GHG emissions (net) of 36.9 MMtCO2e, in comparison to 36.4 MMtCO2e in this analysis, an overall variation of 1%. There is variation between each sector, due to differing methodologies and data sources.

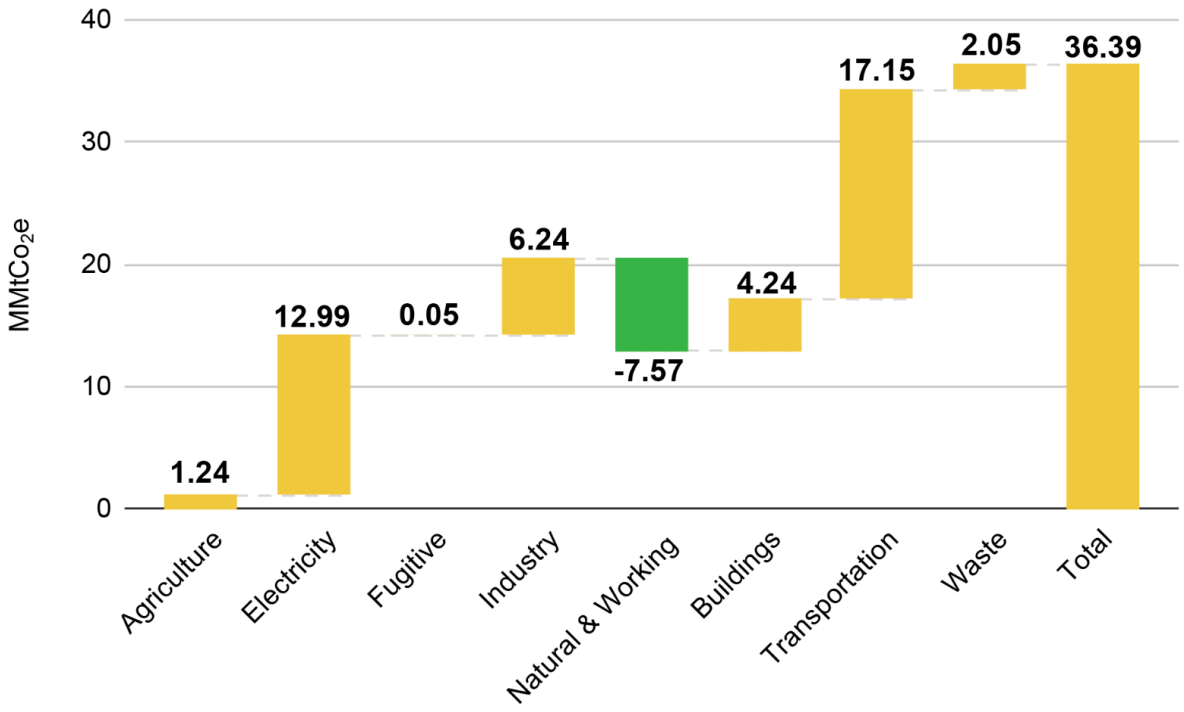
In terms of energy sources (Figure 3.2), electricity is the most significant source of emissions (13 MMtCO2e), followed by gasoline (10.2 MMtCO2e) and natural gas (5.7 MMtCO2e).

Figure 3.2 GHG Emissions by Energy Source (View 2), 2021



When electricity is represented as a stand-alone sector (Figure 3.3), it is the second largest source of GHG emissions (13 MMtCO2e) behind transportation (17 MMtCO2e).

Figure 3.3 GHG Emissions by GHG Inventory Sector (View 3), 2021



GHG emissions for all three views are found in Table 3.2, illustrating the mapping between the end-use sector (view 1, shaded blue), energy source (view 2, shaded orange) and GHG emissions inventory sectors (view 3, shaded green). The contribution to the total emissions on a percent basis is also illustrated for each view.

Table 3.2. GHG emissions by end-use sector, energy source and GHG emissions inventory sector for Nevada, 2021. Numbers are in MMtCO2e.

Energy Source	Agriculture	Fugitive	Industry	Natural & Working Lands	Buildings	Transportation	Waste	Electricity	Total (energy source)	%
Coal			0.47		0.00				**0.47**	1%
Diesel						4.55			**4.55**	13%
Gasoline						10.20			**10.20**	28%
Electricity	0.16		3.86		8.96	0.01		12.99	**12.99**	36%
Jet Fuel						2.36			**2.36**	6%
Natural Gas	0.03		1.45		4.18	0.05			**5.70**	16%
Non Energy	1.21	0.05	2.1	-7.57			2.05		**-2.19**	-6%
Petroleum Products			2.21		0.01				**2.22**	6%
Propane	0.00		0.05		0.04				**0.09**	0%
RNG			0.00						**0.00**	0%
Total (end-use sectors)	**1.39**	**0.05**	**10.11**	**-7.57**	**13.19**	**17.16**	**2.05**		**36.39**	100%
%	4%	0%	28%	-21%	36%	47%	6%		100%	
Total (GHG inventory sectors)	**1.24**	**0.05**	**6.24**	**-7.57**	**4.24**	**17.15**	**2.05**	**12.99**	**36.39**	
%	3%	0%	17%	-21%	12%	47%	6%	36%	100%	

A comprehensive presentation of the results is found in Appendix C, aligning with the GHG Protocol for Community-Scale GHG Inventories. This accounting framework is designed for sub-national governments according to IPCC accounting protocols and differentiates which GHG emissions are emitted directly within the geographical boundary and which emissions are the result of activities within the geographic boundary but are emitted out of state.

When divided by Nevada's 2021 population of 3.15 million, the per capita emissions were:

- **14 metric** tons CO_2e per person (gross)
- **11.3 metric** tons CO_2e per person (net, after accounting for land-based sequestration)

The U.S. national average in 2021[11] was approximately 13.7 metric tons CO_2e per person (gross).

3.3 Inventory Trends and Analysis

The greenhouse gas (GHG) emissions inventory for Nevada demonstrates notable trends and contextual factors that inform the state's climate planning efforts.

Historic Emissions Trends

Nevada's GHG emissions peaked in 2005 at 56.4 million metric tons of CO_2e ($MMTCO_2e$). According to the NDEP 2024 Greenhouse Gas Emissions Inventory report,the state has achieved a net reduction of approximately 11 $MMTCO_2e$ since 2005, reaching 45.25 $MMTCO_2e$ in 2021 (gross).[12] This decline reflects policy measures, particularly in the electricity generation sector, such as the Renewable Portfolio Standard (RPS), which mandates 50% renewable electricity by 2030. The transition away from coal-fired power and toward renewables and natural gas has significantly contributed to reduced emissions.[13]

COVID-19 Impacts and Recovery

Like many jurisdictions, Nevada saw a sharp decrease in GHG emissions in 2020 (-12% over 2019) due to the COVID-19 pandemic. Transportation emissions alone dropped 16% over 2019, due to reductions in travel and aviation fuel use. However, emissions rebounded in 2021 and 2022 as economic activity resumed, highlighting the need for structural rather than temporary emissions reductions.[14]

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[11] "Data Page: Per capita CO_2 emissions", part of the following publication: Hannah Ritchie, Pablo Rosado, and Max Roser (2023) - "CO_2 and Greenhouse Gas Emissions". Data adapted from Global Carbon Project, Various sources. Retrieved from https://ourworldindata.org/grapher/co-emissions-per-capita [online resource]

[12] NDEP's inventory methodology differs from the one applied in the CCAN, which is why figures between the two sources may not match exactly.

[13] Nevada Division of Environmental Protection 2024 Report. Nevada Statewide Greenhouse Gas Emissions Inventory and Projections, 1990-2044. Retrieved from: https://ndep.nv.gov/uploads/air-pollutants-docs/2024_GHG_Inventory_Report.pdf

[14] Nevada Division of Environmental Protection 2024 Report. Nevada Statewide Greenhouse Gas Emissions Inventory and Projections, 1990-2044. Retrieved from: https://ndep.nv.gov/uploads/air-pollutants-docs/2024_GHG_Inventory_Report.pdf

4 | BAU/BAP GHG Emissions Projections

Reference scenarios estimate future emissions without considering any new climate measures, providing a baseline against which the impact of additional measures can be assessed. For the CCAN, two reference scenarios provide near-term (2030) and long-term (2050) GHG emission projections.

- The first reference scenario — the **Business-as-Usual (BAU) Scenario** — projects energy use and GHG emissions out to 2050 based on existing conditions, population growth trends, and employment forecasts. The BAU does not consider emission impacts of adopted plans, policies, or legislated targets that are not yet fully in effect.
- The second reference scenario — the **Business-as-Planned (BAP) Scenario** — reflects energy use and GHG emissions assuming full implementation of adopted and funded plans, policies, and regulations that are expected to impact GHG emissions. This scenario shows what could happen if the State follows through on its current commitments.

4.1 Scenario Methodology

This section outlines the methods used to develop and model the reference scenarios and their emissions projections. These scenarios are not predictions, but plausible, evidence-based projections that reflect how emissions in Nevada could evolve based on state and local data, key emission drivers, current trends, and augmented by input from engagement activities. As shown above, two reference scenarios were developed to explore potential futures for Nevada through 2050. For detailed methodology and quality assurance procedures, see the Data, Methods, and Assumptions Manual in Appendix B.

4.1.1 Modeling Tool

The scenarios were modeled using the SSG's ScenaEnergy model. ScenaEnergy uses a bottom-up approach to account for energy supply and demand across sectors, fuels, and land use. The model tracks renewable and conventional energy sources, energy-consuming technologies (e.g., vehicles, buildings, appliances), and intermediate energy flows like electricity and heat.

Based on interconnected stock-and-flow models, ScenaEnergy tracks energy use and GHG emissions over time, incorporating assumptions about future technologies and behaviors (e.g., electric vehicle adoption) A stock-and-flow model is a type of diagram that represents how the

quantity (stock) changes over time due to the inflows and outflows (the flow) of certain variables (e.g., technology adoption rates, technology lifecycle), . It is used in system dynamics to capture complex, non-linear relationships and feedback loops within the energy system.

For any given year, the model traces energy from source to end use—through carriers like gasoline or electricity—while accounting for technology efficiencies, conversions and losses, ensuring a complete energy balance and accurate GHG emissions estimates.

For additional information on the technical modeling process and its inputs and assumptions, please review the Data, Methods, and Assumptions Manual in Appendix B.

4.1.2 Scenario Descriptions

Table 4.2 summarizes the key differences between BAU and BAP scenarios. The BAP provides a more accurate baseline for measuring the additional emissions reductions needed to meet long-term climate targets by showing how far policies and plans already in motion take the state compared to a “do-nothing” future (BAU). .

Table 4.2. Descriptions of the three scenarios developed for Nevada.

	Scenario Label	Title	Description
	BAU	Business-as-Usual	A scenario that extrapolates current demographic patterns into the future to illustrate energy use and GHG emissions (and sinks, if applicable) if no additional plans, policies, programs and projects are implemented. This scenario answers the question, “What would happen if no other future measures are taken?”
	BAP	Business-as-Planned	A reference scenario that extrapolates current demographic patterns into the future while taking into account existing and approved plans, legislations and targets that would affect energy use and emissions, and it assumes no additional climate measure interventions. This scenario answers the question, “What would happen if only current measures, plans and policies are implemented?”

4.1.3 Modeling the Scenarios

After the baseline inventory was completed, BAU and BAP scenarios were modeled using ScenaEnergy. The modeling process is driven by a set of key assumptions that define how population growth, economic activity, technological advancements, and policy implementation are expected to evolve over time. Each assumption affects multiple components of the model through stock-and-flow relationships, such as the rate at which fossil-fueled equipment is retired and replaced with cleaner technologies. The assumptions for the BAU and BAP scenarios are summarized in Table 4.3 and are the foundation of each scenario's emissions projections.

Table 4.3. Modeling parameters and assumptions for BAU and BAP Scenarios.

	BAU Scenario	**BAP Scenario**
Population	• Population will increase 36.4% between 2021 and 2050. • Assumptions are based on *Nevada County Population Projections 2023 to 2042* developed by the Nevada State Demographer at the Nevada Department of Taxation.	Same assumptions as the BAU scenario.
Employment	• Jobs will increase 47.2% between 2021 and 2050. Increasing from 1,536.36 to 2,260.93 in 2050. • Assumption based on the *Nevada Governor's Office of Economic Development, Economy Overview*	Same assumptions as the BAU scenario.
Energy Systems	• No additional installations of renewable energy sources or closures of fossil-fueled power plants.	• Assumes Nevada achieves NREL Cambium Projections - Mid-Case Scenario • Local electricity generation (i.e. solar rooftop generation) increases 69% • All coal power plants are closed by 2048

	BAU Scenario	BAP Scenario
Building sector	• Residential building stock floor area will increase 36.8% • Non-residential building floor space will increase by 51.1% • Energy efficiency of both new and existing buildings will not improve beyond current energy efficiency standards. • Appliances will be replaced at the end of their useful life with no efficiency standards. • Assumptions are based on *Envision Carson City Master Plan Update, City of Las Vegas 2050 Master Plan, 2024 Truckee Meadows Regional Plan Update, and City of Reno Housing Demand Forecast and Needs Assessment*. Other building growth assumptions align with population and employment growth projections.	• Building stock growth assumptions are the same as the BAU scenario • While the State adopts new IECC codes every three years, adoption at the local level is inconsistent and lags behind state adoption. As such, energy efficiency of new buildings is assumed not to improve beyond current energy efficiency standards. • Over 154,000 buildings are retrofitted due to programs like Home Energy Retrofit Opportunity for Seniors, NV Energy demand-side management programs, Weatherization Assistance Program and Energy Assistance Program, and IRA Energy Efficient Home Improvement Tax Credit • Appliances will be replaced at the end of their useful life, and new appliances will be installed, in line with the 2021 Assembly Bill 383.
Transportation sector	• Uptake of zero emission vehicle adoption does not increase beyond current registrations.	• ZEVs make up 24% of all new vehicle registrations in 2050 aligned with and an extrapolation of the Nevada Energy Electric Vehicle Adoption Forecast (mid scenario)[15] and Clean Cars Nevada. • Government fleets transition to zero emission vehicles aligned with Assembly Bill 262. • Fuel economy standards improve to align with USDOT CAFE Standards and EPA Greenhouse Gas Emissions Standards for Heavy-Duty Vehicles.
Waste sector	• No changes to current policies or practices	• No changes to current policies or practices

[15] NV Energy, Battery Electric Vehicle Adoption Forecast (2021). Available at: https://es.nvenergy.com/publish/content/dam/nvenergy/brochures_arch/cleanenergy/ertep/BEV-Adoption-Forecast.pdf

	BAU Scenario	BAP Scenario
Industrial sector	• No changes to current policies or practices	• Incorporates commitments from the mining industry to reduce GHG reductions including Nevada Gold Mines, LLC commitment to achieve 39% reduction by 2030 and net zero by 2030.
Agricultural sector and Natural Working Lands	• No changes to current policies or practices	• No changes to current policies or practices

4.1.4 Limitations

The methodology and results presented here do not, and cannot, fully capture all the complex and evolving factors that may influence Nevada's future energy use and GHG emissions. These projections are not forecasts or definitive predictions, rather they are tools to help the State explore the impacts of the implementation of existing programs and policies that may impact future emissions and to serve as a baseline to compare the other scenarios against. Reference scenarios can support informed decision-making on climate measures by illustrating potential trajectories and trade-offs under varying conditions.

4.2 Reference Scenario Results

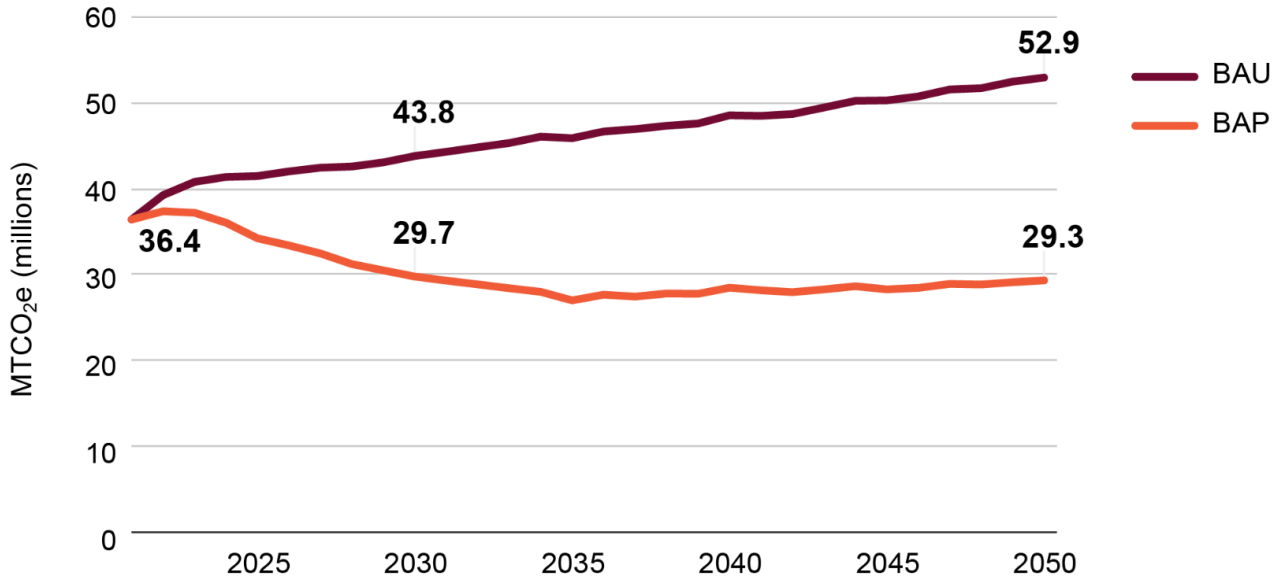
Table 4.4 shows the modeling results for the base year GHG emissions alongside BAU and BAP near-term and long-term GHG emissions projections by sector for Nevada. Modeling results are presented by end-use sector (View 1).

Table 4.4 Net GHG emissions by scenario and sector (metric tonnes of CO_2e).

Sector	Base Year 2021	BAU Scenario		BAP Scenario	
		2030	2050	2030	2050
Buildings	13,203,000	17,900,000	21,731,000	9,372,000	8,635,000
Transportation	17,164,000	17,126,000	19,681,000	15,613,000	14,796,000
Industrial	10,107,000	11,830,000	13,346,000	7,940,000	7,848,000
Waste	2,052,000	3,050,000	4,330,000	3,050,000	4,330,000
Agriculture	1,393,000	1,393,000	1,328,000	1,266,000	1,150,000
Fugitive	46,000	58,000	62,000	54,000	56,000
Natural and Working Lands	-7,566,000	-7,553,000	-7,523,000	-7,553,000	-7,523,000

Sector	Base Year 2021	BAU Scenario		BAP Scenario	
		2030	2050	2030	2050
TOTAL	36,399,000	43,804,000	52,955,000	29,742,000	29,292,000
% change over base year		20%	45%	-18%	-20%

Figure 4.1. Comparison of projected net emissions in the BAU and BAP scenarios, 2021-2050, with sequestration.



The BAU and BAP modeling results show different trajectories for GHG emissions for Nevada in 2050. If the current conditions of today are maintained without further intervention, the BAU scenario projects emissions to increase by 45%, rising from 36.4 $MMTCO_2e$ in 2021 to 52.9 $MMTCO_2e$ in 2050. In contrast, the BAP scenario, which assumes full implementation of adopted laws, regulations, and approved plans, projects a 20% reduction or 7.1 $MMTCO_2e$ in emissions by 2050.

Significant reductions are seen in transportation and buildings including residential, commercial and government buildings. Residential building emissions fall from 7.4 $MMTCO_2e$ in 2021 to 4.0 $MMTCO_2e$ in 2050 under BAP, while transportation emissions decline by nearly 2.5 $MMTCO_2e$. These reductions are due to policies like 2019 Senate Bill 358 which requires increased grid renewable energy generation, 2023 Assembly Bill 262 that requires government fleets transition to zero emission vehicles, and the adoption of new Corporate Average Fuel Economy at the national level.

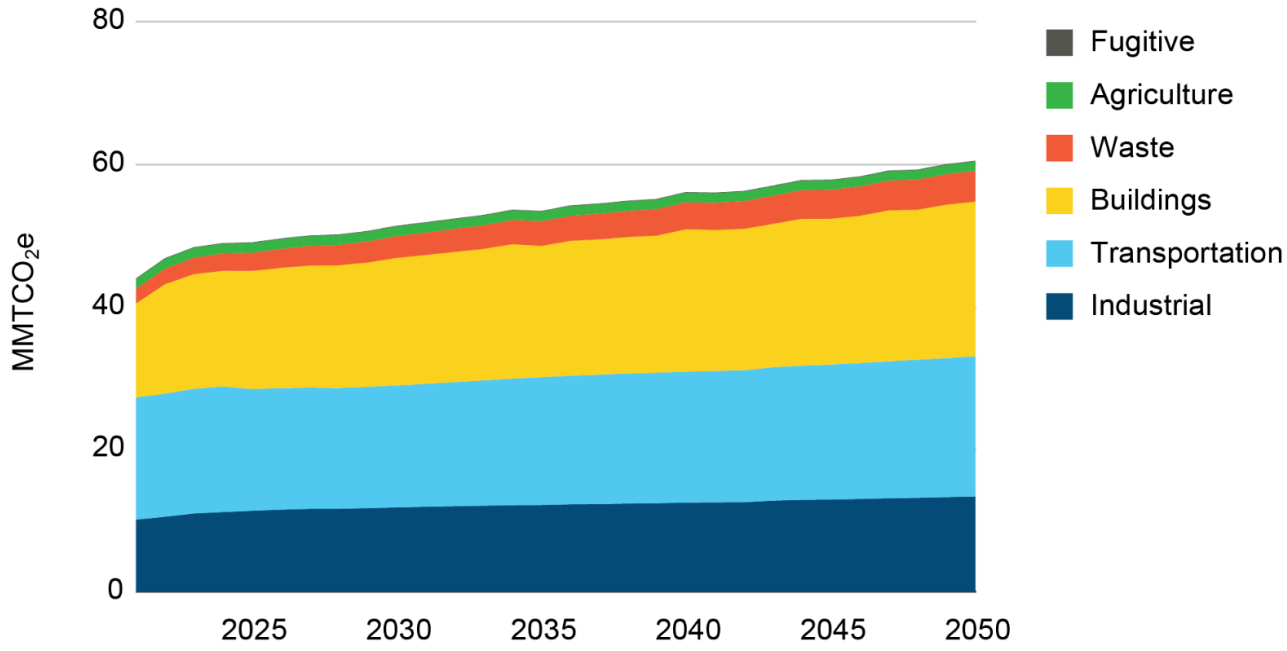
The BAP scenario avoids nearly 24 $MMTCO_2e$ compared to the BAU by 2050, highlighting the emission reduction potential of fully implementing existing plans. The State's current policies and commitments set the stage for curbing long-term emissions growth.

4.3 BAU Scenario Results

The BAU scenario assumes continued reliance on fossil fuels and no significant acceleration in the deployment of clean energy technologies. If current conditions are maintained and population and job trends continue to grow, total emissions reach 61.6 $MMTCO_2e$ by 2050 (Figure 4.2) with the largest increases coming from the buildings and waste sectors. Commercial floorspace is expected to increase over 50% driving the increase in building emissions alongside construction of residential buildings to meet demands from population and employment growth. Waste production will keep up with population growth and legacy landfills will continue to emit.

Sequestration from Natural and Working Lands remains consistent in the BAU scenario, and when accounted for offset 7.6 $MMTCO_2$, reducing net emissions to 53 $MMTCO_2e$ in 2050.

Figure 4.2. Projected total GHG emissions in the BAU Scenario, by end-use sector (View 1) without sequestration, 2021 - 2050.



4.4 BAP Scenario Results

The BAP scenario represents Nevada's projected energy use and emissions trajectory based on existing and committed plans, policies, regulations, and investments at the municipal, state, and federal levels. It includes expected changes in population and employment but excludes aspirational targets, unlegislated proposals, or unfunded initiatives. The BAP Scenario will serve as a reference point for assessing the impact of new climate measures evaluated in the CCAN.

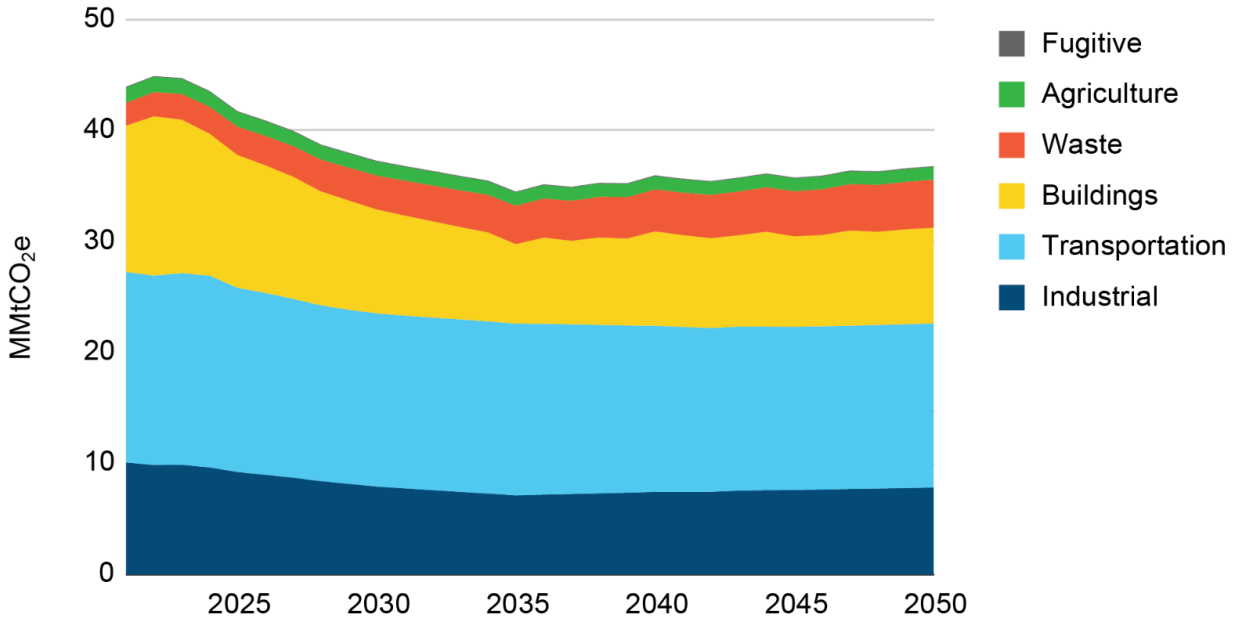
Nevada has already adopted policies and undertaken programs that will reduce GHGs in the State. The BAP scenario projects net emissions to decline 20% by 2050, reflecting the anticipated impact of existing policies and planned investments. Despite this downward trend, total emissions are estimated to be 36.8 $MMTCO_2e$ in 2050, significantly above the State's climate targets.

Based on stakeholder input, this scenario does not assume Nevada's energy grid will be completely carbon neutral in 2050 as stated in the policy goal of 2019 Senate Bill 358. While grid emissions aren't completely eliminated, they are largely reduced in line with National Renewable Energy Laboratory's (NREL's) Cambium datasets that assume electricity generation will rely heavily on renewable energy sources. With more utility and local renewable energy generation, emissions are driven down in the building sector, including government, residential, commercial, and industrial buildings that require electricity for space and water heating and cooling. At the same time, increased floorspace and demand for cooling continue to keep the emissions in the building sector high.

While the transportation sector remains the largest contributor, emissions are reduced by 2.4 $MMTCO_2e$ by 2050. Policies like Clean Cars Nevada, USDOT's Corporate Average Fuel Economy, and the EPA's GHG Standards for Heavy-Duty Vehicles are the drivers for this reduction.

In the BAP scenario, the waste sector and fugitive emissions are the only rising emissions. This rise tracks with population growth and limited existing measures or policy interventions. The State hasn't adopted a new recycling rate target since 1991.

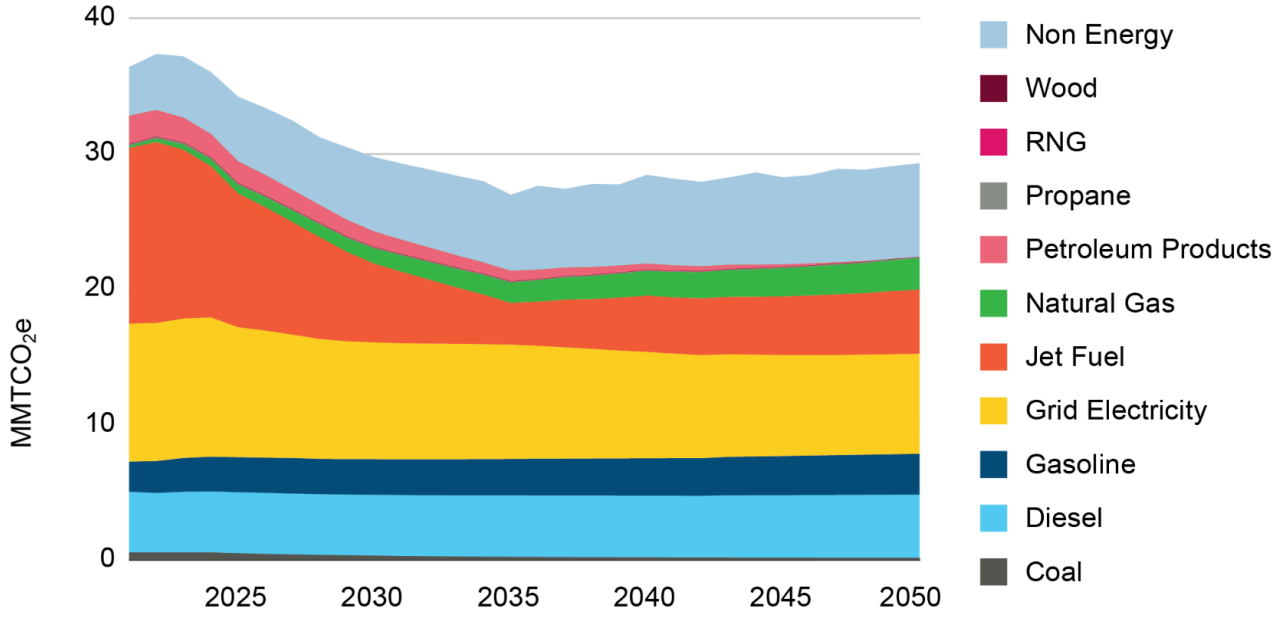
Figure 4.3. Total GHG emissions in the BAP Scenario, by end-use sector (View 1) without sequestration, 2021 - 2050.



In the BAP scenario, gasoline consumption declines steadily, driven by the implementation of the USDOT's CAFE Standards and Nevada's Clean Cars program, which improve fuel efficiency and expand access to zero-emission vehicles. Although the freight and shipping industries are projected to grow, diesel emissions remain relatively stable as a result of the EPA's GHG Standards for Heavy-Duty Vehicles, which limit emissions per vehicle type.

Grid electricity emissions fall significantly as more renewable energy sources, particularly solar, are installed, in line with Nevada's Renewable Portfolio Standard and planned grid decarbonization efforts. However, these gains are partially offset by a rise in natural gas use, especially in buildings, where growing demand for space and water heating is met with gas infrastructure expansion. Additionally, petroleum product use likely increases as new industrial floorspace is added and the sector continues to rely on fossil fuels for high-temperature processes.

Figure 4.4. Total GHG emissions in the BAP Scenario, by fuel source (View 2), without sequestration, 2021 - 2050.



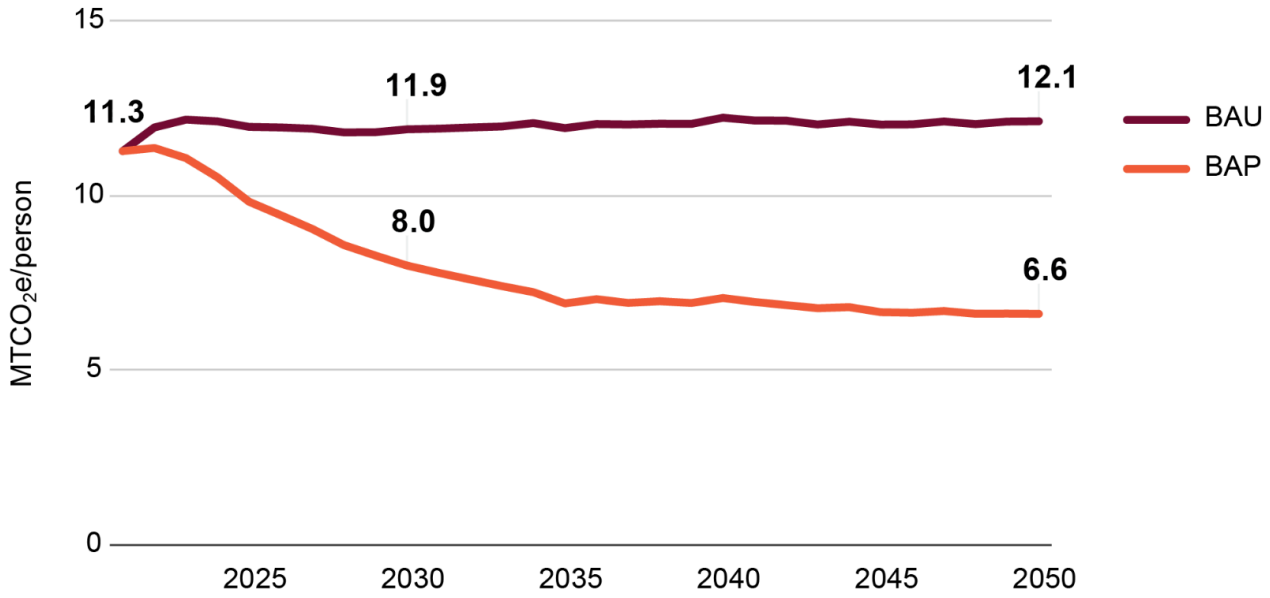
BAP per capita emissions are anticipated to decline from 11.3 MtCO2e per person in the baseline year to 8.0 MtCO2e per person in 2030 (-30%).and 6.6 MtCO2e per person in 2050 (-41%). In contrast, the BAU scenario sees an 8% rise in per capita emissions by 2050, reaching 12.1 MtCO2e per person.

To contextualize Nevada's per capita emissions, here's how it compares to neighboring states:

- **California:** 8.3 MtCO2e per person, among the lowest in the region, thanks to its clean electricity grid, aggressive climate policies, and high;y-efficient building codes.
- **Oregon**: 9.0 MtCO2e per person, benefitting from a hydropower-dominated grid and strong climate policies.
- **Idaho:** 10.7 MtCO2e per person, relatively low emissions due to a clean electricity mix and lower industrial output.
- **Arizona**: 11.4 MtCO2e per person, driven by transportation and natural gas electricity generation.
- **Utah:** 18.6 MtCO2e per person, among the highest in the region, largely due to coal-heavy electricity generation.[16]

[16] U.S. Energy Information Administration, State Carbon Dioxide Emissions Data, https://www.eia.gov/environment/emissions/state/.

Figure 4.5. Total GHG emissions in the BAU and BAP Scenarios, per capita, without sequestration, 2021 - 2050.

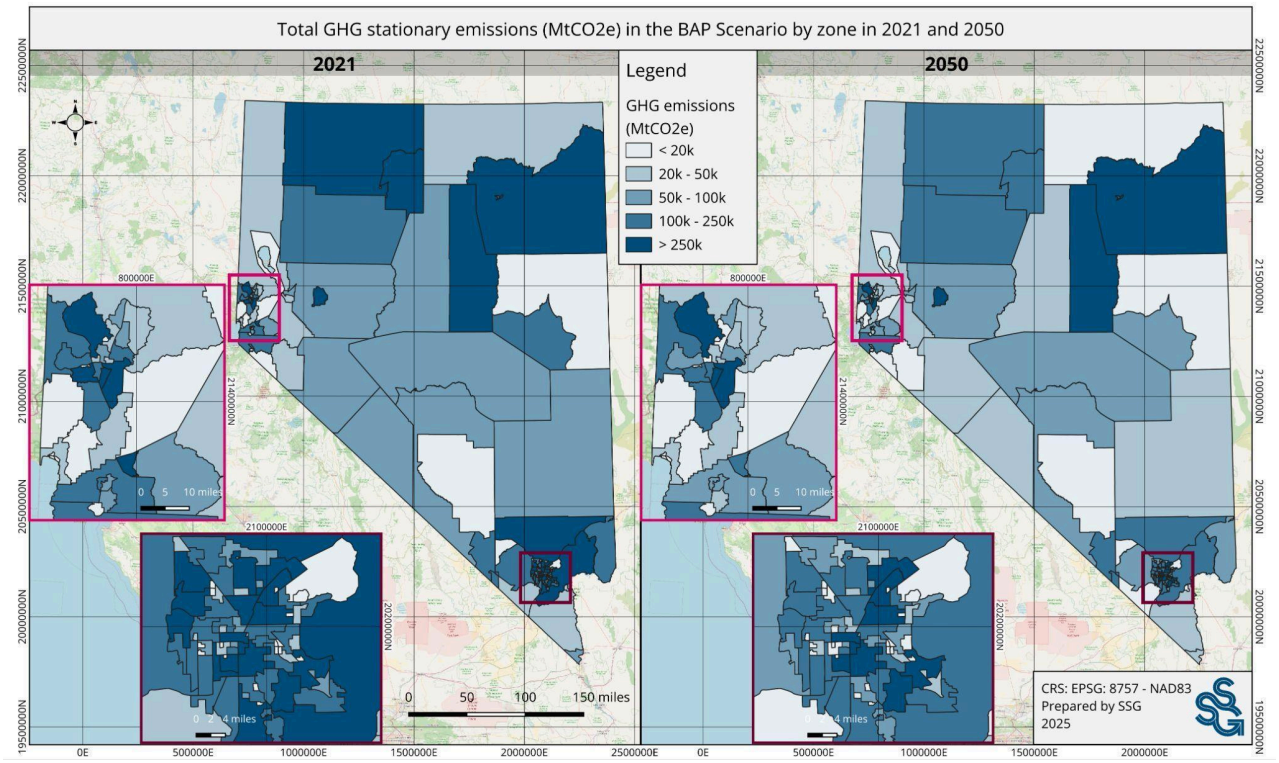


Mapping emissions by zone provides important insight into the geographic distribution of greenhouse gas emissions across Nevada. In the modeling analysis, the State is divided into 149 distinct zones. Each zone represents either a single county or a group of census tracts within a county. Every county is represented by at least one zone, while more populous or densely populated counties are divided into multiple zones to reflect their size more accurately. This zoning approach allows emissions data to be spatially analyzed alongside other community-level factors, such as socioeconomic vulnerability.

Less populous zones tend to have lower overall emissions due to fewer buildings, vehicles, and industrial operations. However, these zones often cover larger geographic areas and may include a wider range of land uses and sectoral activities, such as agriculture or mining. In contrast, urbanized zones contribute a larger share of statewide emissions, as they contain denser development and higher concentrations of energy use; these urban areas are divided into smaller zones to better capture population density and socioeconomic variation.

By 2050, urban zones are projected to experience more substantial emissions reductions, driven by cleaner electricity for building use and improvements in vehicle efficiency. This spatial differentiation highlights the importance of tailoring climate measures to local conditions and ensuring emissions reductions occur where they are most needed.

Figure 4.6. Total GHG emissions (MtCO2e) in the BAP Scenario by zone in 2021 and 2050.



4.4.1 Building Sector

In the building sector, the BAP scenario shows the potential emission reductions that can be made when the energy grid uses cleaner technologies. Figure 4.7. shows building emissions by sector and fuel source. Overall building emissions decline 35% between 2021 and 2050, largely driven by the transition to a cleaner grid and the phase-out of coal.

However, these gains are partially negated by increases in other fossil fuels as floorspace grows. Natural gas emissions grow 22% in 2050, as it remains a dominant fuel for space and water heating. Deeper emissions reductions will require policies that support building electrification, reducing reliance on natural gas, in conjunction with decarbonizing the electricity grid.

Figure 4.7. GHG emissions from the Building Sector in the BAP Scenario, by end-use and by energy source, 2021 - 2050.

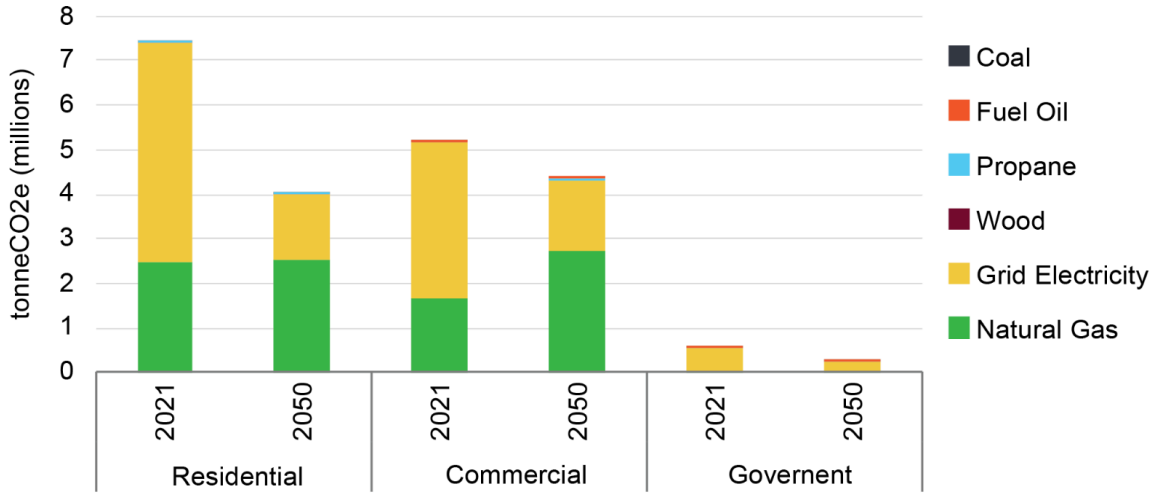
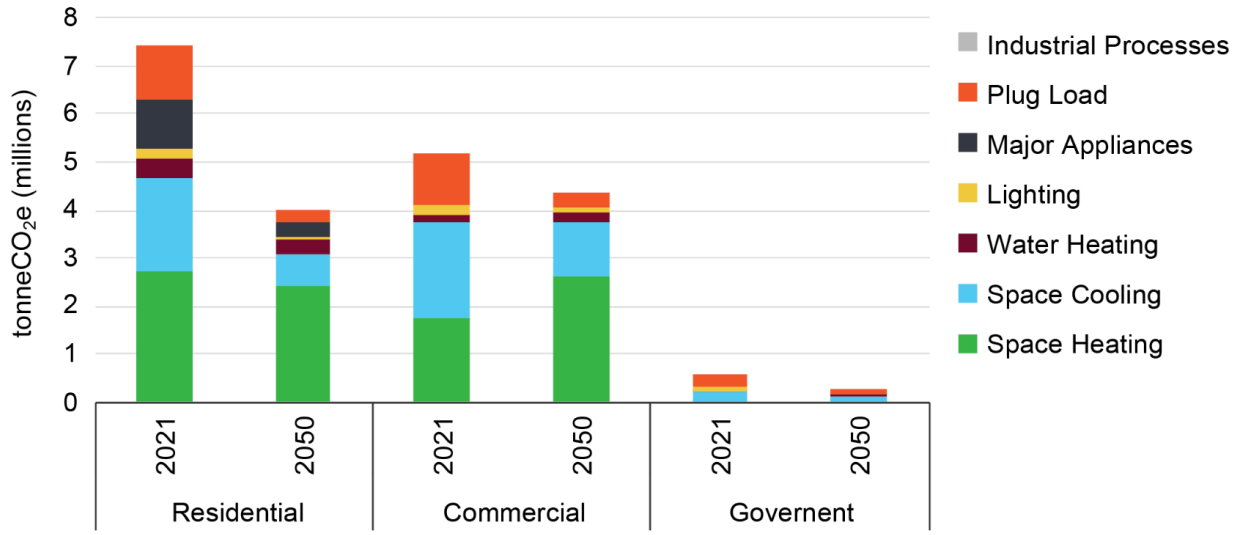


Figure 4.8. GHG emissions from the Building Sector in the BAP Scenario, by sector and end-use, 2021 - 2050.



Most building end uses have significant emission reductions reflecting improvements in energy efficiency in appliances associated with 2021 Assembly Bill 383 and a cleaner electricity grid. Major appliances and plug loads have the largest emissions reductions of 73% and 72%, demonstrating the combined impact of energy efficiency and a cleaner grid.

Similarly, space cooling emissions decline by 52%, reflecting efficiency improvements in HVAC technologies and cleaner electricity. Water heating emissions are reduced by 9%, though this smaller decline is due to a continued reliance on fossil-fueled systems in many buildings.

Space heating emissions, on the other hand, increase by 11%, due to the growing demand for natural gas space and water heating in larger commercial and residential spaces.

4.4.2 Transportation Sector

By 2050, the transportation sector shows mixed progress in reducing emissions in the BAP scenario. Passenger car emissions decline by 43% and light truck emissions fall by 23%, reflecting improved fuel efficiency, increased adoption of electric vehicles, and state policies such as Clean Cars Nevada.

Heavy-duty truck emissions increase by 9%, a slower increase due to the EPA's GHG Standards for Heavy Duty Vehicles. Emissions from other transportation modes remain relatively unchanged in the scenario.

Figure 4.9. GHG emissions in the Transportation Sector in the BAP Scenario by vehicle type, 2021 - 2050.

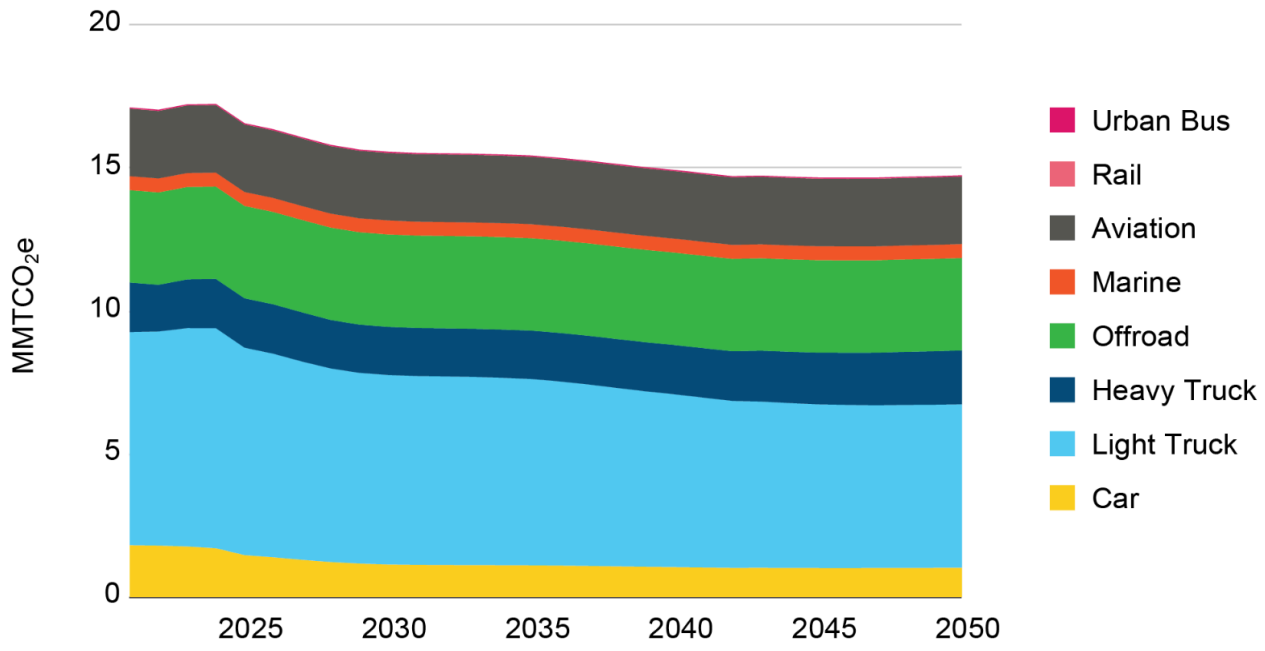
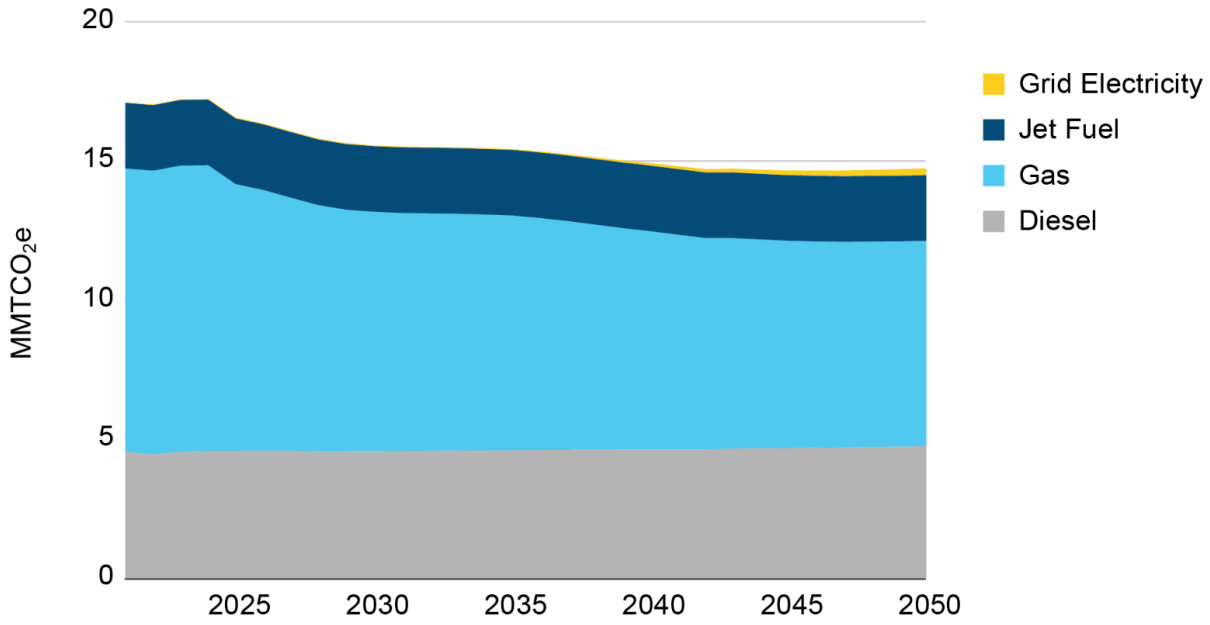


Figure 4.10. GHG emissions in the Transportation Sector in the BAP Scenario, by fuel source, 2021 - 2050.



Gasoline-related emissions decline by 28% in the BAP scenario due to improved vehicle efficiency and the gradual electrification of personal use vehicles. Aligned with increasing heavy duty vehicles emissions, diesel emissions rise 4% by 2050. The EPA's GHG Emission Standards for Heavy Duty Vehicles have tamped down emission as freight transport continues to grow.

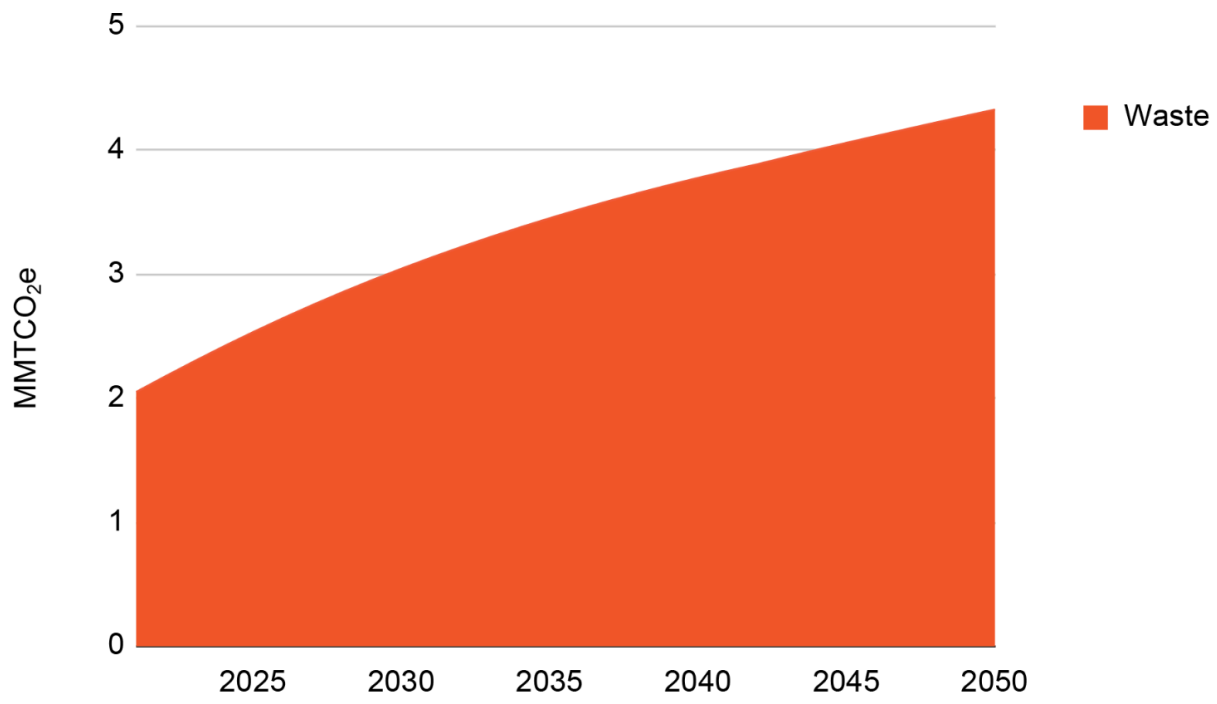
Emissions from the use of grid electricity for transportation increases substantially, from 10,690 MtCO2e in 2021 to 244,403 $MtCO_2e$ in 2050, as electric vehicle adoption expands. By 2050, grid electricity only accounts for 9% of transportation energy use but only 2% of transportation energy emissions, underscoring the relatively smaller emissions footprint of electric vehicles. Jet fuel emissions remain steady.

4.4.3 Waste Sector

Emissions from the waste sector are projected to double from approximately 2.05 $MMTCO_2e$ to 4.33 $MMTCO_2e$ by 2050. This growth is driven by population expansion and the resulting increased consumption, which leads to higher volumes of landfilled waste. Without significant interventions, such as expanded composting, recycling, or methane capture, emissions from waste are likely to continue growing.

Since 1991, Nevada has aimed to achieve a 25% recycling rate for municipal solid waste. While the state met or exceeded this goal from 2011 to 2013, recent years have seen a decline. In 2023, the statewide recycling rate was reported at 20.32%, falling short of the established target. This decline underscores ongoing challenges in waste diversion efforts and highlights the importance of integrated waste management strategies as part of Nevada's broader climate efforts.

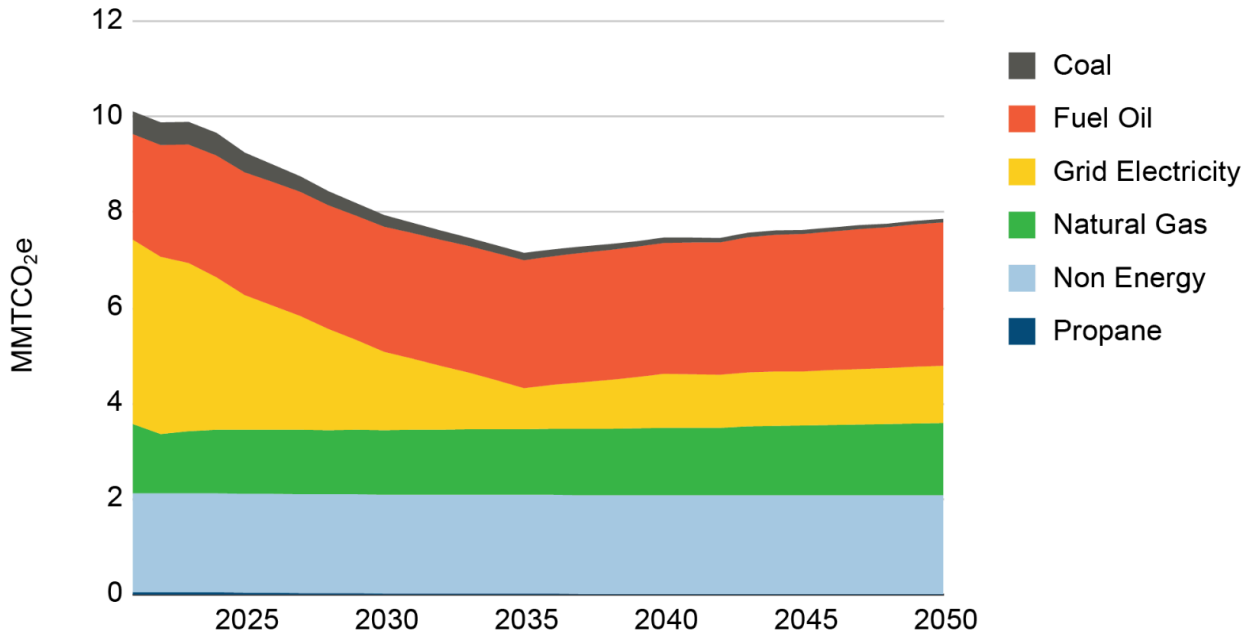
Figure 4.11. GHG emissions in the Waste Sector in the BAP Scenario, 2021 - 2050.



4.4.4 Industry Sector

Emissions from Nevada's industrial sector are projected to decline by 25% in the BAP scenario, falling from 10 $MMTCO_2e$ to 7.8 $MMTCO_2e$. While overall industrial activity is expected to grow, emissions are projected to decline due to grid decarbonization and efficiency increases in the mining sector. Industry is one of the largest emitting sectors, second to transportation. This trend indicates that with supportive policy and technological investment, the industrial sector can reduce its carbon emissions while continuing to grow.

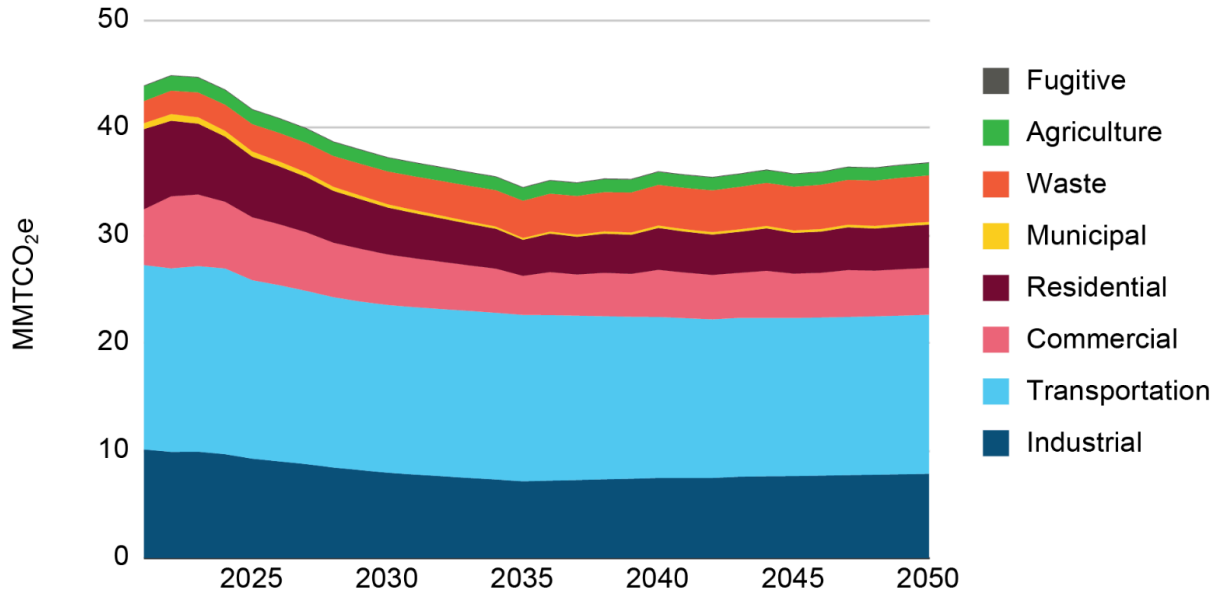
Figure 4.12. GHG emissions in the Industrial Sector by Fuel Type in the BAP Scenario, 2021 - 2050.



4.4.5 Agriculture Sector

Agricultural emissions in Nevada are projected to decline by 17% by 2050, primarily due to a cleaner electricity grid powering agricultural buildings and operations. While overall agricultural activity remains relatively stable with the majority of agricultural emissions coming from farming practices and livestock. Farming equipment is captured in the transportation sector as a part of off-road vehicles.

Figure 4.13. GHG emissions in the Agricultural Sector in the BAP Scenario, 2021 - 2050.

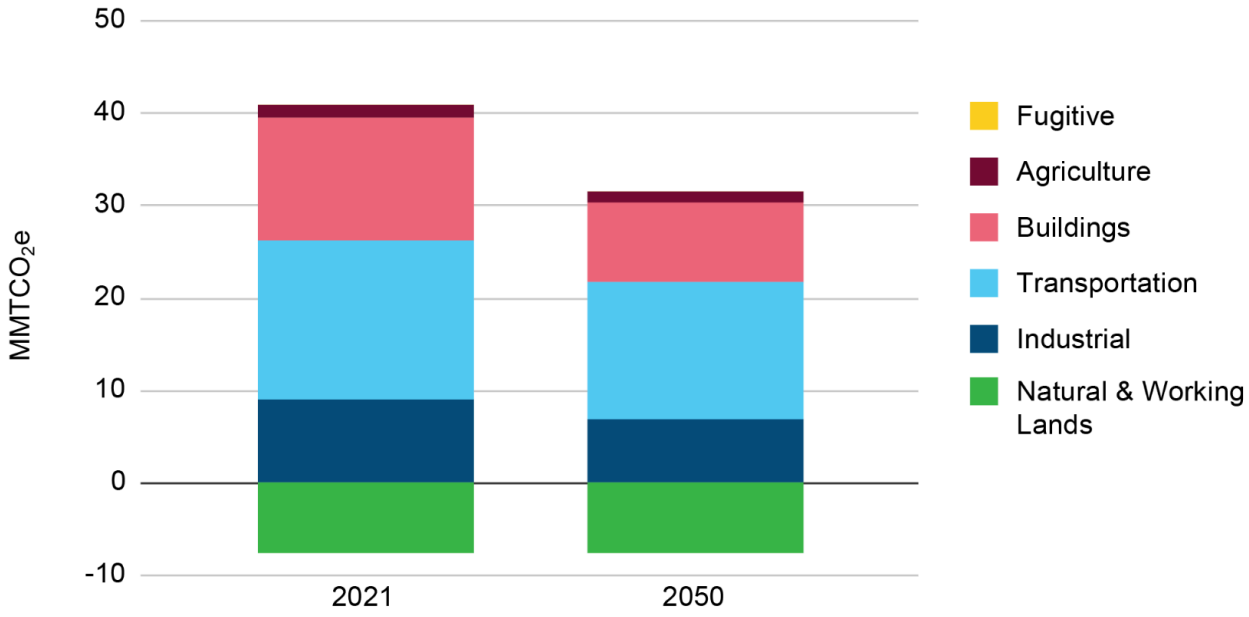


4.4.6 Natural and Working Lands

Carbon sequestration remains relatively constant, capturing approximately 7.5 $MMTCO_2e$ annually throughout the BAP Scenario. This is primarily due to the absence of new large-scale sequestration initiatives.

Sequestration can be a highly variable and uncertain sector as it is significantly influenced by environmental factors. Wildfires and drought, both of which are projected to become more frequent and intense due to climate change, can severely impair the land's ability to absorb and store carbon, making sequestration a less reliable mitigation strategy unless actively managed and expanded.

Figure 4.14. GHG emissions reductions from the Natural and Working Lands Sector relative to the total GHG emissions in the BAP Scenario, 2021 and 2050.

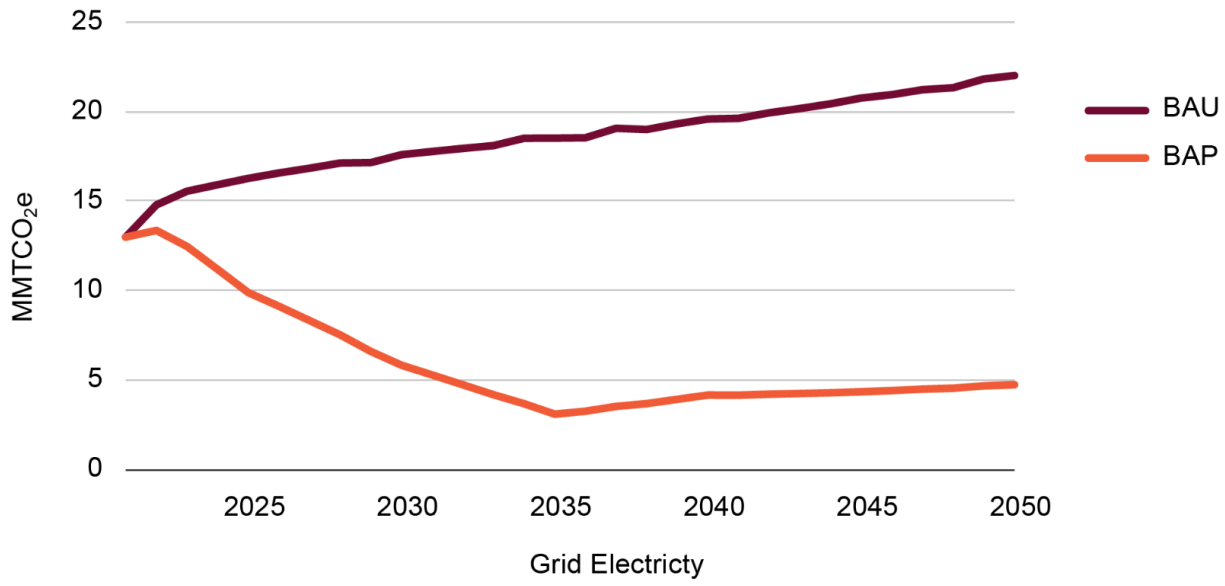


4.4.7 Electricity Generation

While the charts for the BAU and BAP Scenarios incorporate electricity generation within end-use sectors, addressing emissions from electricity generation is critical to achieving Nevada's net-zero targets. Figure 4.6 splits out GHG emissions from electricity consumption specifically.

In the BAU scenario, Nevada's grid-related emissions increase substantially, reaching over 22 $MMCO_2e$ by 2050 as electricity production continues to rely on fossil-fueled electricity generation. The BAP scenario, on the other hand, sees grid emissions decline from 12.99 $MMCO_2e$ in 2021 to just 4.73 $MMCO_2e$ by 2050. This reduction reflects the impact of existing policies, particularly Senate Bill 358, which accelerates the integration of renewable energy sources and sets the State on a pathway toward cleaner electricity.

Figure 4.15. GHG emissions from Electricity Consumption in the BAU and BAP scenarios, 2021 - 2050.



While the BAP scenario does not fully achieve the State's statutory goal of a 100% renewable portfolio by 2050, it shows that current legislation enables a transition to a cleaner energy mix. At the same time, population growth and associated growth in transportation, buildings, and appliances increases overall electricity consumption, countering some of the gains in cleaner electricity generation.

5 | Near-Term and Long-Term GHG Reduction Targets

GHG reduction targets guide climate policy, investment, and regulation. They provide a quantitative trajectory for aligning the State's economy with the realities of climate science and the obligations of intergovernmental commitments. For Nevada, these targets anchor the CCAN and guide how measures for emission reductions are defined.

Without intervention, global emissions trends are on course for a 3°C rise in temperature, well beyond the 1.5°C threshold identified by the Intergovernmental Panel on Climate Change (IPCC)[17] as the level necessary to avoid the most dangerous climate impacts. GHG targets are the roadmarkers for avoiding dangerous levels of warming. Targets also provide:

- Strategic alignment across sectors and agencies,
- Market signals for private investment,
- Policy design and evaluation, and
- Accountability for progress over time.

Science-based target (SBT) methodologies, used by national and subnational governments, translate global temperature goals into local targets by considering historical emissions, current emissions intensity, and economic capacity.[18] Many jurisdictions—including California, New York, and international counterparts such as Germany and the United Kingdom—have used these methods to calibrate science-aligned and technically feasible GHG reduction pathways.

5.1 Nevada's Current Targets and Progress

5.1.1. Statutory Targets (SB 254)

In 2019, Nevada adopted economy-wide GHG reduction targets under Senate Bill 254:

- **28% below 2005 levels by 2025**
- **45% below 2005 levels by 2030**
- **Zero or net-zero emissions by 2050**

Baseline: 47.1 $MMTCO_2e$ (2005)

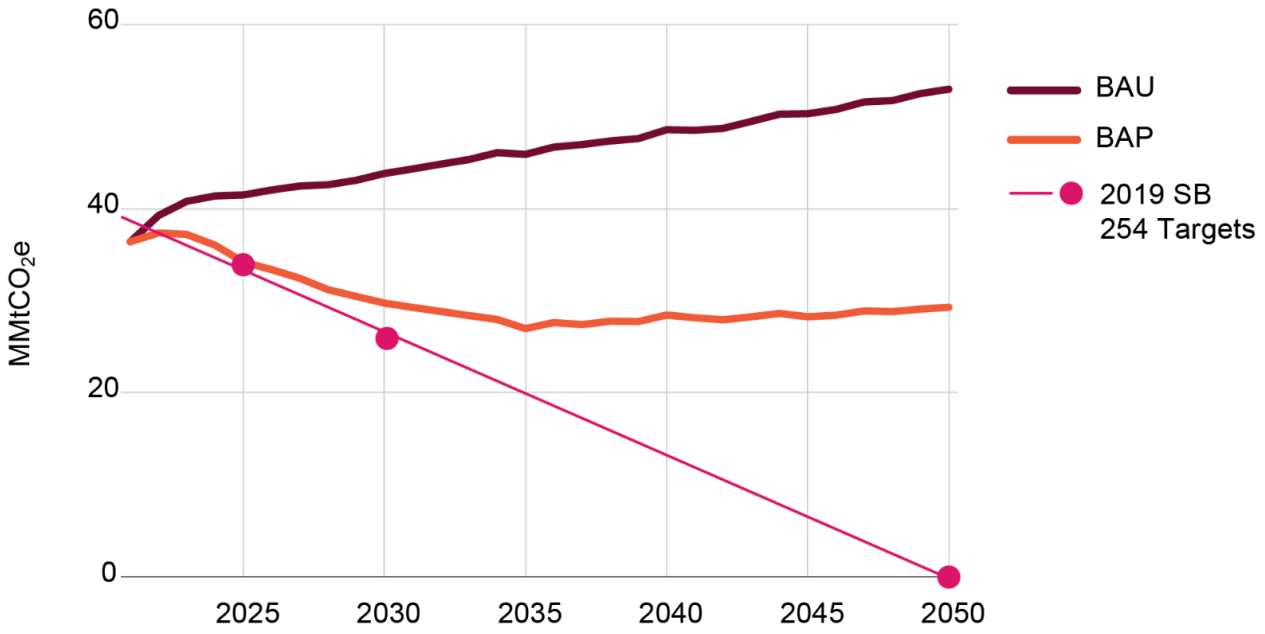
[17] "Climate Change 2022 Mitigation of Climate Change: Summary for Policy Makers," IPCC, accessed in November 2024, https://www.ipcc.ch/report/ar6/wg3/downloads/report/IPCC_AR6_WGIII_SummaryForPolicymakers.pdf.
[18] "Science-based targets for sub-national governments," CDP, accessed in November 2024. https://www.cdp.net/en/cities/science-based-targets-for-sub-national-governments

The BAU scenario, which assumes current conditions are maintained as population and job growth continue, results in emissions gaps of 7.6 $MMTCO_2e$ in 2025, 17.9 $MMTCO_2e$ in 2030, and 53 $MMTCO_2e$ in 2050. The BAP scenario reaches 34.2 $MMTCO_2e$ in 2025, nearly achieving the 2025 target, with increasing gaps out until 2050.

Table 5.1: Nevada's GHG Targets, BAU and BAP emissions projections (including sequestration) and Emissions Gap

Year	SB 254 Target	BAU Projection ($MMTCO_2e$)	Emissions Gap	BAP Projection ($MMTCO_2e$)	Emissions Gap
2025	33.9	41.5	7.6	34.2	0.3
2030	25.9	43.8	17.9	29.7	3.8
2050	0	53.0	53.0	29.3	29.3

Figure 5.1 Nevada's GHG targets and the BAU and BAP emissions projections, including sequestration.



The analysis reveals a gap between the current trajectory, as represented by the BAP scenario and Nevada's targets, with the gap growing over time. Strengthening near-term implementation measures and calibrating sector-based targets to close the 2030 gap will be required for Nevada to achieve its GHG reduction targets.

5.2 Sectoral Targets and Strategic Levers

5.2.1 Energy

Senate Bill 358 requires 50% of electricity generated in the State to be from renewable sources by 2030 and sets a policy goal of 100% by 2050. The legislation also sets interim targets for renewable energy generation between 2020 and 2030, but does not define the benchmarks between 2030 and 2050.

Renewable Energy Generation Requirements in SB 358:

- 22% in 2020
- 24% in 2021
- 29% in 2022 and 2023
- 34% in 2024 through 2026
- 42% in 2027 through 2029
- 50% in 2030
- 100% in 2050

In 2023, renewable energy resources accounted for 39% of Nevada's total in-state electricity net generation. Utility-scale solar and small-scale solar photovoltaic (PV) together supplied about 26% of the state's total generation, while geothermal energy provided 10% and hydroelectric power 3%.[19]

Nevada's statutory targets for electricity decarbonization are robust. However, gaps remain between 2030 and 2050 in terms of interim milestones. Other states have adopted more accelerated timelines (e.g., 100% clean grids by 2040 or 2045), presenting a benchmark for policy recalibration.

- Opportunity: Align interim targets post-2030 and integrate distributed generation, storage, and transmission planning into a 100% clean electricity roadmap.

5.2.2 Buildings

Nevada's targets for new buildings are shaped by the building code. The state adopts the newest International Energy Conservation Code (IECC) every 3 years in compliance with NRS 701.220 and NAC 701.185 (R153-17AP), and the State is in the process of adopting the 2024 IECC, which is open for public comment.[20] While the State is obliged to adopt the new code every three years, cities and counties are not required to update codes at the same rate, normally lagging three to seven years behind the State adoption in the most populous counties.

[19] U.S. Energy Information Administration, *Nevada - State Energy Profile Overview*, last modified March 21, 2024, https://www.eia.gov/state/analysis.php?sid=NV#40.
[20] "Energy Codes in Nevada," Nevada Governor's Office of Energy, accessed in November 2024, https://energy.nv.gov/programs/building_energy_codes/.

Other building-related targets in the State include the Las Vegas Master Plan, which set the target of reducing residential and commercial building energy use by 80% by 2050.[21] All-in Clark County sets a goal of advocating for the legislation to establish automatic adoption of updated IECC codes and create an enforceable time limit for subsequent local adoption.[22] The IECC is working to accelerate the construction of net-zero residential buildings and intends to integrate pathways to reach zero-energy buildings by 2030.[23]

- Opportunity: Formalize a net-zero new construction target and expand retrofit financing statewide.

5.2.3 Transportation

Nevada has adopted a number of policies that target emissions in the transportation sector. In 2023, the legislature passed AB 262 which aims to have all publicly owned vehicles be zero emission by 2050.[24]

The Multi-State Medium- and Heavy-Duty Zero Emission Vehicle Memorandum of Understanding, of which Nevada is a signatory along with 15 other states, sets a target of 30% ZEV new sales by 2030 and 100% by 2050.[25]

Clean Cars Nevada was adopted in 2021 and aligns with California's Advanced Clean Cars I which sets higher CO2 targets for vehicles than the EPA's standards. The regulation requires manufacturers to deliver a certain percentage of their sellable stock to be ZEVs annually. In 2025, 22% of the vehicle stock for sale in Nevada must be ZEVs.[26]

However, Nevada has not yet adopted Advanced Clean Cars II, which mandates 100% ZEV sales by 2035—a standard already in place in 12 states.

- Opportunity: Accelerate ZEV sales mandates and establish statewide VMT reduction targets to complement electrification.

5.2.4 Industry

Most industrial targets and measures in the state are driven by the private sector. For example, a number of mining companies have set decarbonization (i.e. Kinross Gold, Nevada Gold Mines, and SSR Mining).

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[21] "City of Las Vegas 2050 Master Plan," City of Las Vegas, accessed in November 2024, https://files.lasvegasnevada.gov/planning/CLV-2050-Master-Plan.pdf.
[22] "Smart Buildings & Development," All-in Clark County, accessed in November 2024, https://allinclarkcounty.com/documents/communityplan/SmartBuildingsAndDevelopment.pdf.
[23] "Net Zero Energy," International Code Council, accessed in November 2024, https://www.iccsafe.org/advocacy/net-zero/.
[24] "ASSEMBLY BILL NO. 262," State of Nevada, accessed in November 2024, https://www.leg.state.nv.us/Session/82nd2023/Bills/AB/AB262.pdf.
[25] "Multi-State Medium- and Heavy-Duty Zero Emission Vehicle Memorandum of Understanding," accessed in November 2024, https://gov.nv.gov/uploadedFiles/govnewnvgov/Content/News/Press/2022/MHDV_ZEV_MOU_20220329_signed.pdf
[26] "Clean Cars Nevada," Nevada Division of Environmental Protection, accessed in November 2024, https://ndep.nv.gov/air/clean-cars-nevada.

- Opportunity: Develop an industrial decarbonisation strategy in Nevada with measures to support renewable energy and industrial energy efficiency.

5.2.5 Waste

Waste generation contributes to GHG emissions mainly through methane released by decomposing organic waste in landfills and carbon dioxide from waste incineration. Waste diversion strategies reduce material flows into landfills and incinerators, lowering methane and carbon dioxide emissions, and decreasing the need for energy-intensive extraction and production of raw materials.

Adopted in 1991, AB 320 targets a recycling rate goal of 25%. The state has struggled to consistently achieve this rate, recently being just shy of reaching the target.

State of Nevada Recycling Rates:

- 2011 to 2013: > 25%
- 2014 to 2019: 21 - 22 %
- 2020: 24.3 %
- 2021: 24 %

- Opportunity: Continue to advance recycling and other waste diversion programs and support landfill gas capture projects.

5.2.6 Other Sectors

Several municipalities have adopted urban forestry targets that contribute to both community well-being and GHG reduction goals. The City of Las Vegas has launched an Urban Forestry Initiative to double its tree canopy coverage from 10 percent to 20 percent by 2035, while the City of Reno is implementing ReLEAF Reno, a program designed to preserve and expand the city's urban forest. These initiatives aim to improve residents' quality of life and mitigate urban heat island effects, while also enhancing carbon sequestration.

Beyond these efforts, there are currently no other significant forest or agriculture emission reduction targets identified at the state or local level.

- Opportunity: Develop a program to reduce the heat island effect in the state while also increasing carbon sequestration.

6 | GHG Emission Reduction Scenarios and Measures

The CCAN scenarios estimate future emissions based on the implementation of targeted climate strategies and measures. These scenarios build on the BAP scenario baseline and incorporate varying levels of technology adoption, different technologies or emissions reduction strategies and other community considerations. Three CCAN scenarios were modeled to present different pathways to achieve long-term GHG reduction goals and support Nevada in achieving its net-zero targets by 2050.

- The **Low-Carbon (LC) Scenario** represents the most rapid deployment of climate measures, assuming an accelerated transition to a clean electricity grid, deployment of net-zero building codes, extensive building retrofits, widespread adoption of zero-emission vehicles, and decarbonization of industrial processes.
- The **Mixed Fuels (MF) Scenario** assumes a slower phaseout of fossil fuels, increased reliance on alternative fuels like hydrogen and renewable natural gas (RNG), and a gradual rollout of clean technologies across sectors.
- The **Community-Driven (CD) Scenario** focuses on delivering early measures and benefits to low-Income and at-risk communities. It prioritizes broadening access to clean energy, expanding active and public transportation, and ensuring at-risk communities are the first to see improvements in air quality, mobility, and energy efficiency.

Together, these CCAN scenarios offer a comparative lens to evaluate how different implementation strategies can shape the State's emissions trajectory, community well-being, and economic transformation from 2021 to 2050.

Figure 6.1 compares net emissions projected in the reference and CCAN scenarios. Net emissions account for carbon sequestration, meaning the actual total emissions produced in each scenario are higher than the net values shown.

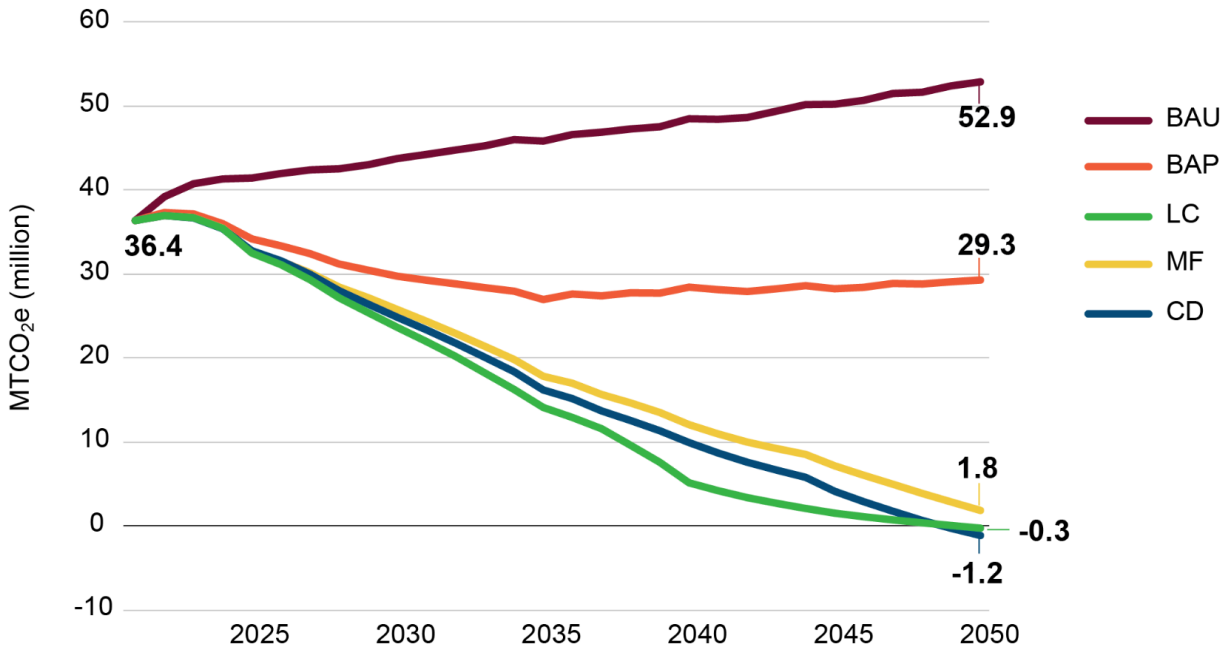
As seen in previous sections, when no measures are taken BAU emissions rise steadily to 52.9 $MMtCO_2e$ by 2050 and even with the implementation of existing plans and policies, emissions only fall to 29.3 $MMtCO_2e$ by mid-century.

All three CCAN scenarios are in the ballpark of achieving net-zero emissions by 2050 (including sequestration), with one pathway reaching net-negative emissions. The CD scenario becomes net-negative in 2048 achieving -1.2 $MMtCO_2e$ by 2050, as it has the deepest emissions reduction in the last five years relative to the other scenarios. The LC scenario achieves deeper emissions reductions sooner than the other two scenarios and

steadily declines in the 2040s to reach -0.3 $MMtCO_2e$ in 2050. The MF scenario results in a slower descent in GHG emissions, ending up at 1.8 $MMtCO_2e$ in 2050.

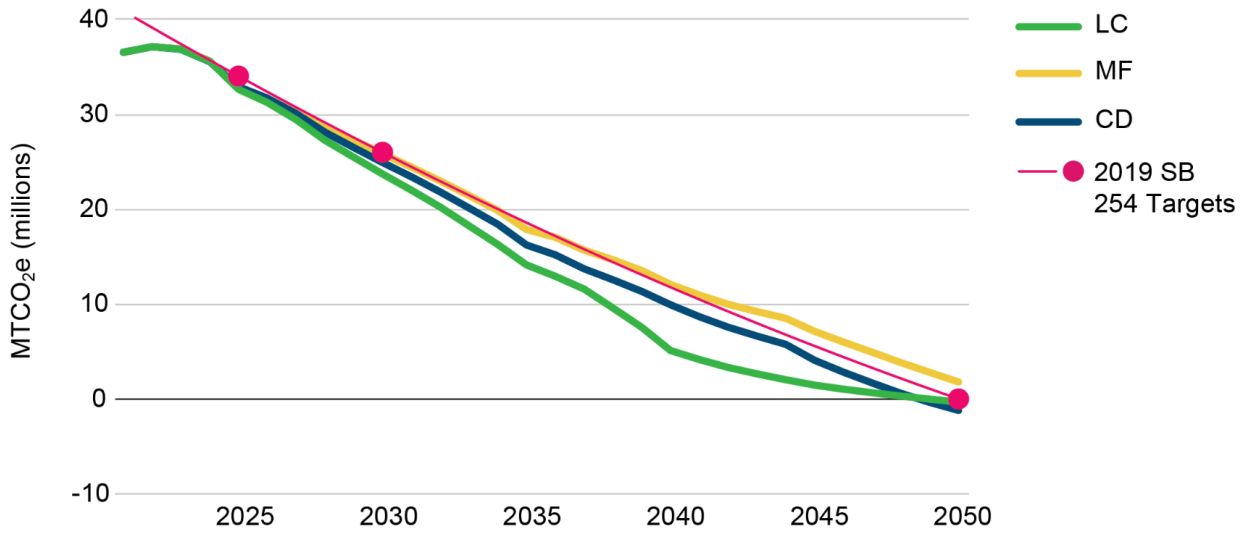
These scenarios illustrate a range of strategic, targeted interventions that can reduce emissions in alignment with the State's GHG targets. Each CCAN scenario offers a distinct approach for how to shape a cleaner, healthier, more sustainable future for Nevada.

Figure 6.1. GHG emissions in the BAU, BAP, LC, MF, and CD scenarios, including sequestration, 2021-2050.



Senate Bill 254 established statewide greenhouse gas reduction targets for Nevada, aiming for emissions to be reduced by 28% below 2005 levels by 2025, 45% below 2005 levels by 2030, and net-zero or zero emissions by 2050. Figure 6.2. shows all three CCAN scenarios meeting these requirements in the short-term, and by 2050, the LC and CD scenarios narrowly exceed the target while the MF scenario achieves near-zero emissions.

Figure 6.2. GHG emissions in the LC, MF, and CD scenarios compared to State emissions reduction targets from 2019 under Senate Bill 254, 2021-2050.



The results indicate that Nevada's climate targets are achievable through coordinated policy and large-scale investment. The LC, MF, and CD scenarios assume bold shifts in how the State generates and uses energy, manages transportation, builds infrastructure and supports communities. Early implementation of measures ensures that near-term benchmarks are met and minimizes compounding financial cost and avoiding constraints limiting long-term decarbonization

6.1 Opportunity Areas

Achieving net-zero by 2050 would require system-wide transformation across every major sector. The CCAN scenarios identify eleven strategic "Opportunity Areas" that collectively address the key sources of emissions and define the structural changes needed to decarbonize Nevada. These Opportunity Areas address all sectors:

- Power Nevada with Clean Energy
- Build Net-Zero New Buildings
- Transform Existing Buildings
- Move with Active and Public Transit
- Accelerate Adoption of Zero Emission Vehicles for All
- Drive Sustainable Transport of Goods
- Decarbonize Industry
- Divert and Reuse Waste
- Harness Landfill Gas
- Grow Nature-Based Solutions
- Make Farming More Sustainable

EachOpportunity Area represents a suite of measures to accelerate decarbonization while delivering economic, health, and co-benefits. Table 6.1 provides an overview of the thirty measures that are included in the Opportunity Areas and indicates which scenario the measures correspond to. Most measures are included in each scenario, and implemented at different paces and rates of change. A comparison of scenario assumptions is provided in Section 6.2 and detailed descriptions of each measure are provided in the sectoral overviews of this chapter.

Table 6.1. Opportunity Areas and Measures in the CCAN.

Sector	Opportunity Area	Measures	LC	MF	CD
Energy Systems	Power Nevada with Clean Energy	Paths to a Clean, Renewable, Reliable, and Resilient Grid for Nevada	✓	✓	✓
		Expand Residential Solar Access and Affordability with Financing and Technical Support Programs	✓	✓	✓
		Adopt Initiatives Supporting Community Solar and Renewable Co-ops	✓	✓	✓
		Scale Up Solar Installation in Commercial Sector with Financing and Technical Support Programs	✓	✓	✓
Buildings	Build Net Zero New Buildings	Strengthen Building Energy Conservation Codes	✓	✓	✓
		Adopt Net-Zero Ready Standards for All New Buildings	✓	✓	✓
		Invest in Zero-Emission Affordable Housing Options			✓
	Transform Existing Buildings	Establish Building Performance Standards for Existing Large Buildings	✓	✓	✓
		Retrofit Nevada - Modernize Homes Initiative	✓	✓	✓
		Retrofit Nevada - Modernize Businesses Initiative	✓	✓	✓
		Incentivize and Require Heat Pumps for Heating and Cooling in Residential Buildings	✓	✓	✓
		Incentivize and Require Heat Pumps for Heating and Cooling in Commercial Buildings	✓	✓	✓
Transportation	Move with Active and Public Transit	Build Public Transit and Active Transportation Networks for Everyone	✓	✓	✓

Sector	Opportunity Area	Measures	LC	MF	CD
	Accelerate Adoption of Zero Emission Vehicles for All	Launch ZEV for NV, an initiative to increase personal use ZEVs	✓	✓	✓
		Establish Lead the Charge, an Electrifying Public Fleets Assistance Program	✓	✓	✓
		Deploy Community-Based Electric Carsharing Programs			✓
	Drive Sustainable Transport of Goods	Incentivize and Require the Clean Commercial Fleet Transition	✓	✓	✓
		Adopt Power Up Clean Worksites, an initiative to transition Off-Road Equipment to ZEVs	✓	✓	✓
		Fuel Sustainable Skies Program	✓	✓	✓
		Propel Marine Vessels to use Low- and Zero-Emission Fuels	✓	✓	✓
Industry	Decarbonize Industry	Maximize Industrial Energy Efficiency	✓	✓	✓
		Accelerate Deployment of Green Hydrogen for Industrial Decarbonization	✓	✓	✓
		Electrify Industrial Processes and Integrate On-Site Renewables	✓	✓	✓
		Support Industrial Carbon Capture, Utilization, and Storage (CCUS) Solutions	✓	✓	✓
Waste	Divert and Reuse Waste	Expand recycling, composting, and sustainable materials management programs	✓	✓	✓
	Harness Landfill Gas	Develop and Fund Landfill Gas Capture and Utilization Systems	✓	✓	✓
Agriculture	Make Farming more Sustainable	Grow Regenerative Agriculture Practices in Nevada	✓	✓	✓
		Improve Grazing Management and Rangeland Resilience	✓	✓	✓
Natural and Working Lands	Grow Nature-Based Solutions	Expand Urban and Community Tree Canopy Coverage Across Nevada	✓	✓	✓
		Protect and Restore Natural Lands Initiative	✓	✓	✓

6.2 GHG Emission Reduction Measures Summary

The CCAN scenarios build upon the BAP scenario to show what additional changes could be made to meet Nevada's emissions targets. The modeling assumptions for each measure in the CCAN scenarios are described in the following table. Full details of the modeling methodology used are found in Data, Methods and Assumptions Manual in Appendix B.

The measures presented in this analysis are not intended to be prescriptive, but instead explore a range of possible climate action pathways Nevada could take to reduce emissions. The CCAN does not evaluate every potential constraint to implementation, and therefore, measures may not be feasible at every scale or in every part of the state.

Table 6.2. Modeled low-carbon measures.

Measure	LC Scenario	MF Scenario	CD Scenario
Implement a Clean, Reliable, and Resilient Grid for Nevada	All fossil-fuel power generation plants retire and are replaced with zero-emissions power **by 2040**.	All fossil-fuel power generation plants retire and are replaced with zero-emissions power **by 2050**.	Same as MF Scenario.
Expand Residential Solar Access and Affordability with Financing and Technical Support Programs	Increase solar rooftop PV installations **12%** annually in residential buildings.	Increase solar rooftop PV installations **10%** annually in residential buildings.	Same as LC Scenario.
Adopt Initiatives Supporting Community Solar and Renewable Co-ops	Community solar installations increase by **12%** year-over-year starting in 2027.	Community solar installations increase by **8%** year-over-year starting in 2027.	Community solar installations increase by **15%** year-over-year starting in 2027.
Scale Up Solar Installation in Commercial Sector with Financing and Technical Support Programs	Increase solar rooftop PV installations **17%** annually in commercial buildings.	Increase solar rooftop PV installations **14%** annually in commercial buildings.	Increase solar rooftop PV installations **20%** annually in commercial buildings.
Strengthen Building Energy Conservation Codes	Building energy conservation codes are updated every 3 years in line with State adoption of IECC codes. Energy Use Intensity (EUI) is reduced **by 5%** for all new building types **every 3 years aligned with code adoption.**	Same as LC Scenario.	Same as LC Scenario.

Measure	LC Scenario	MF Scenario	CD Scenario
Adopt Net-Zero Ready Standards for All New Buildings	All new residential, commercial, municipal and industrial buildings are net-zero ready **by 2030** - includes on-site renewables, electric appliances, and IECC code adoption.	All new residential, commercial, municipal and industrial buildings are net-zero ready **by 2036** - includes on-site renewables, electric appliances, and IECC code adoption.	All new residential, commercial, municipal and industrial buildings are net-zero ready **by 2027** - includes on-site renewables, electric appliances, and IECC code adoption.
Invest in Zero-Emission Affordable Housing Options			Community Land Trusts increase to provide zero-emission affordable home buying options. State develops additional zero-emission rental housing.
Establish Building Performance Standards for Existing Large Buildings	Building performance standards reduce existing buildings emissions. ● Buildings over 200,000 sq. ft: Reduce EUI **by 40% by 2030.** ● Buildings 100,000–200,000 sq. ft: Reduce EUI **by 40% by 2032.** ● Buildings 50,000–100,000 sq. ft: Reduce EUI **by 40% by 2035.** ● Buildings must meet declining energy use standards every five years.	Same as LC Scenario.	Same as LC Scenario
Retrofit Nevada - Modernize Homes Initiative	All existing residential buildings are retrofitted to reduce energy use **by 40%**. All buildings are retrofitted **by 2045**.	All existing residential buildings are retrofitted to reduce energy use **by 40%**. All buildings are retrofitted **by 2050**.	Low-income and at-risk homes are prioritized for retrofitting to reduce energy use **by 40%**. **Retrofits broaden to non-low-income areas in 2035.**

Measure	LC Scenario	MF Scenario	CD Scenario
Retrofit Nevada - Modernize Businesses Initiative	All existing commercial and government buildings are retrofitted to reduce energy use **by 40%**. All buildings are retrofitted **by 2045.**	All existing commercial and government buildings are retrofitted to reduce energy use **by 40%**. All buildings are retrofitted **by 2050**.	Commercial buildings located in low-income and at-risk areas are prioritized for retrofitting to reduce energy use **by 40%**. **Retrofits broaden to non-low-income areas in 2035.**
Incentivize and Require Heat Pumps for Heating and Cooling in Residential Buildings	Increase heat pump deployment 5% annually and replace air conditioners at the end of life with heat pumps **starting in 2027**.	Increase heat pump deployment 5% annually and replace air conditioners at the end of life with heat pumps **starting in 2030**.	Replace air conditioners at the end of life with heat pumps in low-income and at-risk areas **starting in 2026**. Increase heat pump deployment b**y 5%** in non-low-income areas annually **starting in 2035.**
Incentivize and Require Heat Pumps for Heating and Cooling in Commercial Buildings	Increase heat pump deployment 5**% annually** and replace air conditioners at the end of life with heat pumps **starting in 2027**.	Increase heat pump deployment **5% annually** and replace air conditioners at the end of life with heat pumps **starting in 2030**.	Increase heat pump deployment **5% annually** starting in **low-income areas in 2027.** Expand deployment to non-low-income areas **in 2035.**
Build Public Transit and Active Transportation Networks for Everyone	**By 2050, 30%** of trips are completed by active or public transportation. **Transit - 18% Walking - 7% Biking - 5%**	**By 2050, 20%** of trips are completed by active or public transportation. **Transit - 10% Walking - 6% Biking - 4%**	**By 2050, 40%** of trips are completed by active or public transportation. **Transit - 17% Walking - 15% Biking - 8%**
Launch ZEV for NV, an initiative to increase personal use ZEVs	**By 2035, all** new personal, light-duty vehicles sold are electric.	**By 2030, 50%** new personal, light-duty vehicles sold are electric.	**By 2033, all** new personal, light-duty vehicles sold are electric.
Establish Lead the Charge, an Electrifying Public Fleets Assistance Program	Publicly owned vehicle fleets are ZEVs **by 2040**. This includes light-, medium-, and heavy duty vehicles.	Publicly owned vehicle fleets are ZEVs **by 2050.** This includes light-, medium-, and heavy duty vehicles **Hydrogen buses** and heavy duty vehicles are added to fleets.	Publicly owned vehicle fleets are ZEVs **by 2050**. This includes light-, medium-, and heavy duty vehicles

Measure	LC Scenario	MF Scenario	CD Scenario
Deploy Community-Based Electric Carsharing Programs			Increase uptake in car-sharing programs using ZEVs. Reduces personal use vehicle ownership **by 5%** in urban areas **by 2040** and **7% by 2050**.
Incentivize and Require the Clean Commercial Fleet Transition	**By 2035, all** new commercial, light-duty vehicles sold are electric. **By 2045, 100%** of new medium and heavy-duty vehicles sold are ZEVs.	**By 2030, 50%** new commercial, light-duty vehicles sold are electric. **By 2045, 100%** of new medium and heavy-duty vehicles sold are ZEVs. **50%** of new medium and heavy duty vehicle sales **are hydrogen vehicles in 2035.**	**By 2035, all** new commercial, light-duty vehicles sold are electric. **By 2045, 75%** of new medium and heavy-duty vehicles sold are ZEVs.
Adopt Power Up Clean Worksites, an initiative to transition Off-Road Equipment to ZEVs	**By 2050, 100%** of new off-road vehicles sold are ZEVs.	**By 2050, 95%** of new off-road vehicles sold are ZEVs.	Same as LC Scenario.
Fuel Sustainable Skies Program	**By 2045,** aviation **50%** of flights are powered by sustainable aviation fuel.	**By 2050,** aviation **50%** of flights are powered by sustainable aviation fuel.	**By 2050,** aviation **75%** of flights are powered by sustainable aviation fuel.
Propel Marine Vessels to use Low- and Zero-Emission Fuels	**By 2050,** marine fuel is converted to zero-emissions fuel or vessels are electrified.	*Same as LC Scenario.*	Same as LC Scenario.
Maximize Industrial Energy Efficiency	Industrial processes **are 25% more efficient by 2032** and increase efficiency **10% every five years.**	Industrial processes **are 25% more efficient by 2035** and increase efficiency **10% every five years.**	Same as MF Scenario.
Accelerate Deployment of Green Hydrogen for Industrial Decarbonization	**By 2038**, increase hydrogen use in industrial processes by **50%**.	**By 2035**, increase hydrogen use in industrial processes by **50%** and **75%** by **2040**.	Same as MF Scenario.

Measure	LC Scenario	MF Scenario	CD Scenario
Electrify Industrial Processes and Integrate On-Site Renewables	On-site renewables provide **at least 50%** of the energy required for industrial processes **by 2040**. Electrification of process heat increases 1**5% in 2032, 35% in 2038, 50% in 2040**.	On-site renewables provide **at least 50%** of the energy required for industrial processes **by 2045**. Electrification of process heat increases **15% in 2035, 35% in 2040, 50% in 2045**.	On-site renewables provide **at least 50%** of the energy required for industrial processes **by 2045**. Electrification of process heat increases **25% in 2035, 50% in 2040, 75% in 2045**.
Support Industrial Carbon Capture, Utilization, and Storage (CCUS) Solutions	Carbon capture reduces CO2 emissions by **50% in industry by 2040**.	Same as LC Scenario.	Same as LC Scenario.
Expand recycling, composting, and sustainable materials management programs	Divert **30%** of organics and **50%** of recyclables from landfill by **2045**.	Divert **15%** of organics and **35%** of recyclables from landfill by **2050.**	Same as LC Scenario.
Develop and Fund Landfill Gas Capture and Utilization Systems	**In 2030**, complete construction on landfill gas capture facilities at the **3 largest landfill sites.** Every two years begin three more landfill gas capture projects until all waste management sites have facilities.	**In 2030**, complete construction on landfill gas capture facilities at the **5 largest landfill sites.** Every two years begin three more landfill gas capture projects until all waste management sites have facilities.	**In 2030,** complete construction on landfill gas capture facilities at the **3 landfill sites closest to population centers.** Every two years begin three more landfill gas capture projects until all waste management sites have facilities.
Grow Regenerative Agriculture Practices in Nevada	Convert **50%** of agricultural lands from conventional tillage to no-till and cover crop practices.	Convert **30%** of agricultural lands from conventional tillage to no-till and cover crop practices.	Same as LC Scenario.
Improve Grazing Management and Rangeland Resilience	Improve grazing management practices on **50%** of rangelands.	Improve grazing management practices on **30%** of rangelands.	Same as LC Scenario.
Expand Urban and Community Tree Canopy Coverage Across Nevada	Cities increase tree canopy cover **to 30%-40% by 2045.**	Cities increase tree canopy cover **to 30%-40% by 2050.**	Tree canopy in **low-income areas is increased by 2035** and cities increase canopy cover overall **to 30%-40% by 2050.**
Protect and Restore Natural Lands Initiative	Protect and restore sagebrush and forested lands, **adding 395,000 plants by 2030.**	Same as LC Scenario.	Same as LC Scenario.

6.3 CCAN Scenario Projections

6.3.1 CCAN Projections for GHG Emissions by End-Use Sectors

Across all CCAN scenarios, Nevada could make substantial progress toward deep decarbonization, but key differences in scale, timing, and community outcomes shape their effectiveness. Transportation, waste, industry, and agriculture remain the high emitting sectors in 2050 across all pathways.

Figure 6.3. GHG emissions by sector in the CCAN Scenarios, by end-use sector (View 1), 2050.

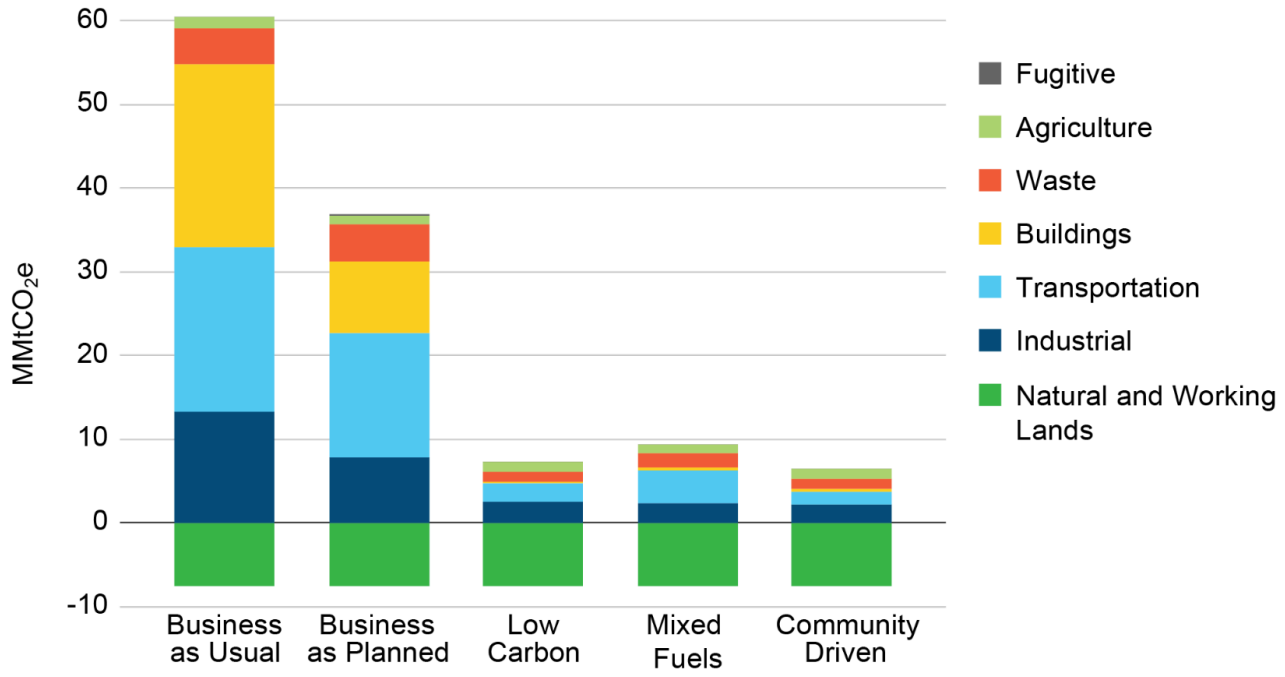
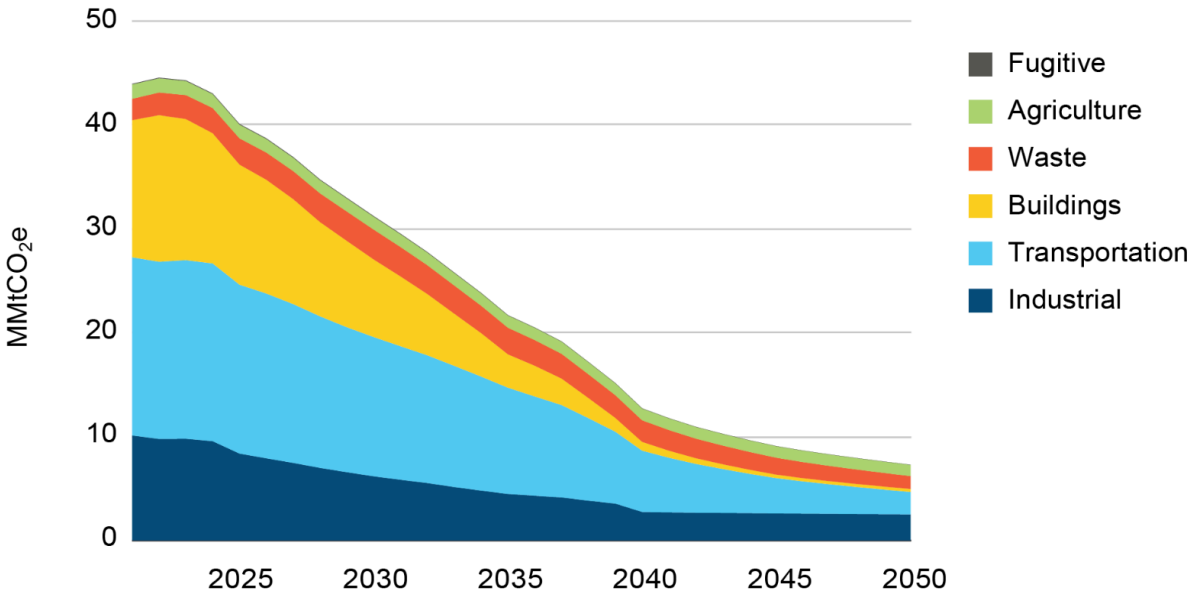


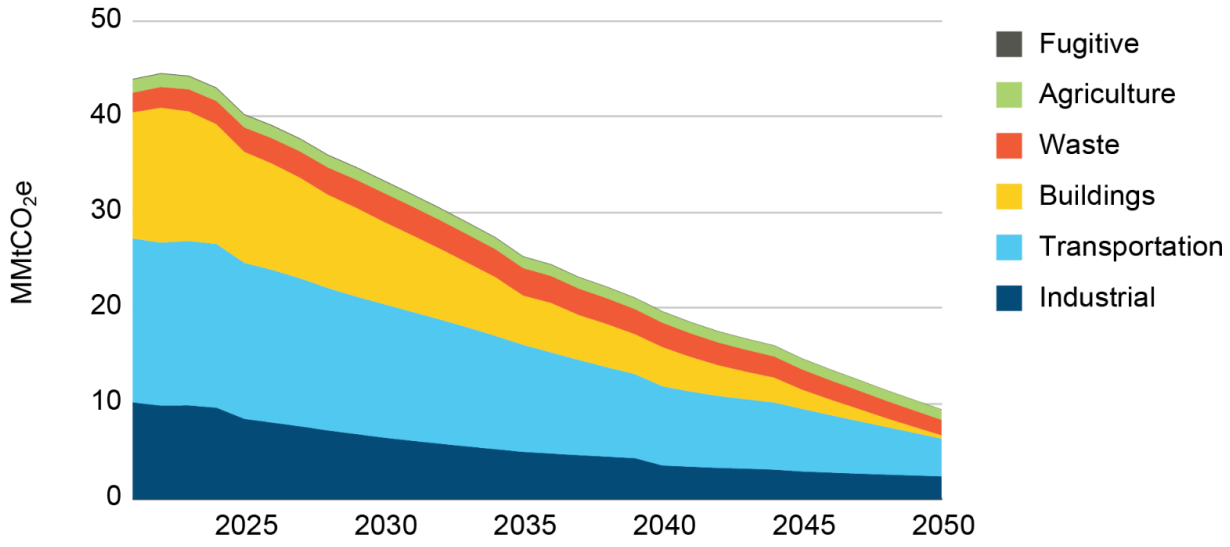
Figure 6.4. GHG emissions in the Low Carbon Scenario, by end-use sector (View 1), without sequestration, 2021 - 2050.



In the LC scenario, net emissions fall to 23.5 $MMTCO_2e$ by 2030, a 35% reduction from the baseline year, successfully surpassing Nevada's interim target of reducing emissions to 26 $MMTCO_2e$ by 2030. By 2050, the LC scenario reaches -0.3 $MMTCO_2e$. Figure 6.4 shows total emissions which do not account for sequestration. Total emissions in 2030 are 31.2 $MMTCO_2e$ and 7.3 $MMTCO_2e$ in 2050 without sequestration. Cumulative emissions for the LC scenario are 467 $MMTCO_2e$.

These reductions are driven by high-impact measures implemented early on in the scenario. The accelerated clean energy transition plays a central role, retiring all fossil fuel power generation by 2040 and rapidly expanding clean electricity. A net-zero building code in 2030 and widespread building retrofits for all building types significantly cut energy demand and electrifies buildings. Industrial decarbonization measures contribute to the steep emissions decline after 2030. Early investments lead to substantial and sustained emissions reductions across all sectors.

Figure 6.5. GHG emissions in the Mixed Fuel Scenario, by end-use sector (View 1), without sequestration, 2021 - 2050.



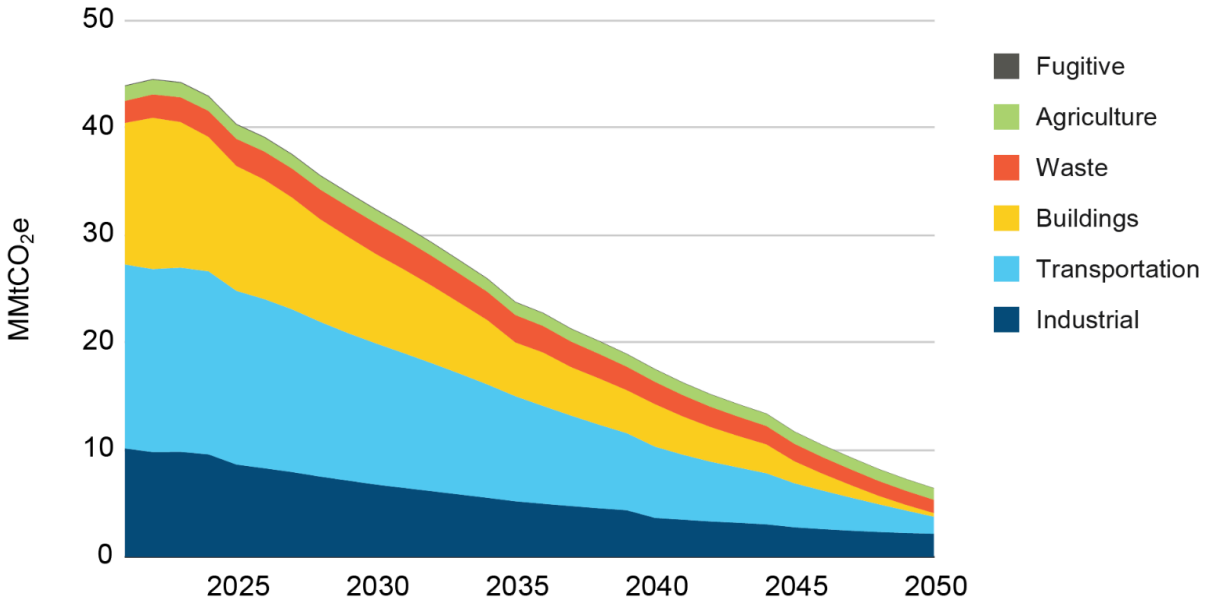
In the MF scenario, net emissions are reduced to 25.8 $MMTCO_2e$ in 2030, a 29% reduction from the baseline year, and just under the state's 2030 target. By 2050, net emissions reach 1.8 $MMTCO_2e$. Total emissions seen in Figure 6.5 show the MF emissions to be 33.3 $MMTCO_2e$ in 2030 and 9.3 $MMTCO_2e$ in 2050. Cumulative emissions for the MF scenario are 565 $MMTCO_2e$, nearly 100 $MMTCO_2e$ more emissions than the LC scenario.

Compared to LC, the MF scenario assumes slower implementation of key decarbonization measures. Fossil fuel power plants retire by 2050 (vs. 2040 in LC), leading to slower expansion of clean electricity and emissions from electricity consumption in the 2040s when more vehicles, homes, and appliances are being electrified.

Transportation measures are also less ambitious, with zero-emission vehicle adoption ramping up more gradually and slower mode shift to active and public transport by 2050. A notable divergence is in hydrogen deployment. Increased green hydrogen use in vehicles and industry help lower emissions but the slower implementation does not provide significant emissions reductions.

The MF scenario shows that while more gradual phase-in of fuel transition strategies can yield substantial emissions reductions, deeper and earlier measures are needed to reach net-zero by 2050.

Figure 6.6. GHG emissions in the Community Driven Scenario, by end-use sector (View 1), without sequestration, 2021 - 2050.

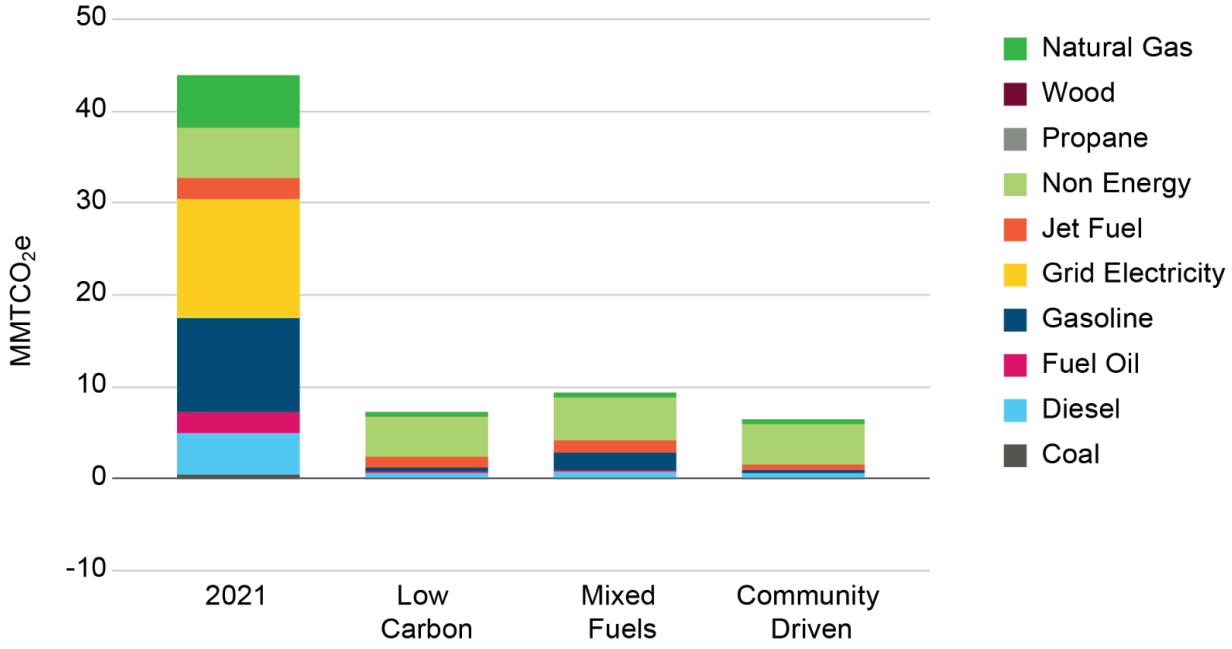


The CD scenario reaches 24.8 $MMTCO_2e$ net emissions in 2030, a 32% reduction from the baseline, and achieves net-negative emissions of -1.2 $MMTCO_2e$ in 2050. Figure 6.6 shows total emissions (without sequestration), which are 32.4 $MMTCO_2e$ in 2030 and 6.4 $MMTCO_2e$ in 2050. CD's cumulative emissions are 517 $MMTCO_2e$, greater than the MF scenarios but 50 $MMTCO_2e$ less emissions reductions than the LC scenario.

The CD scenario is not as accelerated as the LC scenario due to targeted measures geared towards low-income and at-risk communities before broadening implementation more widely, particularly for retrofits and deployment of heat pumps. To increase access to low-energy costs and savings, the CD scenario adopts zero-emission building codes in 2027 and expands access to zero-emission affordable housing and community solar.

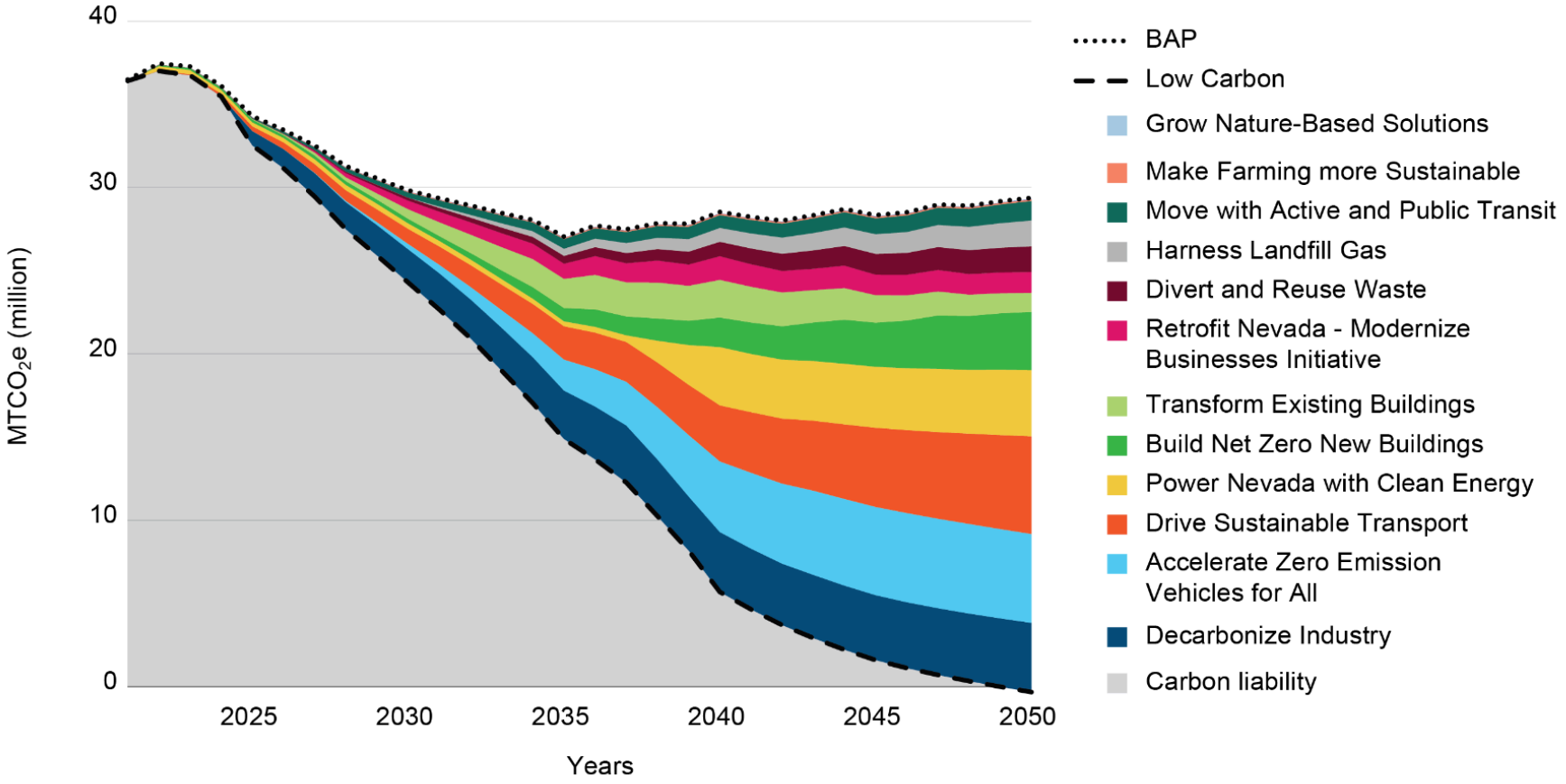
Transportation emissions decline sharply due to high ZEV adoption and a 40% shift to walking, biking, and transit by 2050. This trend outpaces MF's 20% mode shift and slower ZEV adoption timeline. While LC reaches net-zero slightly earlier (by 2048), the CD scenario aims for additional community benefits.

Figure 6.7. GHG emissions in the CCAN Scenarios, by energy source (View 2), 2050.



The remaining emissions in 2050 in all scenarios primarily come from fossil fuels in the transportation, waste, industry, and agriculture sectors (Figure 6.7). Diesel and gasoline use remains, especially in the MF scenario where electrification is slower. Jet fuel use is a contributor to emissions in 2050 but is lower in the CD scenario, where targeted measures were taken to reduce pollution near airports, often located in low-income areas. Non-energy emissions from waste and agriculture are reduced from 2021 even with population growth,, reflecting lower landfill diversion rate and methane capture proposed for the State. Emissions from electricity consumption are eliminated, and natural gas use is nearly phased out entirely by 2050 in all scenarios.

Figure 6.8. GHG emissions reductions in the LC Scenario by Opportunity Area, 2026-2050.



In the LC scenario, the three Opportunity Areas that deliver the highest cumulative emissions reductions between 2025 and 2050 are:

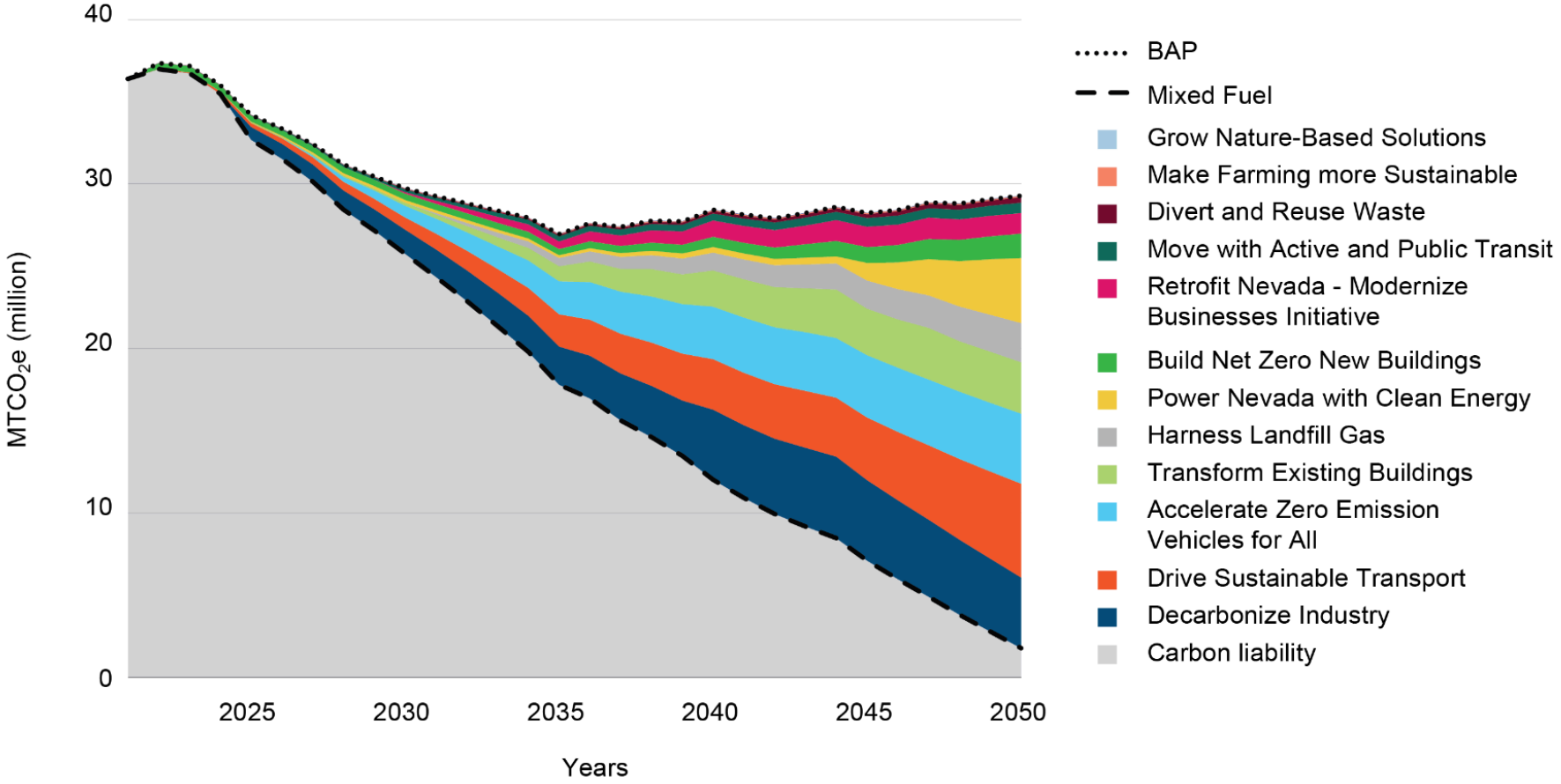
- **Decarbonize Industry – 77.7 MMtCO_2e reduced**
  This Opportunity Area achieves the highest cumulative emissions reduction across all sectors. It includes electrifying industrial processes, adopting low-carbon fuels, improving energy efficiency, and deploying technologies such as carbon capture and storage (CCS). These measures reduce emissions from Nevada's industrial base.

- **Accelerate Zero-Emission Vehicles for All – 84.7 MMtCO_2e reduced**
  This initiative drives adoption of ZEVs for personal use, paired with incentives, charging infrastructure, and supportive policies. The transition away from internal combustion engines reduces emissions from the transportation sector.

- **Drive Sustainable Transport of Goods – 73.2 MMtCO_2e reduced**
  This Opportunity Area targets commercial fleets, freight, and off-road equipment. It includes electrification, fuel switching (e.g., to hydrogen), and efficiency improvements. The impact is nearly equal to the passenger ZEV strategy, highlighting the importance of addressing emissions beyond personal vehicles.

Together, these three Opportunity Areas account for **over 235.6 MMtCO_2e reductions,** over half the emission reductions, making them the cornerstone of the LC scenario.

Figure 6.9. GHG emissions reductions in the MF Scenario by Opportunity Area, 2026-2050.

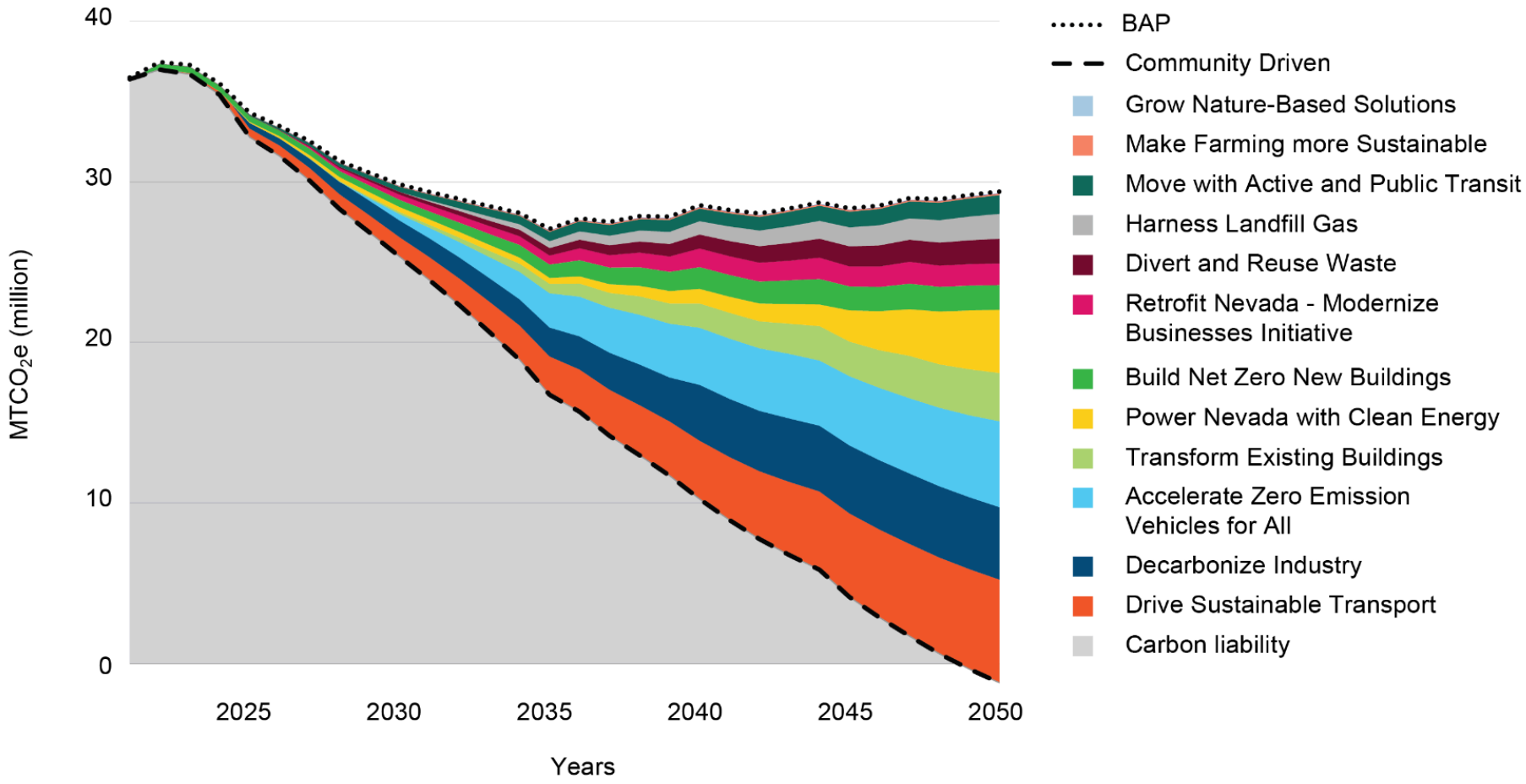


In the MF scenario, the three Opportunity Areas that achieve the highest cumulative emissions reductions by 2050 are:

- **Decarbonize Industry – 79.4 MMtCO_2e reduced**
- **Drive Sustainable Transport of Goods – 65.5 MMtCO_2e reduced**
- **Accelerate Zero-Emission Vehicles for All – 60.9 MMtCO_2e reduced**

These three Opportunity Areas account for **over 205.7 ktCO_2e reduction**s.

Figure 6.10. GHG emissions reductions in the CD Scenario by Opportunity Area, 2026-2050.



In the CD scenario, the three Opportunity Areas that achieve the highest cumulative emissions reductions by 2050 are:

- **Accelerate Zero-Emission Vehicles for All – 80.5MMtCO_2e reduced**
- **Drive Sustainable Transport of Goods – 77.0 MMtCO_2e reduce**
- **Decarbonize Industry – 66.9 MMtCO_2e reduced**

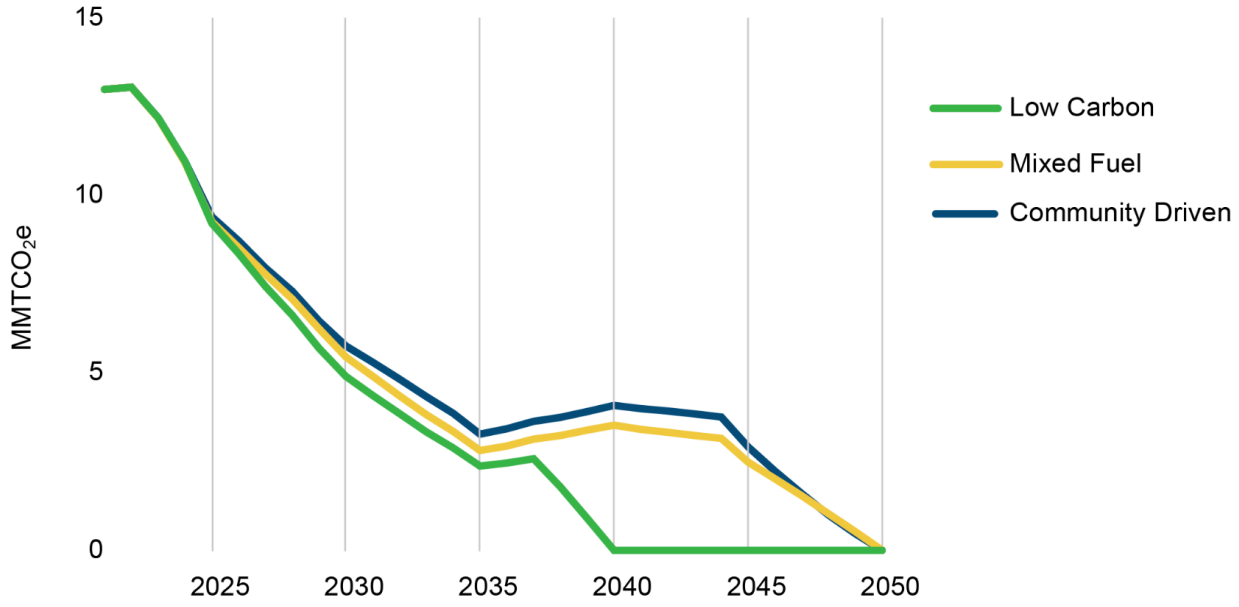
Combined, these three Opportunity Areas account for **217 ktCO_2e reductions**.

6.4 CCAN Outlook by Sector

6.4.1 Energy Systems

The following analysis splits out emissions from electricity consumption from other end-use sectors and illustrates how decarbonizing the electricity system enables emissions reductions across all sectors.

Figure 6.11. GHG emissions from electricity consumption for all CCAN Scenarios, 2021-2050.



Grid decarbonization is a foundational strategy across all CCAN scenarios, as it ensures that electrification happening in transportation, buildings, and industry results in meaningful emissions reductions. In the LC scenario, the grid reaches zero emissions by 2040; in this scenario cumulative GHG emissions from electricity consumption between 2026-2050 total 117 MMTCO2e. Both the MF and CD scenarios fully decarbonize the grid by 2050. However, due to the higher and earlier electrification of vehicles and buildings in the CD scenario, cumulative emissions from electricity total 164 MMTCO2e, compared to 154 MMTCO2e in the MF scenario. An earlier clean energy transition paired with robust electrification amplifies emissions reductions.

Figure 6.9 presents the projected electricity generation by source under the LC Scenario, developed in alignment with Nevada's Renewable Portfolio Standard (RPS). In this scenario, the state achieves 100% clean electricity by 2040, a full decade ahead of the statutory RPS target. By 2050, the electricity supply is entirely renewable, with solar accounting for 52.7%,

wind 21.0%, geothermal 17.4%, hydropower 8.1%, and biomass/biogas 0.8%. No generation from coal or natural gas is projected beyond 2040. Reaching this generation mix will require installed capacity of 12,612 MW of solar, 3,531 MW of wind, 1,153 MW of geothermal, 1,052 MW of hydro, and 60 MW of biomass/biogas. To ensure system reliability and flexibility, especially during periods of low renewable output, the scenario also assumes deployment of approximately 19,600 MWh of battery storage by 2050. These projections offer a strategic outlook for long-term resource planning in the context of statewide decarbonization efforts.

Figure 6.12. Projected grid electricity generation for the LC Scenario, by energy source, 2021-2050.

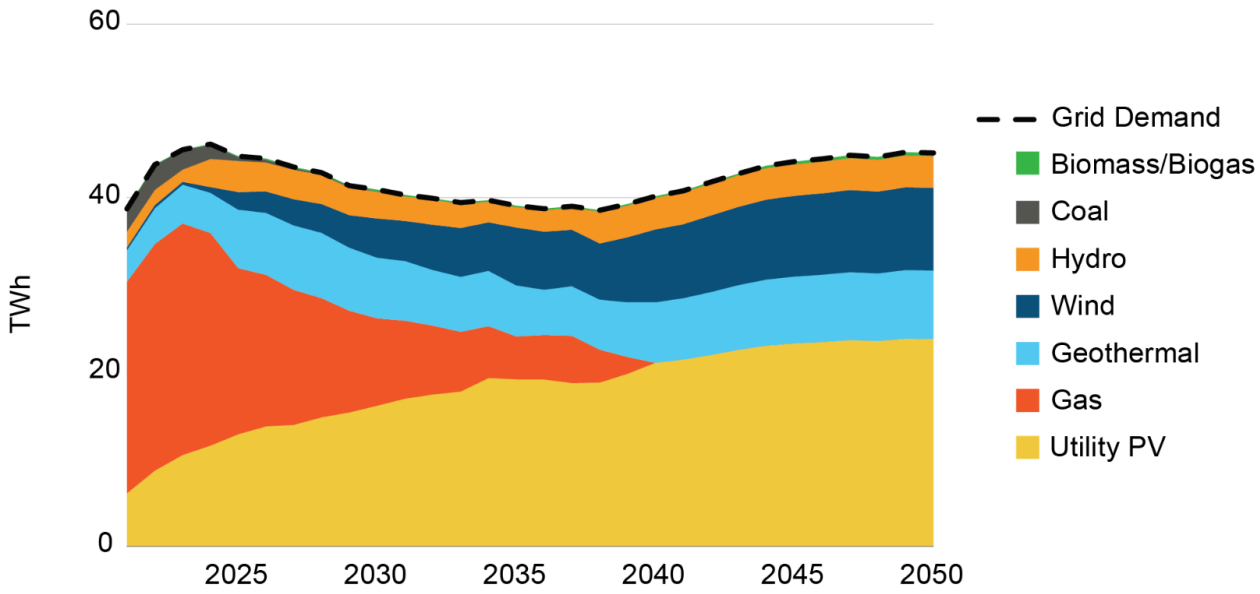


Figure 6.10 presents projected electricity generation by source under the MF Scenario. While this scenario maintains a trajectory toward deep decarbonization, it features a more gradual phase-out of fossil fuels compared to the LC Scenario. Nevada reaches 100% clean electricity by 2050, aligning with the state's RPS timeline. By 2050, the generation mix is entirely renewable, with solar contributing 53.7%, wind 21.0%, geothermal 17.4%, hydropower 7.1%, and biomass/biogas 0.8%. Coal is fully phased out after 2030, and natural gas generation continues at reduced levels through the late 2040s before being eliminated by 2050. Meeting these targets requires an estimated installed capacity of 11,718 MW of solar, 3,273 MW of wind, 1,055 MW of geothermal, 1,052 MW of hydro, and 55 MW of biomass/biogas. Given the continued high reliance on solar generation, this scenario also assumes approximately 21,000 MWh of battery storage by 2050 to maintain system reliability and manage diurnal variability.

Figure 6.13. Projected grid electricity generation for the MF Scenario, by energy source, 2021-2050.

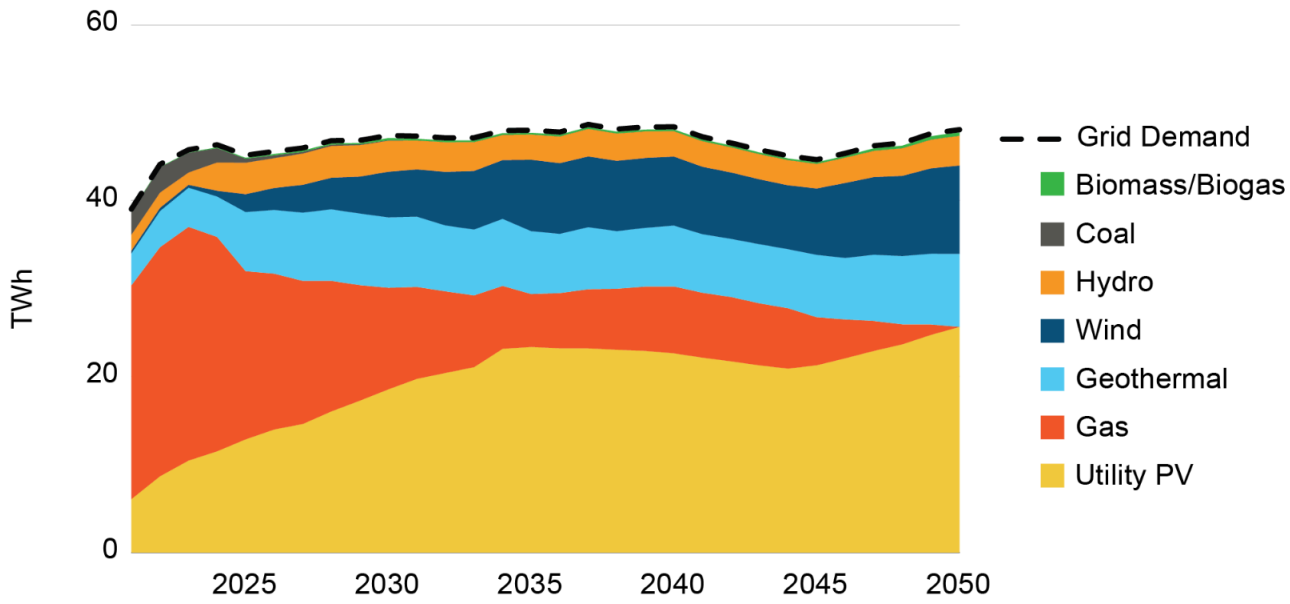
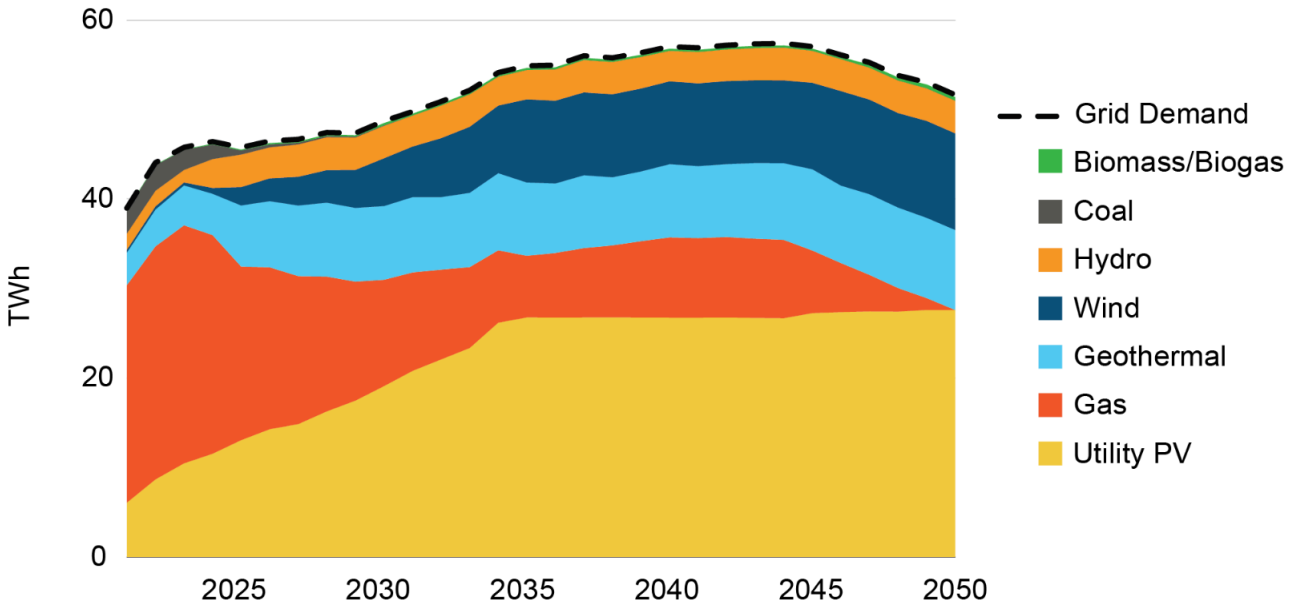


Figure 6.11 presents projected electricity generation by source under the CD scenario. This pathway achieves a fully renewable electricity system by 2050. Solar emerges as the dominant source, accounting for 53.7% of total generation, followed by wind at 21.0%, geothermal at 17.4%, hydro at 7.1%, and biomass/biogas at 0.8%. No generation is projected from coal or natural gas beyond 2050. Reaching this composition will require an estimated installed capacity of 12,612 MW of solar, 3,531 MW of wind, 1,153 MW of geothermal, 1,052 MW of hydro, and 60 MW of biomass/biogas. To ensure grid reliability and balance variable generation, approximately 22,700 MWh of battery storage is also required by 2050.

Figure 6.14. Projected grid electricity generation for the CD Scenario, by energy source, 2021-2050.



Local decentralised electricity generation was evaluated separately from the electricity grid, but contributes significantly to total energy use across all CCAN scenarios, supporting both emissions reductions and energy independence. Local generation is modelled as behind the meter, which, from a modeling perspective, reduces the demand for grid electricity.

In the LC scenario, local generation reaches 23% of total energy use by 2050, reflecting strong early investments in rooftop solar for homeowners and businesses. The CD scenario follows at 21%, driven by targeted access in low-income areas and community solar expansion. The MF scenario is at 17% due to a slower adoption rate. Expanding local solar generation reduces dependence on centralized power, enhances energy resilience, and offers long-term cost savings for homeowners and businesses, particularly when paired with battery storage. As electricity demand rises with widespread electrification, scaling up local decentralised energy sources can help to manage demand, improve affordability, and increase community-level energy security. Chapter 7 describes implementation mechanisms and timelines for all measures.

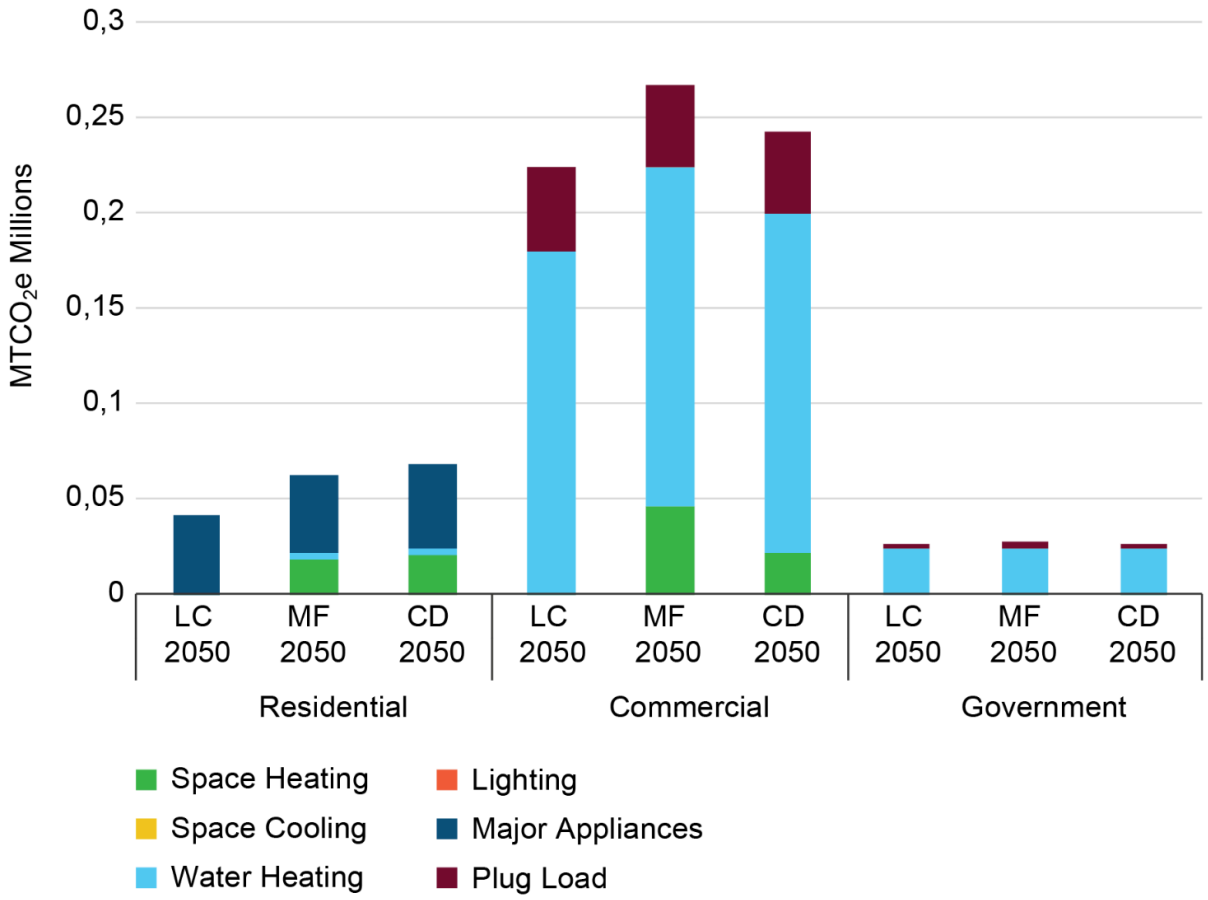
Table 6.3. Cumulative GHG Emissions Reductions in the Energy Sector by Measure

Opportunity Area	Measure	Description		
Power Nevada with Clean Energy	**Implement a Clean, Reliable, and Resilient Grid for Nevada**	Advance Nevada's energy transition by adopting a new Renewable Portfolio Standard, requiring utilities to submit clean energy plans to demonstrate how they will meet targets. Enact a moratorium on new fossil fuel electricity generation and phase out and repurpose existing coal and gas plants through regulatory and financial incentives. Support grid modernization through grants and incentives for advanced technologies as well as expanded transmission to unlock new renewable resources. Launch program to fund innovation in emerging technologies such as geothermal and long-duration storage. Deploy storage incentives to ensure renewable energy is available 24/7.		
		Cumulative GHG Emissions Reductions ($ktCO_2e$) 2026 - 2030		
		LC	**MF**	**CD**
		0	0	0
		Cumulative GHG Emissions Reductions ($ktCO_2e$) 2026 - 2050		
		LC	**MF**	**CD**
		43,898	13,808	14,042
	Expand Residential Solar Access and Affordability with Financing and Technical Support Programs	Increase the adoption of rooftop solar for homeowners and renters by expanding incentives, financing options, and access to technical assistance, especially in low-income, at-risk, and Tribal communities. Support the pairing of solar with battery storage and demand response technologies to improve household energy management, reduce peak demand, and enhance grid stability. Partner with utilities and local governments to streamline permitting and interconnection processes and ensure grid readiness for increased distributed generation. These efforts will lower energy costs, promote energy independence, and empower more Nevadans to actively participate in the state's clean energy future.		
		Cumulative GHG Emissions Reductions ($ktCO_2e$) 2026 - 2030		
		LC	**MF**	**CD**
		1,399	544	891
		Cumulative GHG Emissions Reductions ($ktCO_2e$) 2026 - 2050		
		LC	**MF**	**CD**
		3,670	4,136	10,699

Opportunity Area	Measure	Description		
	Adopt Initiatives Supporting Community Solar and Renewable Co-ops	Support the deployment of community-scale renewable energy projects, including solar gardens, shared solar installations, and cooperatives that provide clean energy access to residents and businesses unable to install on-site systems. Prioritize funding for rural areas, Tribal nations, low income and at risk communities by offering state, local, or Tribal-backed loans and grants. Encourage the development of community energy plans and subscription-based models that allow residents to benefit from solar without needing rooftop access. These efforts will increase participation in clean energy, lower utility bills, and increase energy resilience.		
		Cumulative GHG Emissions Reductions ($ktCO_2e$) 2026 - 2030		
		LC	**MF**	**CD**
		80	62	196
		Cumulative GHG Emissions Reductions ($ktCO_2e$) 2026 - 2050		
		LC	**MF**	**CD**
		409	821	2,526
	Scale Up Solar Installation in Commercial Sector with Financing and Technical Support Programs	Advance clean energy adoption in Nevada's commercial sector by offering performance-based incentives, tax credits, and flexible financing options for solar installations. Expand and promote the use of Commercial Property Assessed Clean Energy (C-PACE) programs to help businesses finance upfront costs for solar, storage, and energy efficiency upgrades through property tax assessments. Support technical assistance and planning resources for businesses to integrate solar into new construction and retrofit projects. Encourage partnerships between businesses, utilities, and local governments to streamline permitting and interconnection processes. Promote the deployment of battery storage and demand response technologies to improve energy resilience and reduce peak demand. Pair storage with commercial solar installations to maximize cost savings and grid benefits.		
		Cumulative GHG Emissions Reductions ($ktCO_2e$) 2026 - 2030		
		LC	**MF**	**CD**
		71	55	88
		Cumulative GHG Emissions Reductions ($ktCO_2e$) 2026 - 2050		
		LC	**MF**	**CD**
		326	721	1,950

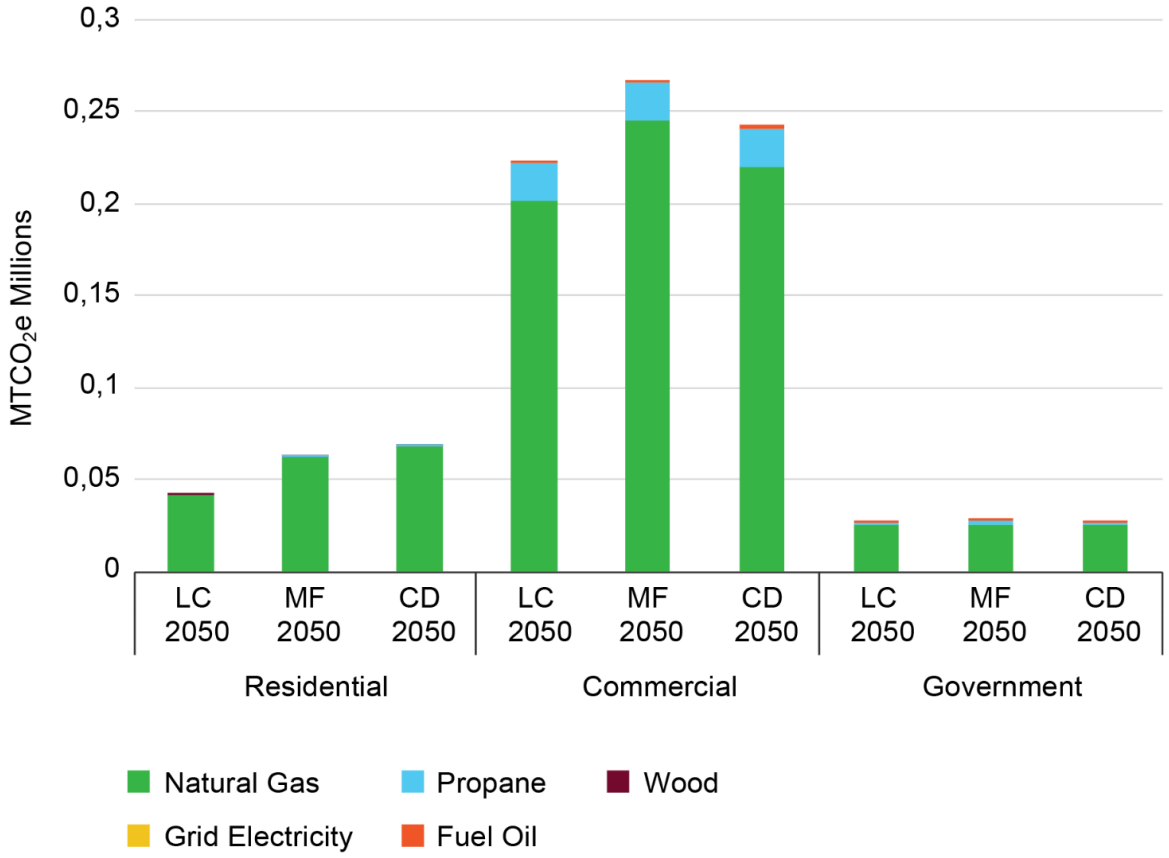
6.4.2 Building Sector

Figure 6.15. GHG emissions in the CCAN Scenarios by sector and by end-use, 2050.



In all CCAN scenarios, building sector emissions decline by approximately 96–98% by 2050, falling from 21.4 MMTCO2e to between 0.5 and 0.8 MMTCO2e (Figure 6.15). The LC scenario achieves the fastest early reductions, cutting emissions 46% by 2030 compared to 39% in the MF and CD scenarios. This early progress is driven by solar deployment, heat pump adoption, and accelerated retrofits. By 2050, the CD scenario achieves the lowest annual emissions overall, supported by early adoption of a net-zero building code in 2027 and increased development of zero-emission affordable housing. The remaining emissions across all scenarios come primarily from commercial water heating.

Figure 6.16. GHG emissions in the CCAN Scenarios by sector and by fuel type, 2050.



Measures in this section focus on electrifying appliances and widespread energy efficiency improvements. Heat pumps are the primary driver of emission reductions in all building types as seen in Figure 6.16. Replacing air conditioning systems with heat pumps at end-of-life, starting as early as 2026 in low-income areas (CD scenario), accelerates electrification while reducing energy demand. Retrofitting all existing residential and commercial buildings to reduce energy use by 40%, and strengthening building performance standards, lowers emissions and increases cost savings.

Continued updates to energy conservation codes every three years, aligned with IECC adoption, ensure steady improvements in new building performance. Achieving these outcomes at scale will require accessible financing, workforce development, and targeted technical assistance to support building owners and occupants—especially in underserved and at-risk communities (See Engagement Findings in section 2).

Table 6.4. Cumulative GHG Emissions Reductions in the Buildings Sector by Measure

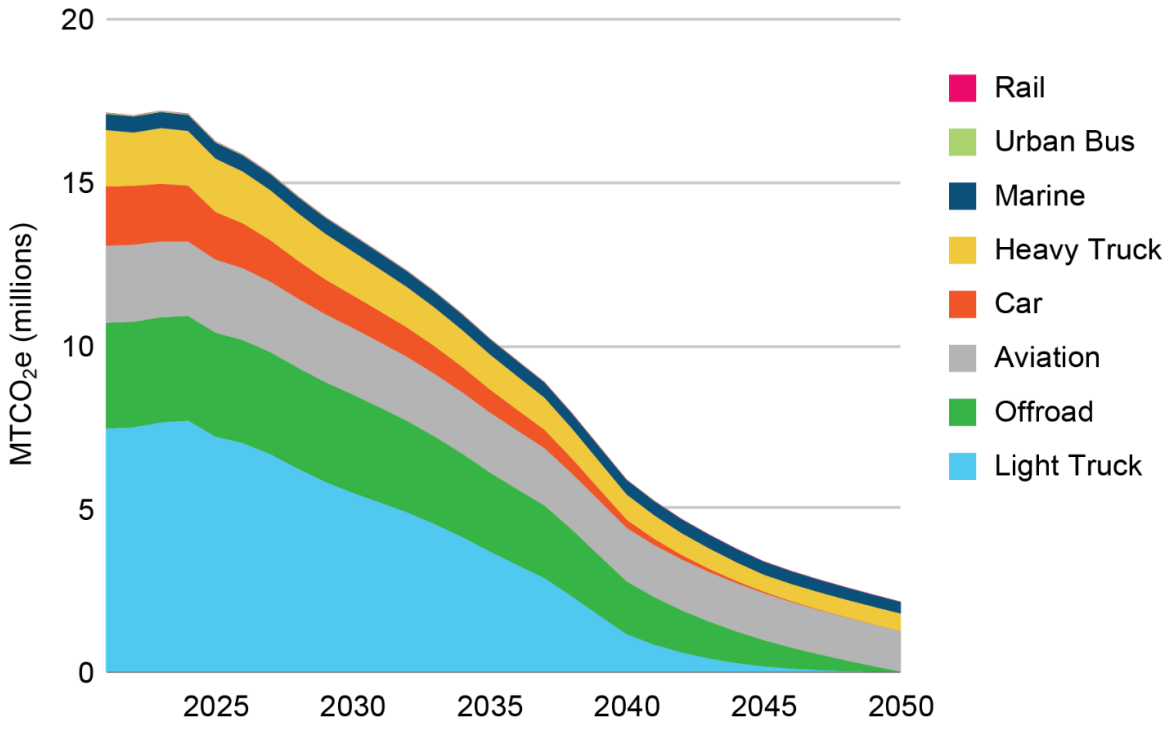
Opportunity Area	Measures	Description		
Build Net Zero New Buildings	**Strengthen Building Energy Conservation Codes**	Nevada's counties and municipalities consistently adopt updated building energy conservation codes in alignment with the state's adoption of the latest International Energy Conservation Code (IECC) every three years. Establish automatic adoption of the most recent IECC codes with a time limit for local jurisdictions to implement them. This ensures uniformity or progress across the state and increases reductions from energy efficiency requirements for new buildings and major renovations.		
		Cumulative GHG Emissions Reductions ($ktCO_2e$) 2026 - 2030		
		LC	**MF**	**CD**
		1,132	1,160	1,170
		Cumulative GHG Emissions Reductions ($ktCO_2e$) 2026 - 2050		
		LC	**MF**	**CD**
		10,222	10,706	10,725
	Adopt Net-Zero Ready Standards for All New Buildings	New residential, commercial, and industrial buildings in Nevada are built to net-zero-ready standards. These standards will include energy-efficient design and technologies that allow buildings to generate as much energy as they consume on an annual basis.		
		Cumulative GHG Emissions Reductions ($ktCO_2e$) 2026 - 2030		
		LC	**MF**	**CD**
		6	716	786
		Cumulative GHG Emissions Reductions ($ktCO_2e$) 2026 - 2050		
		LC	**MF**	**CD**
		28,061	6,189	14,880
	Invest in Zero-Emission Affordable Housing Options	Creation and expansion of zero-emission affordable housing by increasing investment in Community Land Trusts (CLTs) and developing new state-supported rental housing that meets high energy-efficiency and electrification standards.		
		Cumulative GHG Emissions Reductions ($ktCO_2e$) 2026 - 2030		
		LC	**MF**	**CD**
		-	-	54

Opportunity Area	Measures	Description		
		Cumulative GHG Emissions Reductions ($ktCO_2e$) 2026 - 2050		
		LC	**MF**	**CD**
		-	-	526
Transform Existing Buildings	**Establish Building Performance Standards for Existing Large Buildings**	Phased Building Performance Standards (BPS) that requires large commercial and multifamily buildings to meet specific energy use intensity (EUI) reduction targets over time, supported by compliance pathways, technical assistance, and data transparency tools.		
		Cumulative GHG Emissions Reductions ($ktCO_2e$) 2026 - 2030		
		LC	**MF**	**CD**
		455	455	-
		Cumulative GHG Emissions Reductions ($ktCO_2e$) 2026 - 2050		
		LC	**MF**	**CD**
		2,451	2,451	-
	Retrofit Nevada - Modernize Homes Initiative	Launch a statewide initiative that provides energy efficiency retrofits, electrification upgrades, and on-site renewables to residential buildings. Build off of existing programs like Home Energy Retrofit Opportunity for Seniors and Weatherization Assistance Program.		
		Cumulative GHG Emissions Reductions ($ktCO_2e$) 2026 - 2030		
		LC	**MF**	**CD**
		804	69	232
		Cumulative GHG Emissions Reductions ($ktCO_2e$) 2026 - 2050		
		LC	**MF**	**CD**
		18,936	13,117	8,664
	Retrofit Nevada - Modernize Businesses Initiative	A statewide initiative that provides energy efficiency retrofits, electrification upgrades, and on-site renewables to commercial buildings. Expand and coordinate with Commercial Property Assessed Clean Energy (C-PACE) and the Weatherization Assistance Program.		
		Cumulative GHG Emissions Reductions ($ktCO_2e$) 2026 - 2030		
		LC	**MF**	**CD**

Opportunity Area	Measures	Description		
		1,263	86	861
		Cumulative GHG Emissions Reductions ($ktCO_2e$) 2026 - 2050		
		LC	**MF**	**CD**
		24,432	17,631	20,656
	Incentivize and Require Heat Pumps for Heating and Cooling in Residential Buildings	Deployment of heat pumps for space and water heating and cooling in residential and commercial buildings by incentivizing heat pump purchases and requiring new or replacement air conditioning units be high-efficiency heat pumps.		
		Cumulative GHG Emissions Reductions ($ktCO_2e$) 2026 - 2030		
		LC	**MF**	**CD**
		185	0	39
		Cumulative GHG Emissions Reductions ($ktCO_2e$) 2026 - 2050		
		LC	**MF**	**CD**
		7,297	14,811	11,954
	Incentivize and Require Heat Pumps for Heating and Cooling in Commercial Buildings	Deployment of heat pumps for space and water heating and cooling in residential and commercial buildings by incentivizing heat pump purchases and requiring new or replacement air conditioning units be high-efficiency heat pumps.		
		Cumulative GHG Emissions Reductions ($ktCO_2e$) 2026 - 2030		
		LC	**MF**	**CD**
		0	0	28
		Cumulative GHG Emissions Reductions ($ktCO_2e$) 2026 - 2050		
		LC	**MF**	**CD**
		6,427	9,913	10,308

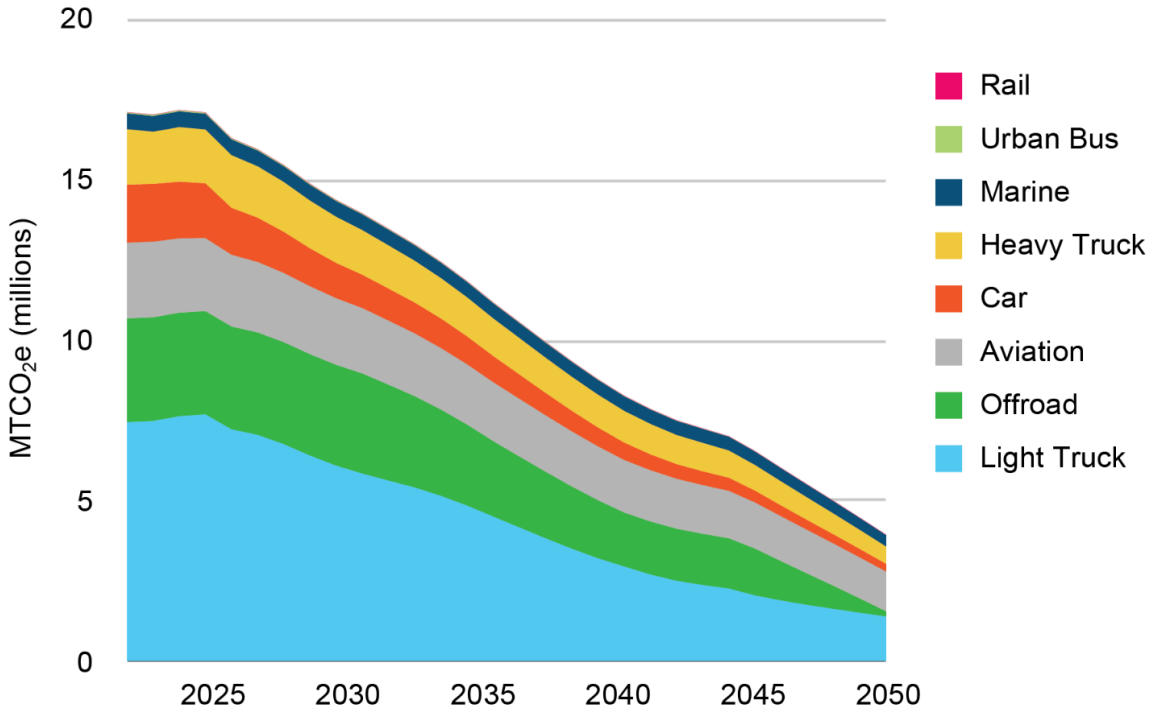
6.4.3 Transportation Sector

Figure 6.17. GHG emissions in the LC Scenario by vehicle type, 2021-2050.



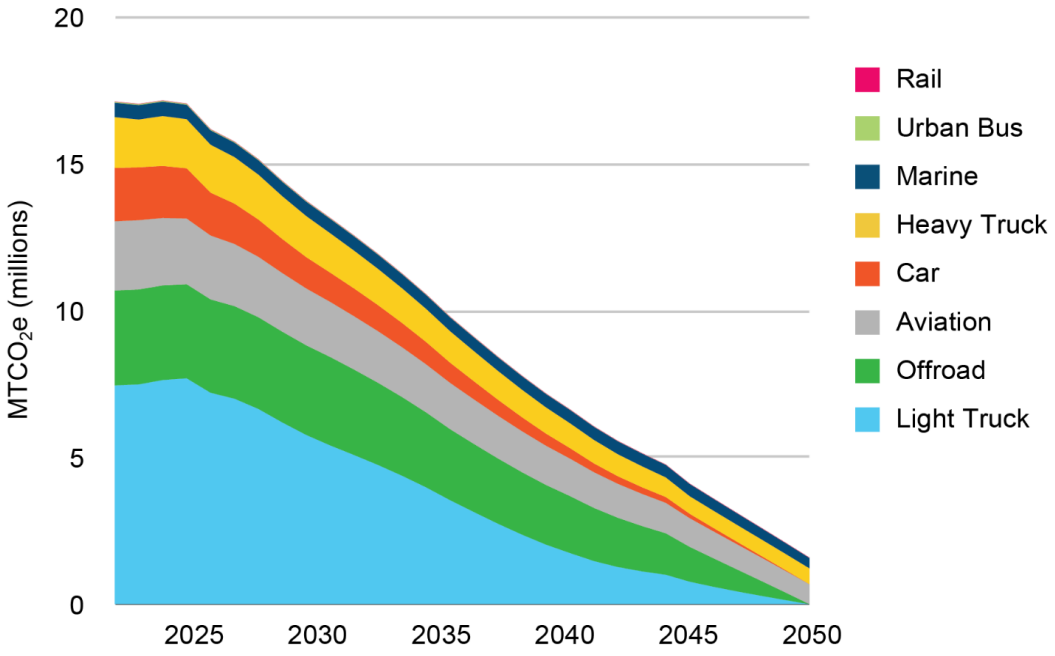
In all scenarios, transportation emissions decline steadily through a mix of vehicle electrification, mode shift, and efficiency improvements. By 2030, emissions are reduced by 23% in the CD scenario, reaching 13.1 MMTCO2e. The LC achieves a 22% reduction while the MF scenario realizes an 18% reduction in 2030. By 2050, the scenarios diverge significantly, with the CD scenario achieving the largest reduction at 91%, followed by LC at 87%, and MF at 77%. In 2050, transportation is responsible for 3.9 MMTCO2e in the MF scenario.

Figure 6.18. GHG emissions in the MF Scenario by vehicle type, 2021-2050.



Emissions reductions are slower in the MF scenario due to slower zero emissions vehicle adoption and lower active transportation rates. As a result, gasoline remains a major fuel source in 2050, contributing 1.9 MMTCO2e, while diesel remains in medium- and heavy-duty vehicles. Hydrogen in the MF scenarios reduces emissions low in heavy duty and off-road vehicles on par with the other scenarios but a slower transition results in remaining emissions from these vehicle types by 2050.

Figure 6.19. GHG emissions in the CD Scenario by vehicle type, 2021-2050.



The CD scenario is characterised by a deeper mode shift, aiming for 40% of trips completed by transit, walking, or biking and accelerating ZEV adoption timelines with programs geared toward helping low-income communities purchase ZEVs. It also includes targeted efforts to reduce air pollutants near airports, where surrounding communities often face higher exposure, further lowering emissions from aviation.

Table 6.5. Cumulative GHG Emissions Reductions in the Transportation Sector by Measure

Opportunity Area	Measures	Description		
Move with Active and Public Transit	**Build Public Transit and Active Transportation Networks for Everyone**	Public transit and active transportation infrastructure are expanded to provide safe, sustainable, and robust mobility options across Nevada. Improve access to reliable and affordable public transportation by building out connected networks, enhancing connectivity to essential services, and fast-tracking pedestrian and bicycle infrastructure. Prioritize funding existing local and Tribal plans and incentivizing e-mobility options.		
		Cumulative GHG Emissions Reductions ($ktCO_2e$) 2026 - 2030		
		LC	**MF**	**CD**
		1,086	590	1,083

Opportunity Area	Measures	Description		
		Cumulative GHG Emissions Reductions ($ktCO_2e$) 2026 - 2050		
		LC	**MF**	**CD**
		16,720	9,156	16,838
Accelerate Adoption of Zero Emission Vehicles for All	**Launch ZEV for NV, an initiative to increase personal use ZEVs**	Develop a comprehensive strategy to support Clean Cars Nevada and accelerate the adoption of zero-emission vehicles (ZEVs). Offer targeted rebates and incentives for new and used ZEVs, particularly for low-income communities. Increase investment in home, workplace, and public charging infrastructure by aligning with Nevada's NEVI Deployment Plan and providing technical and financial support to local governments and community partners. Ensure that ZEV ownership is accessible, affordable, and supported by a reliable, statewide charging network.		
		Cumulative GHG Emissions Reductions ($ktCO_2e$) 2026 - 2030		
		LC	**MF**	**CD**
		2,204	1,614	2,352
		Cumulative GHG Emissions Reductions ($ktCO_2e$) 2026 - 2050		
		LC	**MF**	**CD**
		84,216	60,428	79,392
	Establish Lead the Charge, an Electrifying Public Fleets Assistance Program	To support AB 262 and accelerate the transition of publicly-owned vehicles and transit fleets to zero-emissions, develop "Lead the Charge" assistance program to provide financial and technical support to state agencies, local governments, school districts, and transit authorities. Offer grants, rebates, and low-interest loans to support vehicle procurement, infrastructure upgrades, and workforce training.		
		Cumulative GHG Emissions Reductions ($ktCO_2e$) 2026 - 2030		
		LC	**MF**	**CD**
		33	28	33
		Cumulative GHG Emissions Reductions ($ktCO_2e$) 2026 - 2050		
		LC	**MF**	**CD**

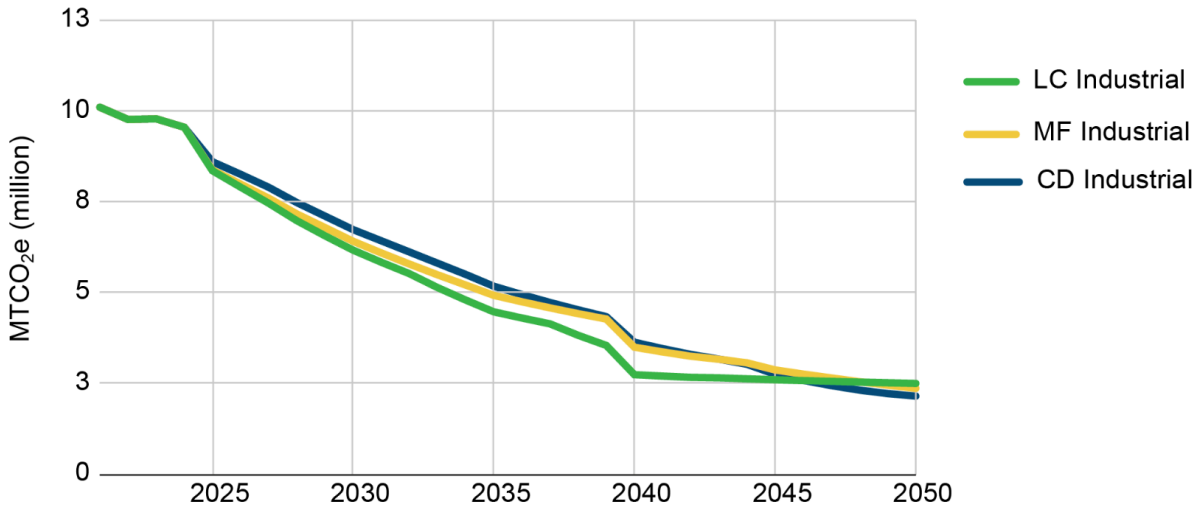
Opportunity Area	Measures	Description		
		516	434	502
	Deploy Community-Based Electric Carsharing Programs	Support the launch and expansion of zero-emission vehicle carsharing programs through grants, technical assistance, and public education. Prioritize deployments in low income and at risk communities to increase access to clean, affordable transportation options. Partner with local governments, transit agencies, and community-based organizations to develop and promote shared mobility services that reduce the need for personal vehicle ownership.		
		Cumulative GHG Emissions Reductions ($ktCO_2e$) 2026 - 2030		
		LC	**MF**	**CD**
		-	-	63
		Cumulative GHG Emissions Reductions ($ktCO_2e$) 2026 - 2050		
		LC	**MF**	**CD**
		-	-	587
Drive Sustainable Transport of Goods	**Incentivize and Require the Clean Commercial Fleet Transition**	Accelerated transition of commercial fleets including light-, medium-, and heavy-duty vehicles to zero-emission technologies through grants, loans, infrastructure support, and strategic partnerships. Partner with fleet operators and logistics companies to develop transition plans, install charging and hydrogen fueling infrastructure along major freight corridors, and pilot technologies like battery swapping. Support planning, piloting, and implementation of vehicle and fueling infrastructure upgrades in coordination with the NEVI Deployment Plan.		
		Cumulative GHG Emissions Reductions ($ktCO_2e$) 2026 - 2030		
		LC	**MF**	**CD**
		1,268	1,100	1,268
		Cumulative GHG Emissions Reductions ($ktCO_2e$) 2026-2050		
		LC	**MF**	**CD**
		20,730	17,457	19,987
	Adopt Power Up Clean Worksites,	Accelerated replacement of fossil-fuel powered off-road and industrial equipment with zero-emissions alternatives across		

Opportunity Area	Measures	Description		
	an initiative to transition Off-Road Equipment to ZEVs	sectors like construction, mining, industry, landscaping, and agriculture. Establish sales targets for zero-emission off-road equipment. Provide grants, rebates, and workforce training to businesses and workers to support deployment of electric and hydrogen-powered equipment and fueling infrastructure. Launch demonstration projects and public-private partnerships to scale up deployment.		
		Cumulative GHG Emissions Reductions ($ktCO_2e$) 2026 - 2030		
		LC	**MF**	**CD**
		737	368	737
		Cumulative GHG Emissions Reductions ($ktCO_2e$) 2026 - 2050		
		LC	**MF**	**CD**
		34,729	30,483	31,305
	Fuel Sustainable Skies Program	Production, adoption, and deployment of sustainable aviation fuel (SAF) and aviation electrification. Set targets for zero emission airport operations and infrastructure installations. Provide financial and technical assistance to SAF producers and distributors, flight innovators, and airport operators. Encourage the use of SAF and electric plans at commercial and regional airports across Nevada by aligning incentives with federal programs, supporting infrastructure upgrades, and creating procurement partnerships with airlines and public sector stakeholders. Promote research and development of feedstocks and production technologies suitable for Nevada, and prioritize SAF projects that reduce lifecycle emissions and deliver local economic and environmental benefits.		
		Cumulative GHG Emissions Reductions ($ktCO_2e$) 2026 - 2030		
		LC	**MF**	**CD**
		1,200	1,200	1,801
		Cumulative GHG Emissions Reductions ($ktCO_2e$) 2026 - 2050		
		LC	**MF**	**CD**
		16,00	16,000	24,017
	Propel Marine Vessels to use	Transition marine vessels to low- and zero-emission alternatives by incentivizing the use of sustainable marine		

Opportunity Area	Measures	Description		
	Low- and Zero-Emission Fuels	fuels (SMFs) such as green gasoline and e-gasoline. Promote the sale and use of alternative-energy non-commercial vessels including hybrid electric, battery electric, and hydrogen fuel cell vessels. Prioritize the electrification and hydrogen conversion of high-use boats. Begin development of shoreline charging and hydrogen refueling infrastructure, with incentives and technical assistance to encourage early adoption and innovation in the marine sector.		
		Cumulative GHG Emissions Reductions ($ktCO_2e$) 2026 - 2030		
		LC	**MF**	**CD**
		11	11	11
		Cumulative GHG Emissions Reductions ($ktCO_2e$) 2026 - 2050		
		LC	**MF**	**CD**
		1,204	1,077	1,077

6.4.4 Industrial Sector

Figure 6.20. GHG emissions in the CCAN Scenarios, in the industrial sector, 2021-2050.



By 2030, the deepest reductions in the industrial sector are in the LC scenario at 39%, followed by MF at 37%, and CD at 33%. These early gains are largely driven by efficiency improvements and electrification of processes, with compounding reductions due to the acceleration of cleaner electricity.

By 2050, all scenarios achieve deep reductions. The CD scenario reduces industrial emissions by 79%, MF scenario by 77%, and LC scenario by 75%, over 2021. Approximately 2.2 - 2.5MMTCO₂e remain in each scenario. The MF scenario incorporates more hydrogen by 2040. While LC achieves early efficiency gains, its slower scale-up of hydrogen and electrification marginally reduces reductions by 2040. Aimed at reducing industrial emissions and air pollutants to improve air quality near communities, the CD Scenario has increased industrial electrification and on-site renewable energy deployment. When fully implemented by 2050, these measures have the largest impact on reducing industrial emissions.

Measures in this section aim to increase process efficiency, industrial electrification, on-site renewable integration, and targeted carbon capture and storage.

Table 6.6. Cumulative GHG Emissions Reductions in the Industrial Sector by Measure

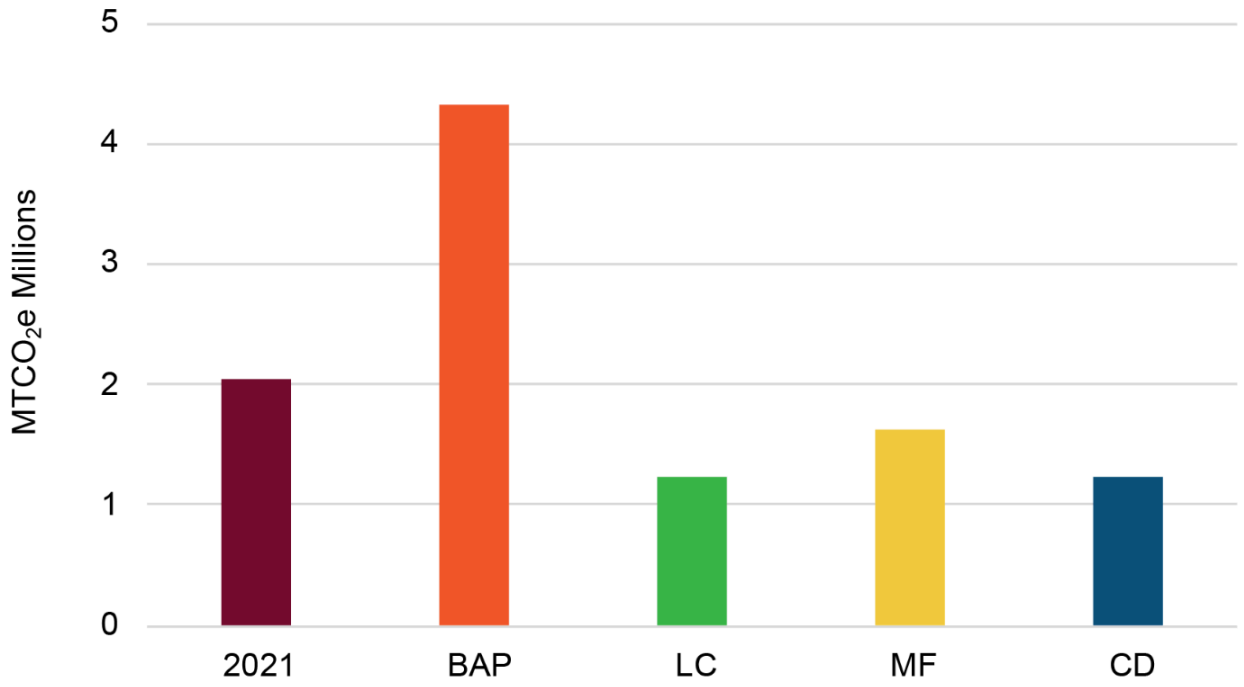
Opportunity Area	Measures	Description
Decarbonize Industry	**Maximize Industrial Energy Efficiency**	Energy efficiency measures in manufacturing and other high-energy-use facilities are prioritised strategies to reduce emissions in Nevada's industrial sector. This includes optimizing

Opportunity Area	Measures	Description		
		process efficiency, upgrading outdated equipment, recovering waste heat, and improving system-level integration. Launch an energy benchmarking program for industrial facilities and provide financing and technical support through energy efficiency challenges.		
		Cumulative GHG Emissions Reductions ($ktCO_2e$) 2026 - 2030		
		LC	**MF**	**CD**
		5,020	4,609	2,558
		Cumulative GHG Emissions Reductions ($ktCO_2e$) 2026 - 2050		
		LC	**MF**	**CD**
		43,134	40,745	29,715
	Accelerate Deployment of Green Hydrogen for Industrial Decarbonization	Support the development and use of green hydrogen to reduce emissions from hard-to-abate industrial sectors such as chemicals, refining, steel, and high-temperature processing. Complement federal tax credits with state incentives, grants, and low-interest loans for hydrogen production and equipment upgrades. Launch a voluntary Industrial Hydrogen Challenge to drive adoption through technical assistance, peer learning, and performance-based rewards for verified emissions reductions.		
		Cumulative GHG Emissions Reductions ($ktCO_2e$) 2026 - 2030		
		LC	**MF**	**CD**
		674	889	953
		Cumulative GHG Emissions Reductions ($ktCO_2e$) 2026 - 2050		
		LC	**MF**	**CD**
		8669	13,293	14,622
	Electrify Industrial Processes and Integrate On-Site Renewables	Electrification of industrial systems and integrated on-site renewable energy generation to reduce greenhouse gas emissions from manufacturing, processing, and high-temperature operations through the development of a statewide industrial electrification taskforce that brings together key actors for industrial decarbonization in the state. Provide technical assistance, incentives, and funding for pilot and demonstration projects. Collaborate with NV Energy and others to support industrial on-site renewable energy and		

Opportunity Area	Measures	Description		
		electrification. Mandate clean energy standards for the industrial sector and explore a carbon pricing mechanism.		
		Cumulative GHG Emissions Reductions ($ktCO_2e$) 2026 - 2030		
		LC	**MF**	**CD**
		2,323	384	557
		Cumulative GHG Emissions Reductions ($ktCO_2e$) 2026 - 2050		
		LC	**MF**	**CD**
		18,873	17,478	16,061
	Support Industrial Carbon Capture, Utilization, and Storage (CCUS) Solutions	Deployment of cost-effective CCUS technologies in Nevada's industrial sector, especially for hard-to-abate emissions sources. Prioritize funding for the development and manufacturing of advanced CO2 capture materials to improve efficiency and reduce costs, as well as innovations in the utilization of captured CO2 for manufacturing new products such as fuels, chemicals, and construction materials. Establish incentive programs, public-private partnerships, and permitting pathways to accelerate CCUS adoption. Encourage integration of CCUS at large emitters and coordinate with regional carbon transport and storage infrastructure efforts.		
		Cumulative GHG Emissions Reductions ($ktCO_2e$) 2026 - 2030		
		LC	**MF**	**CD**
		0	0	0
		Cumulative GHG Emissions Reductions ($ktCO_2e$) 2026 - 2050		
		LC	**MF**	**CD**
		6,111	7,061	5,951

6.4.5 Waste Sector

Figure 6.21. GHG emissions in the CCAN Scenarios, in the waste sector, 2021 and 2050.



Waste sector emissions are addressed through a mix of landfill gas (LFG) capture, waste diversion, and improved organic and recycling practices, though progress varies across scenarios. LC and CD scenarios implement identical waste management measures and timelines, achieving a 40% reduction in emissions by 2050. These reductions are driven by construction of LFG capture facilities starting in 2030, expanding every two years, and by diverting 30% of organics and 50% of recyclables from landfills by 2045.

The MF scenario reduces emissions by 21% by 2050. While LFG capture is deployed, starting earlier and at more sites, greater overall waste generation and less ambitious diversion efforts result in more waste being landfilled. As a result, emissions reductions from the sector are more modest in the MF scenario.

Across all scenarios, waste emissions remain a persistent source of emissions by 2050, reinforcing the need to mandate and support upstream measures like circular economy initiatives, composting, and recycling infrastructure complemented by LFG capture to meet long-term goals.

Table 6.7. Cumulative GHG Emissions Reductions in the Waste Sector by Measure

Opportunity Area	Measures	Description		
Divert and Reuse Waste	**Expand Recycling, Composting, and Sustainable Materials Management Programs**	Accelerate waste reduction, landfill diversion, and promote a circular economy by adopting new diversion targets and requirements. Support local governments in scaling recycling, composting, and sustainable materials management programs. Support zero waste commitments, establish a single-use plastic producers fee, incentivize food waste recovery, and launch business engagement and construction sector outreach programs.		
		Cumulative GHG Emissions Reductions ($ktCO_2e$) 2026 - 2030		
		LC	**MF**	**CD**
		487	87	487
		Cumulative GHG Emissions Reductions ($ktCO_2e$) 2026 - 2050		
		LC	**MF**	**CD**
		18,300	3,481	18,300
Harness Landfill Gas	**Develop and Fund Landfill Gas Capture and Utilization Systems**	Establish a statewide framework to identify, evaluate, and implement landfill gas (LFG) capture systems in Nevada. Require methane mitigation considerations in permitting for new or expanding landfills and use the 2022 Nevada Sustainable Materials Management Plan reporting framework to understand where LFG infrastructure may best be deployed. Provide funding and technical assistance for site-specific feasibility studies and project development. Coordinate with utilities to streamline grid connection and power purchase agreements.		
		Cumulative GHG Emissions Reductions ($ktCO_2e$) 2026 - 2030		
		LC	**MF**	**CD**
		0	0	0
		Cumulative GHG Emissions Reductions ($ktCO_2e$) 2026 - 2050		
		LC	**MF**	**CD**
		16,945	23,503	16,945

6.4.6 Agriculture Sector

In all scenarios, agricultural emissions decline by 10% by 2030, reaching 1.2 $MMTCO_2e$, and by 22% by 2050, down to 1.1 $MMTCO_2e$. These reductions are achieved through land management practices assumed across all pathways. Specifically, 50% of agricultural lands are converted from conventional tillage to no-till and cover crop practices, and grazing management is improved on 50% of rangelands. These soil-focused strategies help sequester carbon, reduce emissions from soil disturbance, and enhance resilience to climate change. While reductions are modest relative to other sectors, agriculture remains a key area for co-benefits such as improved soil health, water retention, and rural economic resilience.

Table 6.8. Cumulative GHG Emissions Reductions in the Agricultural Sector by Measure

Opportunity Area	Measures	Description		
Make Farming More Sustainable	**Grow Regenerative Agriculture Practices in Nevada**	Adoption of regenerative agricultural practices that build soil health, conserve water, and improve climate resilience. This includes technical and financial support for farmers and ranchers, educational outreach, and targeted incentives to adopt agricultural practices that increase sequestration such as cover cropping, no-till, efficient irrigation, crop diversification, and integrated pest management.		
		Cumulative GHG Emissions Reductions ($ktCO_2e$) 2026 - 2030		
		LC	**MF**	**CD**
		88	55	88
		Cumulative GHG Emissions Reductions ($ktCO_2e$) 2026 - 2050		
		LC	**MF**	**CD**
		1,043	652	1,043
	Improve Grazing Management and Rangeland Resilience	Regenerative grazing management practices that enhance soil carbon storage, conserve water, and restore ecosystem function across Nevada's rangelands. Prioritize partnerships with ranchers, Tribes, and conservation districts to expand sustainable grazing strategies that improve both soil health, hydrology, and long-term landscape resiliency.		
		Cumulative Emissions Reductions ($ktCO_2e$) 2026 - 2030		
		LC	**MF**	**CD**
		64	54	64

Opportunity Area	Measures	Description		
		Cumulative GHG Emissions Reductions ($ktCO_2e$) 2026 - 2050		
		LC	**MF**	**CD**
		728	624	728

6.4.7 Natural and Working Lands

The scenarios share a common protection and conservation measure that cumulatively increases sequestration by 69 $kTCO_2e$ over 25 years.

While each scenario follows a different timeline and emphasis, such as the CD scenario prioritizing tree canopy expansion in low-income communities, the overall targets for urban forestry and conservation are similar across scenarios. These efforts could result in planting over 1.7 million new trees between 2026 - 2050. By 2050, these trees could collectively sequester around 13 $kTCO_2e$ per year.

Table 6.9. Cumulative GHG Emissions Reductions in the Natural & Working Lands Sector by Measure

Opportunity Area	Measures	Description		
Grow Nature-Based Solutions	**Expand Urban and Community Tree Canopy Coverage Across Nevada**	A Nevada Urban and Community Forestry Program to increases tree canopy coverage and enhance urban green infrastructure. Encourage local governments to develop local canopy cover goals. Provide technical and financial assistance to cities, counties, and community-based organizations to expand native tree planting, prioritize low-income and heat-exposed neighborhoods. Promote tree planting through education, workforce development, and outreach campaigns that highlight the benefits of trees for cooling, carbon sequestration, and community well-being.		
		Cumulative GHG Emissions Reductions ($ktCO_2e$) 2026 - 2030		
		LC	**MF**	**CD**
		7	6	9
		Cumulative GHG Emissions Reductions ($ktCO_2e$) 2026 - 2050		
		LC	**MF**	**CD**

Opportunity Area	Measures	Description		
		195	162	184
	Protect and Restore Natural Lands Initiative	Launch and scale a comprehensive statewide carbon sequestration initiative focused on protecting and restoring Nevada's sagebrush and forested ecosystems, supporting nature-based climate solutions, and expanding community-led greening and restoration projects. The program will prioritize projects led by or benefiting Tribes and low-income communities, while enhancing ecological resilience and long-term carbon storage.		
		Cumulative GHG Emissions Reductions ($ktCO_2e$) 2026 - 2030		
		LC	**MF**	**CD**
		8	8	8
		Cumulative GHG Emissions Reductions ($ktCO_2e$) 2026 - 2050		
		LC	**MF**	**CD**
		69	69	69

6.5 Pollution Reduction Impacts

Criteria Air Pollutants (CAPs) are common air pollutants regulated by the U.S. EPA and NDEP under the National Ambient Air Quality Standards (NAAQS). These pollutants — particulate matter, carbon monoxide, lead, sulfur dioxide, nitrogen dioxide, and ground-level ozone — are prevalent and can have negative impacts on public health and the environment.

Hazardous Air Pollutants (HAPs) are a separate category of pollutants that are known or suspected to cause serious health effects such as cancer, reproductive harm, and damage to the nervous system. Examples include benzene, perchloroethylene, and methylene chloride. Unlike CAPs, HAPs are regulated through technology-based emissions standards due to their toxicity, even at low exposure levels.

While CAPs and HAPs are distinct regulatory categories, both contribute to air quality and health risks, and reducing emissions of each is critical to protecting human health and the environment.

In this analysis, five specific CAPs have been tracked over time, including fine particulate matter smaller than 2.5 micrometers (PM2.5), particulate matter smaller than 10 micrometers (PM10),

nitrogen oxides (NOx), sulphur dioxide (SO2) and carbon monoxide (CO). The cumulative reduction of these pollutants is shown in table 6.10. Two HAPs were also evaluated, including . volatile organic compounds (VOCs) and hydrocarbons (HC), which are unburned or partially burned molecules released into the atmosphere.

Due to data limitations for certain measures, estimates of CAPs reductions could not be made.

Table 6.10. Cumulative reductions in CAPs resulting from measures modelled in the CCAN (USTon), 2026-2050

Sector	Measure	Total CO Emissions Reductions			Total NOx Emissions Reductions			Total PM2.5 Emissions Reductions			Total PM10 Emissions Reductions			Total SO_2 Emissions Reductions		
		LC	MF	CD	LC	MF	CD	LC	MF	CD	LC	MF	CD	LC	MF	CD
Energy Systems	Implement a Clean, Reliable, and Resilient Grid for Nevada	2,863	900	1,814	10,937	3,440	3,447	2,705	851	871	2,840	893	907	5,680	1,787	1,825
	Expand Residential Solar Access and Affordability with Financing and Technical Support Programs	130	227	15	497	865	1,780	123	214	486	129	225	514	258	449	1,010
	Adopt Initiatives Supporting Community Solar and Renewable Co-ops	20	40	3	78	154	375	19	38	103	20	40	94	40	80	216
	Scale Up Solar Installation in Commercial Sector with Financing and Technical Support Programs	18	39	1	69	151	459	17	37	92	18	39	92	36	78	179
Buildings	Strengthen Building Energy Conservation Codes	5,028	5,306	3,887	4,957	5,272	4,941	535	550	571	550	565	588	437	453	463
	Adopt Net-Zero Ready Standards for All New Buildings	25,291	4,014	13,706	17,842	2,766	8,920	2,213	371	1,075	2,236	375	1,139	0	0	0
	Invest in Zero-Emission Affordable Housing Options			71			168			44			47			56

Sector	Measure	Total CO Emissions Reductions			Total NOx Emissions Reductions			Total PM2.5 Emissions Reductions			Total PM10 Emissions Reductions			Total SO_2 Emissions Reductions		
		LC	MF	CD	LC	MF	CD	LC	MF	CD	LC	MF	CD	LC	MF	CD
	Establish Building Performance Standards for Existing Large Buildings	2,408	2,408		2,544	2,544		156	156		160	160		127	127	
	Retrofit Nevada - Modernize Homes Initiative	14,738	10,199	6,854	10,093	6,990	4,647	2,125	1,470	983	2,165	1,498	1,000	1,039	720	469
	Retrofit Nevada - Modernize Businesses Initiative	8,734	6,315	9,636	11,083	8,006	10,437	488	350	483	515	369	499	847	606	742
	Incentivize and Require Heat Pumps for Heating and Cooling in Residential Buildings	9,114	18,269	14,209	5,416	10,943	8,792	1,028	2,063	1,657	1,038	2,083	1,670	0	0	0
	Incentivize and Require Heat Pumps for Heating and Cooling in Commercial Buildings	2,739	4,280	3,629	3,108	4,829	4,808	0	0	0	0	0	0	0	0	0
Transportation	Build Public Transit and Active Transportation Networks for Everyone	189,883	102,983	187,086	8,125	4,448	8,234	645	355	644	7,571	4,114	7,549	450	255	444
	Launch EV for NV, an initiative to increase personal use EVs	1,042,756	814,556	1,067,726	49,266	36,468	49,583	2,016	1,152	1,886	39,934	30,634	40,716	2,097	765	1,771

Sector	Measure	Total CO Emissions Reductions			Total NOx Emissions Reductions			Total PM2.5 Emissions Reductions			Total PM10 Emissions Reductions			Total SO_2 Emissions Reductions		
		LC	MF	CD	LC	MF	CD	LC	MF	CD	LC	MF	CD	LC	MF	CD
	Establish Lead the Charge, an Electrifying Public Fleets Assistance Program	1,255	1,065	934	2,024	1,716	1,866	38	36	19	238	202	231	13	10	3
	Deploy Community-Based Electric Carsharing Programs			8,335			554			37			261			24
	Incentivize and Require the Clean Commercial Fleet Transition	37,230	31,663	37,000	36,711	31,173	36,687	512	460	483	9,627	8,198	9,596	494	392	392
	Adopt Power Up Clean Worksites, an initiative to transition Off-Road Equipment to ZEVs	1,174,814	1,142,182	1,175,572	109,756	105,908	108,734	12,206	11,667	11,999	12,843	12,276	12,628	0	0	0
	Fuel Sustainable Skies Program	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Propel Marine Vessels to use Low- and Zero-Emission Fuels	2,692	2,684	19	17,174	17,142	306	408	400	3	421	412	3	0	0	0
Industry	Maximize Industrial Energy Efficiency	80,225	68,499	4,684	92,850	79,973	4,819	5,185	4,656	322	5,259	4,731	326	1,183	1,522	183
	Accelerate Deployment of Green Hydrogen for Industrial Decarbonization	76	101	22	90	120	117	0	1	0	0	1	0	1	1	0

Sector	Measure	Total CO Emissions Reductions			Total NOx Emissions Reductions			Total PM2.5 Emissions Reductions			Total PM10 Emissions Reductions			Total SO_2 Emissions Reductions		
		LC	MF	CD	LC	MF	CD	LC	MF	CD	LC	MF	CD	LC	MF	CD
	Electrify Industrial Processes and Integrate On-Site Renewables	2,956	2,187	3,438	3,568	2,408	3,954	241	102	157	247	102	166	153	-58	-99
	Support Industrial Carbon Capture, Utilization, and Storage (CCUS) Solutions	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-
Waste	Expand recycling, composting, and sustainable materials management programs	470	108	191	118	27	139	25	6	28	302	70	304	429	99	429
	Develop and Fund Landfill Gas Capture and Utilization Systems	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Agricul-ture	Grow Regenerative Agriculture Practices in Nevada	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Improve Grazing Management and Rangeland Resilience	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Natural and Working Lands	Expand Urban and Community Tree Canopy Coverage Across Nevada	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Protect and Restore Natural Lands Initiative	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	TOTAL	2,603,439	2,218,024	2,538,834	386,306	325,345	263,768	30,686	24,934	21,942	86,114	66,987	78,330	13,285	7,344	8,205

Table 6.11. CCAN modeled measures and HAP reduction impacts in USTon, 2021-2050

Sector	Measure	Total VOC Emissions Reductions			Total HC Emissions Reductions		
		LC	MF	CD	LC	MF	CD
Energy Systems	Implement a Clean, Reliable, and Resilient Grid for Nevada	1,097	345	363	0	0	0
	Expand Residential Solar Access and Affordability with Financing and Technical Support Programs	50	87	187	0	0	0
	Adopt Initiatives Supporting Community Solar and Renewable Co-ops	8	15	1	0	0	0
	Scale Up Solar Installation in Commercial Sector with Financing and Technical Support Programs	7	15	182	0	0	0
Buildings	Strengthen Building Energy Conservation Codes	654	685	918	0	0	0
	Adopt Net-Zero Ready Standards for All New Buildings	3,323	540	1,549	0	0	0
	Invest in Zero-Emission Affordable Housing Options			72			0
	Establish Building Performance Standards for Existing Large Buildings	314	314		0	0	
	Retrofit Nevada - Modernize Homes Initiative	2,324	1,608	1,077	0	0	0
	Retrofit Nevada - Modernize Businesses Initiative	805	580	780	0	0	1
	Incentivize and Require Heat Pumps for Heating and Cooling in Residential Buildings	1,358	2,724	2,170	0	0	0

Sector	Measure	Total VOC Emissions Reductions			Total HC Emissions Reductions		
		LC	MF	CD	LC	MF	CD
	Incentivize and Require Heat Pumps for Heating and Cooling in Commercial Buildings	162	250	91	0	0	0
Transportation	Build Public Transit and Active Transportation Networks for Everyone	19,592	10,633	19,397	12,327	6,687	12,259
	Launch EV for NV, an initiative to increase personal use EVs	109,405	85,216	111,955	68,105	53,209	69,585
	Establish Lead the Charge, an Electrifying Public Fleets Assistance Program	263	223	277	137	116	102
	Deploy Community-Based Electric Carsharing Programs			1,104			655
	Incentivize and Require the Clean Commercial Fleet Transition	6,649	5,653	6,372	3,712	3,158	3,716
	Adopt Power Up Clean Worksites, an initiative to transition Off-Road Equipment to ZEVs	91,825	89,209	91,817	0	0	0
	Fuel Sustainable Skies Program	0	0	0	0	0	0
	Propel Marine Vessels to use Low- and Zero-Emission Fuels	483	479	3	0	0	0
Industry	Maximize Industrial Energy Efficiency	1,289	1,194	697	0	0	0
	Accelerate Deployment of Green Hydrogen for Industrial Decarbonization	5	7	1	0	0	0
	Electrify Industrial Processes and Integrate On-Site Renewables	505	355	569	0	0	0
	Support Industrial Carbon Capture, Utilization, and Storage (CCUS) Solutions	0	0	0	0	0	0

Sector	Measure	Total VOC Emissions Reductions			Total HC Emissions Reductions		
		LC	MF	CD	LC	MF	CD
Waste	Expand recycling, composting, and sustainable materials management programs	84	19	125	0	0	0
	Develop and Fund Landfill Gas Capture and Utilization Systems	0	0	0	0	0	0
Agriculture	Grow Regenerative Agriculture Practices in Nevada	0	0	0	0	0	0
	Improve Grazing Management and Rangeland Resilience	0	0	0	0	0	0
Natural and Working Lands	Expand Urban and Community Tree Canopy Coverage Across Nevada	0	0	0	0	0	0
	Protect and Restore Natural Lands Initiative	0	0	0	0	0	0
	TOTAL	240,202	200,152	239,707	84,281	63,170	86,318

6.6 Economic Impacts

This section outlines the economic impacts of three CCAN scenarios. Key concepts that are used to analyze the financial impacts of the pathways are summarized below.[27]

Table 6.11. Definitions of Economic Terms and Concepts

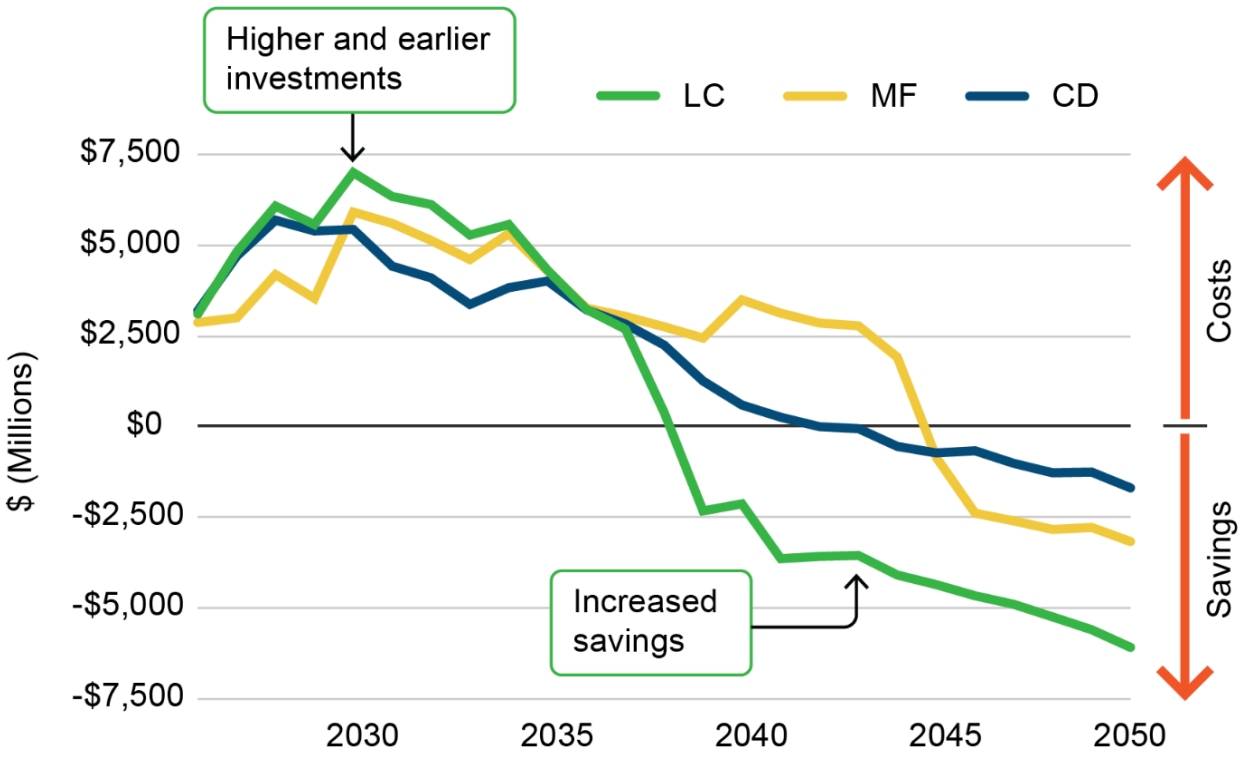
Concept	Explanation
Costs are relative to the BAP Scenario	The economic analysis tracks projected costs and savings associated with low-carbon measures above and beyond the costs in the BAP Scenario.
Discount rate	The discount rate is the rate at which future costs and benefits are reduced in comparison to current costs and benefits, reflecting the value society places on benefits or costs in the future relative to benefits or costs today. The social discount rate is applied in this analysis, which is 3%.[28] At a 3% discount rate, $1 of benefit in 50 years is worth $0.23 in today's terms. A higher discount rate means that future effects are much less significant than present effects, while a lower discount rate means that effects are closer to being equally significant.
Net Present Value	The net present value (NPV) of an investment is the difference between the present value of the capital investment and the present value of the future stream of savings and revenue generated by the investment. Four aggregate categories are used to track the financial performance of the low-carbon measures in this analysis: capital expenditures, energy savings (or costs), operations and maintenance savings, and revenue generation (associated with renewable energy production facilities and some transit actions). Administrative costs associated with implementing programs, as well as any energy system infrastructure upgrades that may be required, are excluded. In this analysis, **a negative NPV means an investment is expected to generate more value than it costs** and positive NPV means that a project generates more costs than benefits. The outcome with the best (most negative) NPV is the preferred option.
Abatement Cost	The abatement cost of an action is the estimated cost for that action to reduce one metric ton of GHG emissions, calculated by dividing the action's NPV by the total GHG emissions reductions (tCO2e) resulting from the action. For example, if a project has an NPV of $1,000 and generates 10 tCO2e of savings, its abatement cost is $100 per tCO2e reduced. The method used in this analysis for calculating the abatement cost is described in Figures 6.38 to 6.41.

[27] Detailed financial assumptions are described in the Data, Methods, and Assumptions Manual
[28] Office of Management and Budget (OMB) Circular No. A-94, 2023. Guidelines and Discount Rates for Benefit-Cost Analysis of Federal Programs. https://www.whitehouse.gov/wp-content/uploads/2023/11/CircularA-94.pdf#page=9.14

Concept	Explanation
Social Cost of Carbon	A benefit-cost analysis compares the economic benefits with the economic costs of proposed measures, which in this analysis is applied to scenarios. The social cost of carbon is used to quantify the dollar value of the scenario's impact on climate change due to changes in GHG emissions. The method for calculating the social cost of carbon is described in Figure 6.32.

While all three scenarios require upfront investment, they generate cost savings through reduced energy use, lower operation and maintenance expenses, and decreased fuel costs. The point at which annual savings exceed annual costs is illustrated in Figure 6.19, which is 2040, and 2046 for the LC and MF scenarios respectively. The earlier and higher investments in the LC scenario result in deeper savings over the later half of the study period.

Figure 6.22. Net Annual Cost or Savings in Each Scenario.



The annual investments and savings for each of the three scenarios are illustrated in Figures 6.23-6.25, as well as the net annual cost or saving (black line). Investments occur earlier in the LC scenario, mid-period in the MF scenario and are more distributed over the course of the CD scenario, peaking at $9 billion in the LC scenario (2034), $8billion in the MF scenario (2043) and $7.6 billion in the CD scenario (2050). Cost savings accumulate over time in each scenario to nearly $6.1 billion per year in 2050 (LC scenario), $3.2 billion (MF scenario) and $3.3 billion (CD scenario).

Figure 6.23. Annual Investment and Savings in the LC Scenario, 2026-2050.

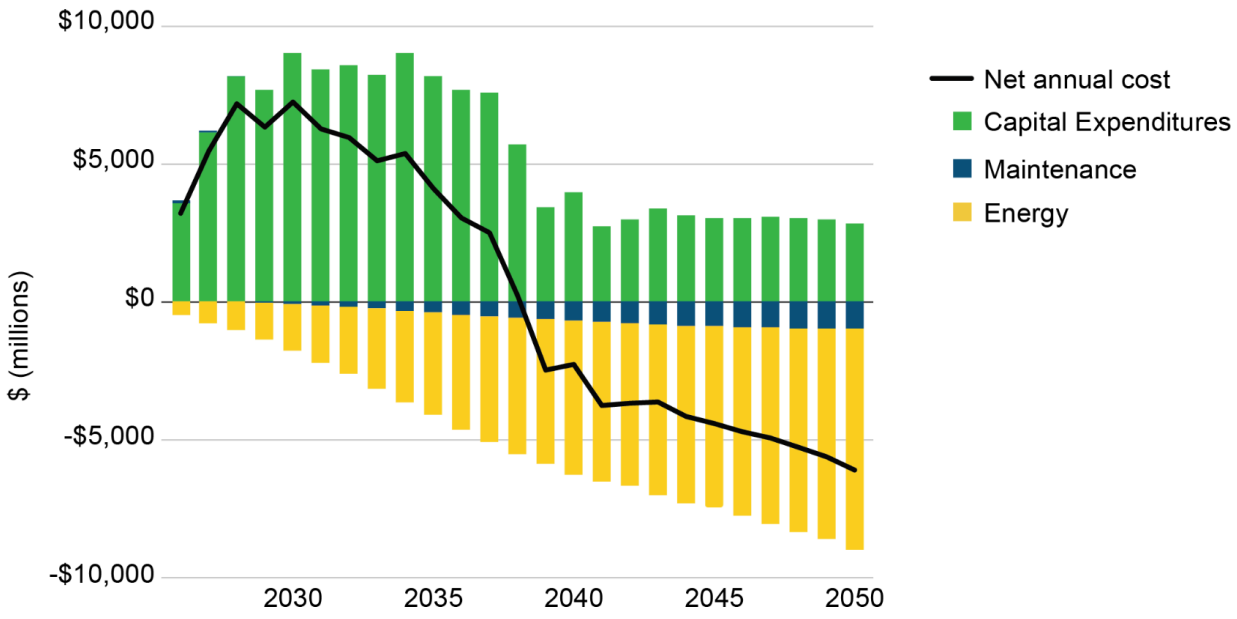


Figure 6.24. Annual Investment and Savings in the MF Scenario, 2026-2050.

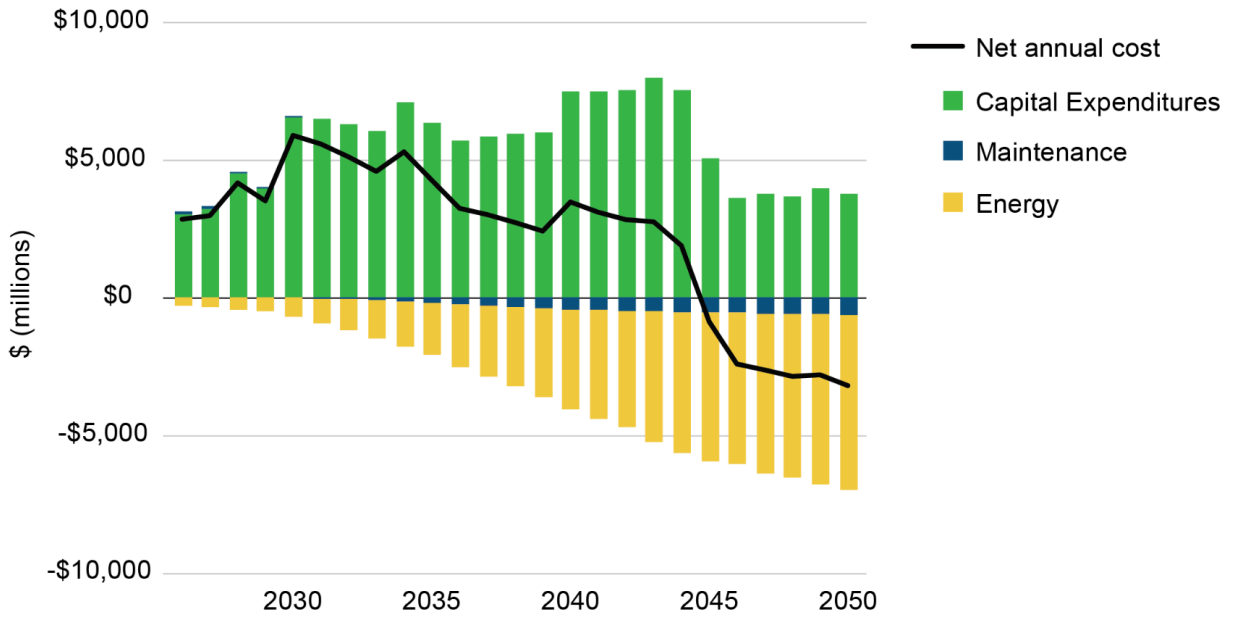
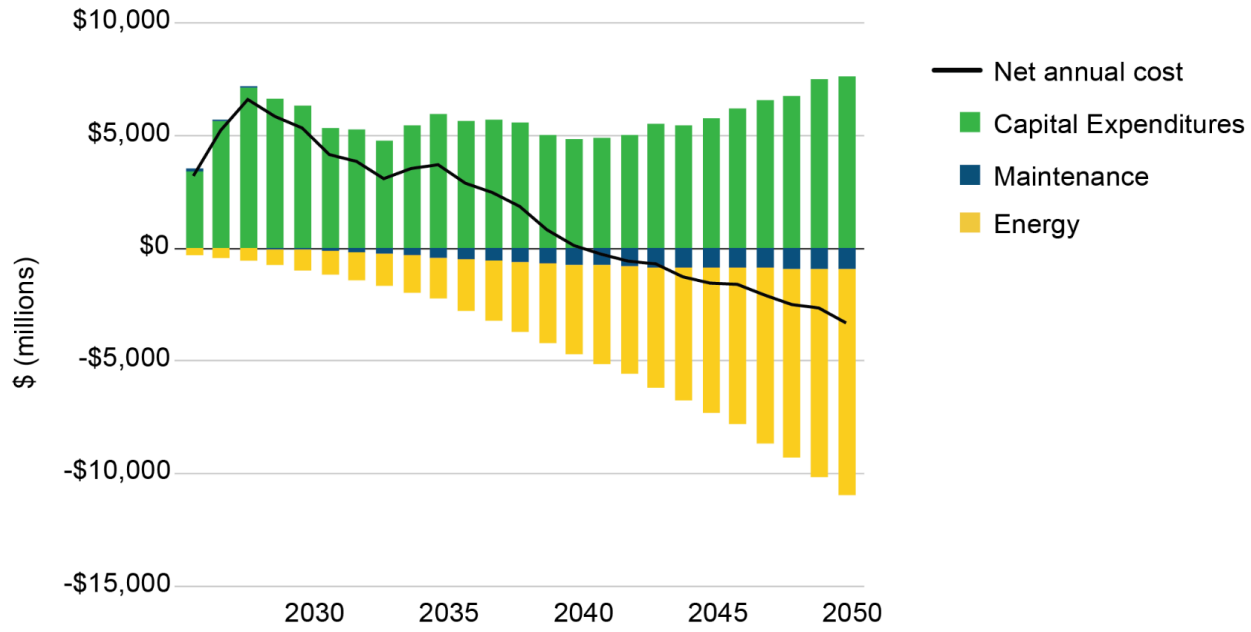


Figure 6.25. Annual Investment and Savings in the CD Scenario, 2026-2050.



The distribution of investments by measure is shown for each scenario in Figures 6.26-6.28. The charts indicate that a major factor in the temporal distribution of the investments is the timing of the building retrofits, which are early in the LC scenario and later in the CD scenario. The benefit of undertaking the retrofits early is that they then have a longer period of time over which to accumulate savings.

These charts present investments on a cash basis, meaning expenditures are shown in the year they are incurred. In practice, however, these projects would likely be financed similarly to other major infrastructure initiatives—through borrowing or other financial mechanisms that spread costs over time. This approach would smooth out the investment profile, reducing year-to-year variability and financial "lumpiness."

Figure 6.26. Annual Capital Investments in the LC Scenario by Measure, 2026-2050.

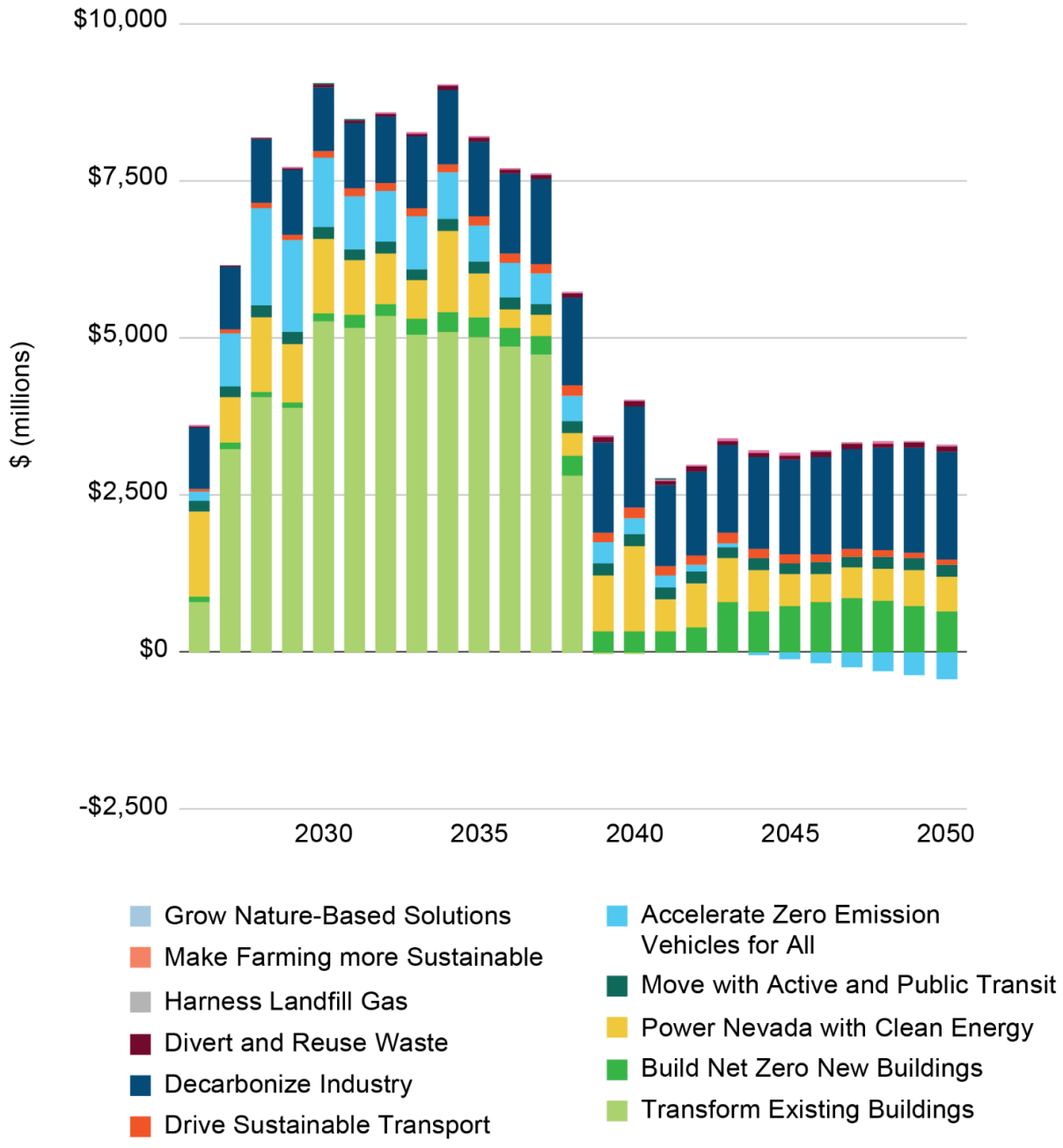


Figure 6.27. Annual Capital Investments in the MF Scenario by Measure, 2026-2050.

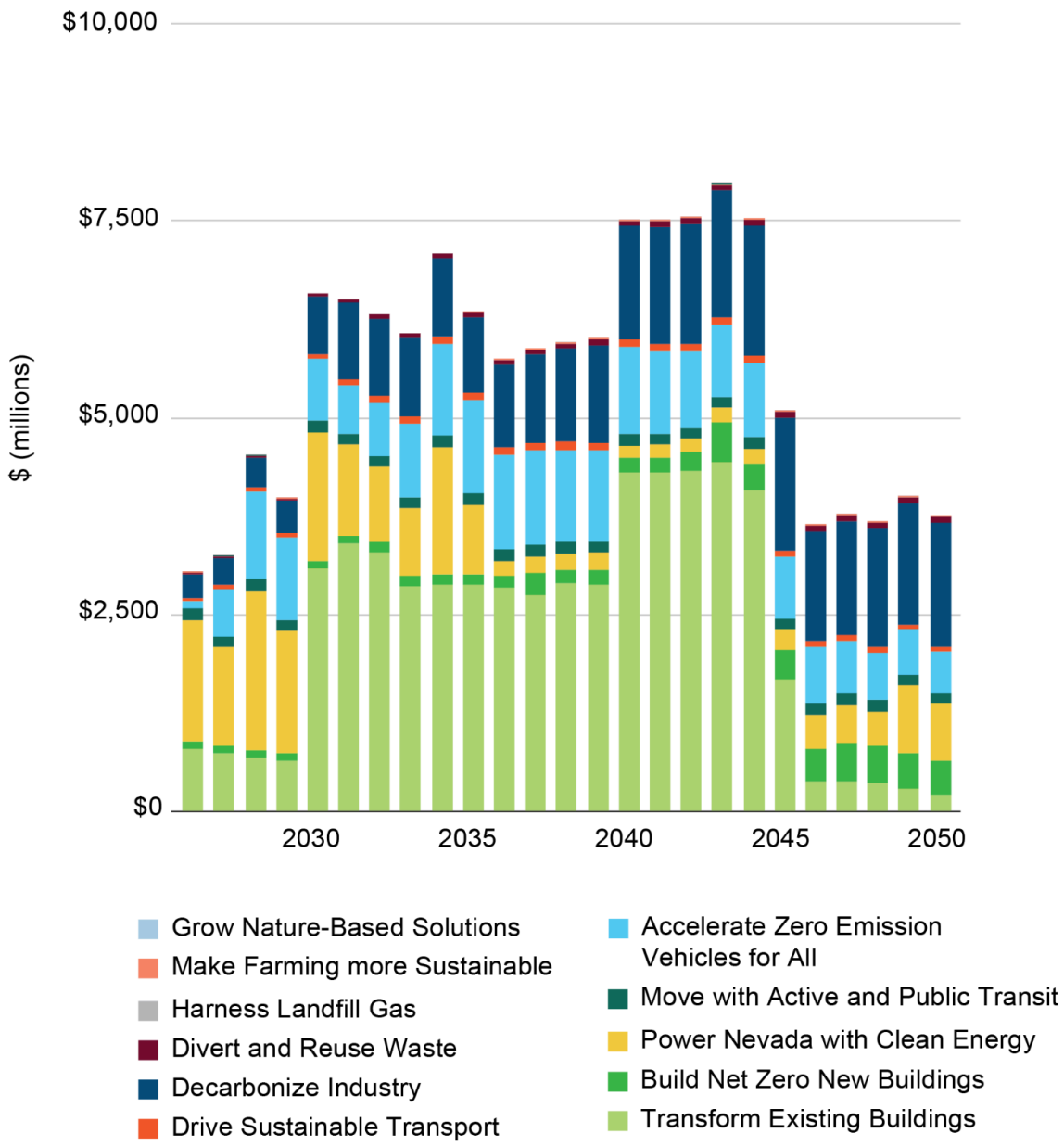
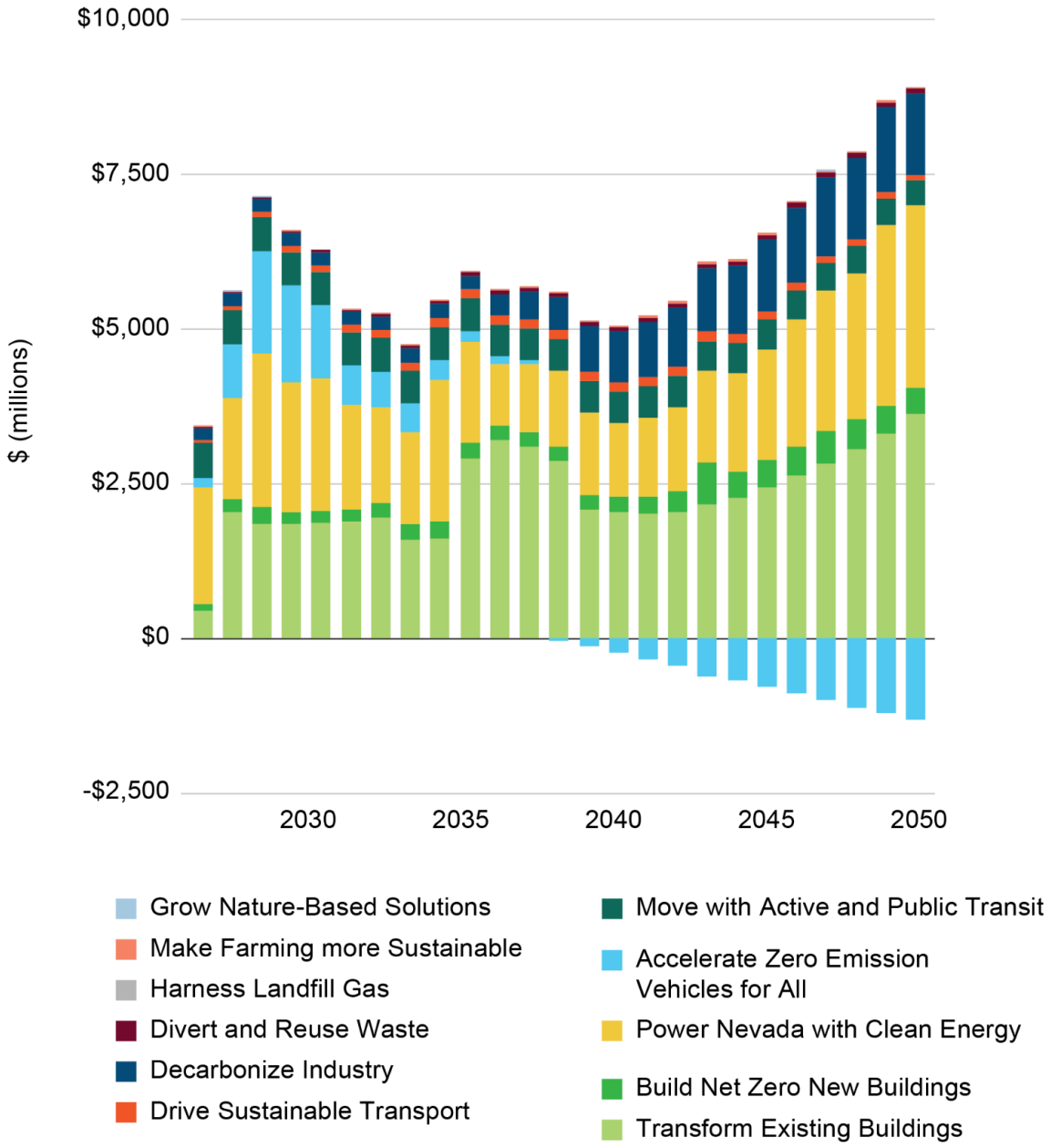


Figure 6.28. Annual Capital Investments in the CD Scenario by Measure, 2026-2050.



Figures 6.29 to 6.31 illustrate the cumulative present value of each of the scenarios, where the investments and savings are discounted back to 2026 at a 3% discounting rate.

The present value of the investments in the LC scenario is $100 billion, the highest of the three scenarios. These investments also generate the greatest savings - $8 billion from operations and maintenance costs and $60.8 billion in reduced energy costs. These savings are generated by efficiency improvements due to improved technologies and building retrofits and revenues from solar energy generation (represented as avoided energy costs). When these numbers are summed, the NPV of the LC scenario is $31 billion (Figure 6.17). In this convention, a positive NPV represents a cost, and a negative NPV represents a savings.

The present value of the investments in the MF scenario is lower at $98 billion, with savings of $62.8 billion for a NPV of $48 billion. The CD scenario falls in the middle in terms of investments, with a prevent value of $100 billion, savings of $51 billion and a NPV of $49 billion.

Figure 6.29. Present Value of the Cumulative Investment and Returns for the LC Scenario, 2026-2050, 3% Discount Rate.

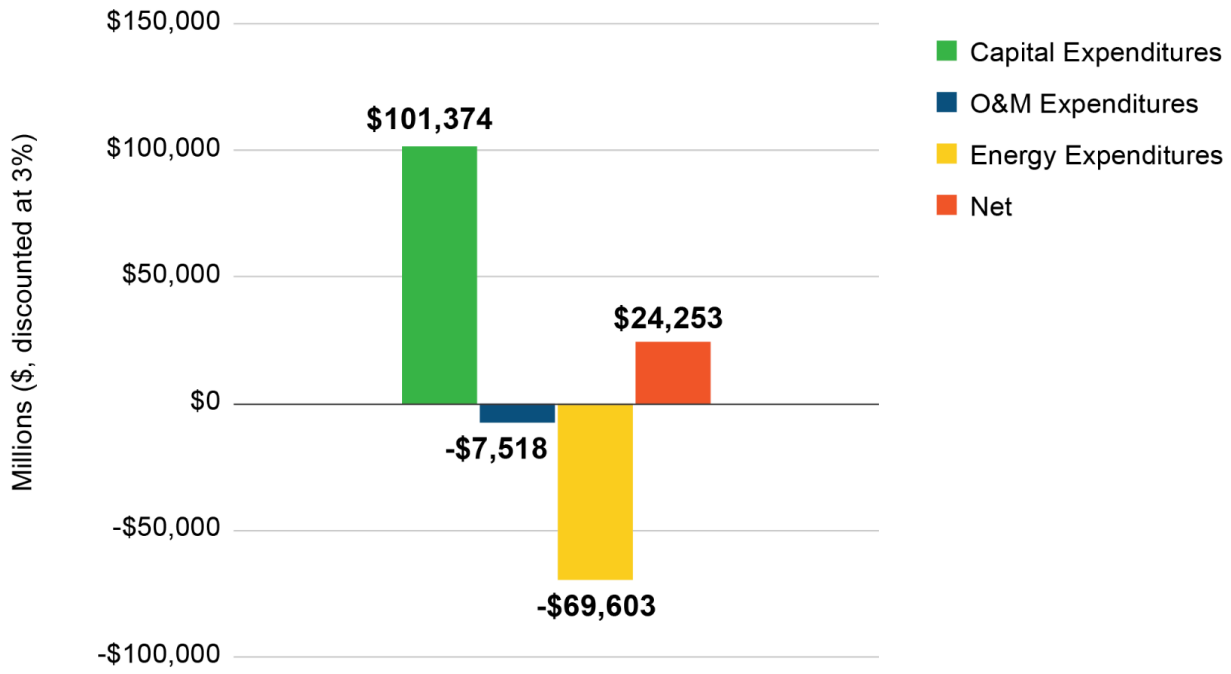


Figure 6.30. Present Value of the Cumulative Investment and Returns for the MF Scenario, 2026-2050, 3% Discount Rate.

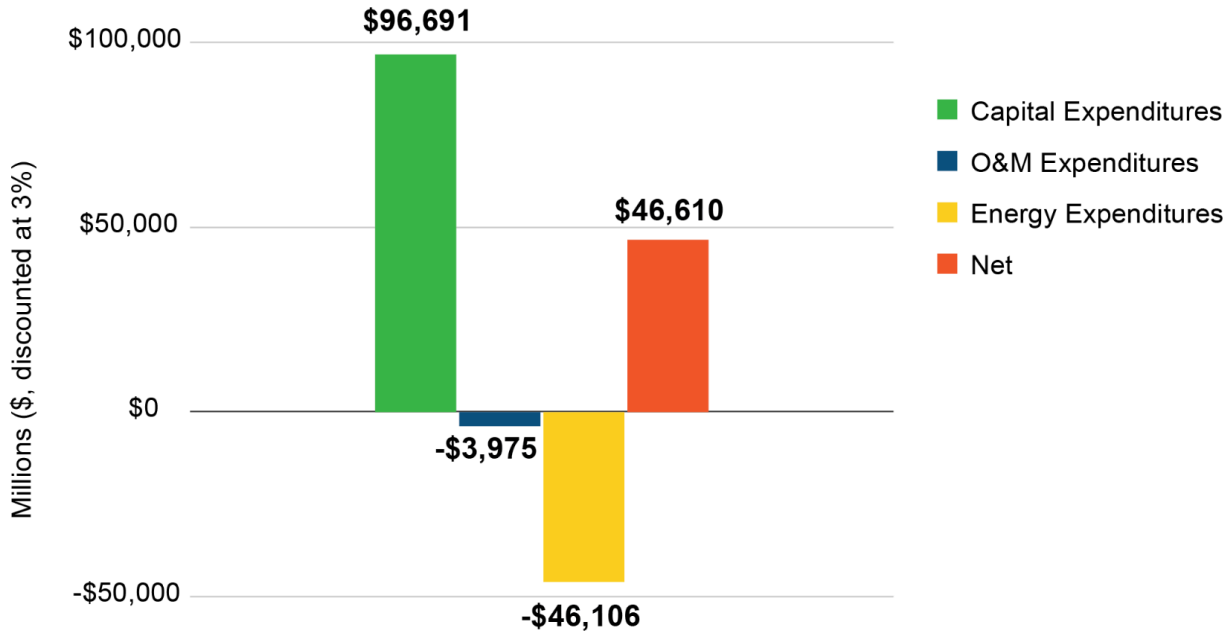
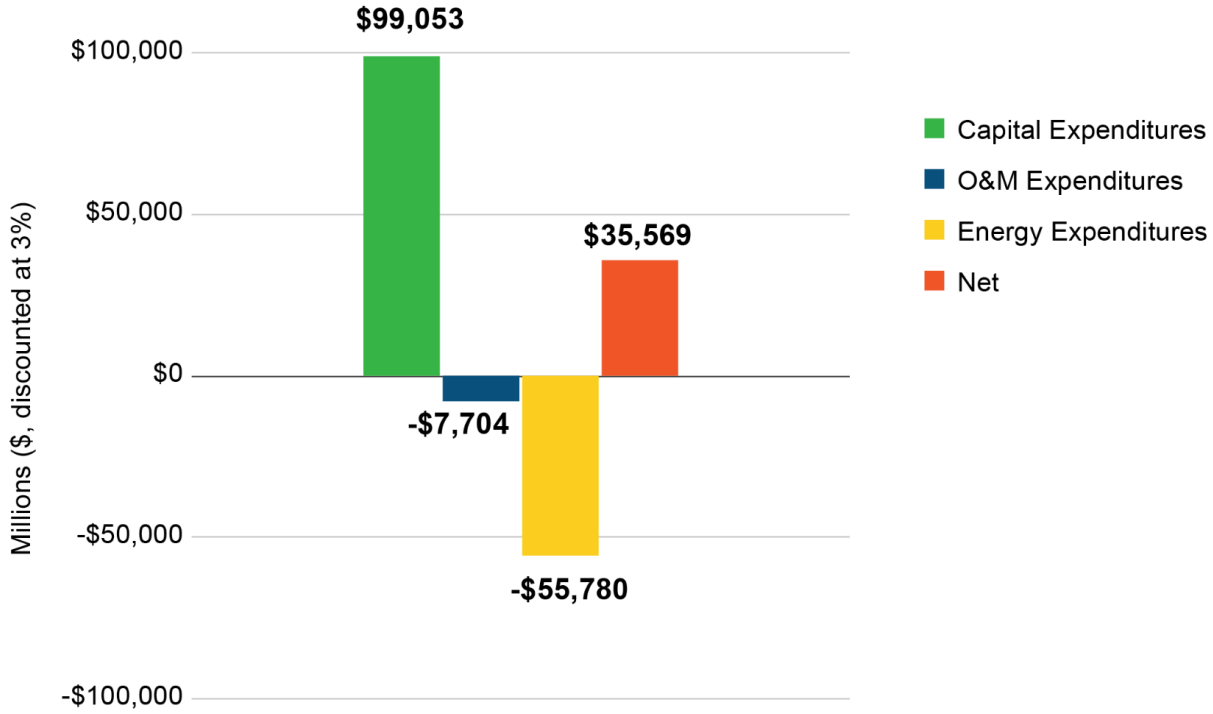


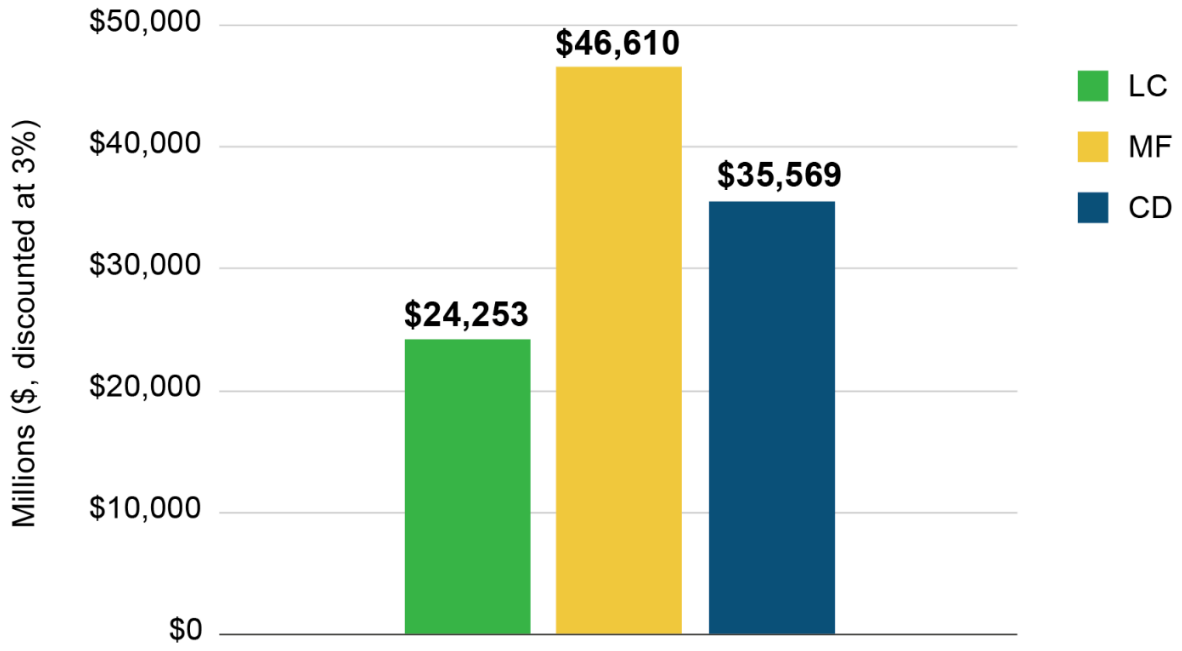
Figure 6.31. Present Value of the Cumulative Investment and Returns for the CD Scenario, 2026-2050, 3% Discount Rate.



The average annual investment required to implement is similar across the three scenarios; the LC scenario is $5.4 billion per year, the CD scenario is $5.8 billion per year and the MF scenario is $5.6 billion per year between 2026 and 2050 (undiscounted). As a benchmark, this level of investment is equivalent to 2.1-2.2% of Nevada's 2024 GDP.[29]

The LC scenario has the lowest NPV ($31 billion) and represents the scenario with the best economic outcomes for Nevada.

Figure 6.32. Net Present Value, All Scenarios, 2026-2050, 3% Discount Rate.



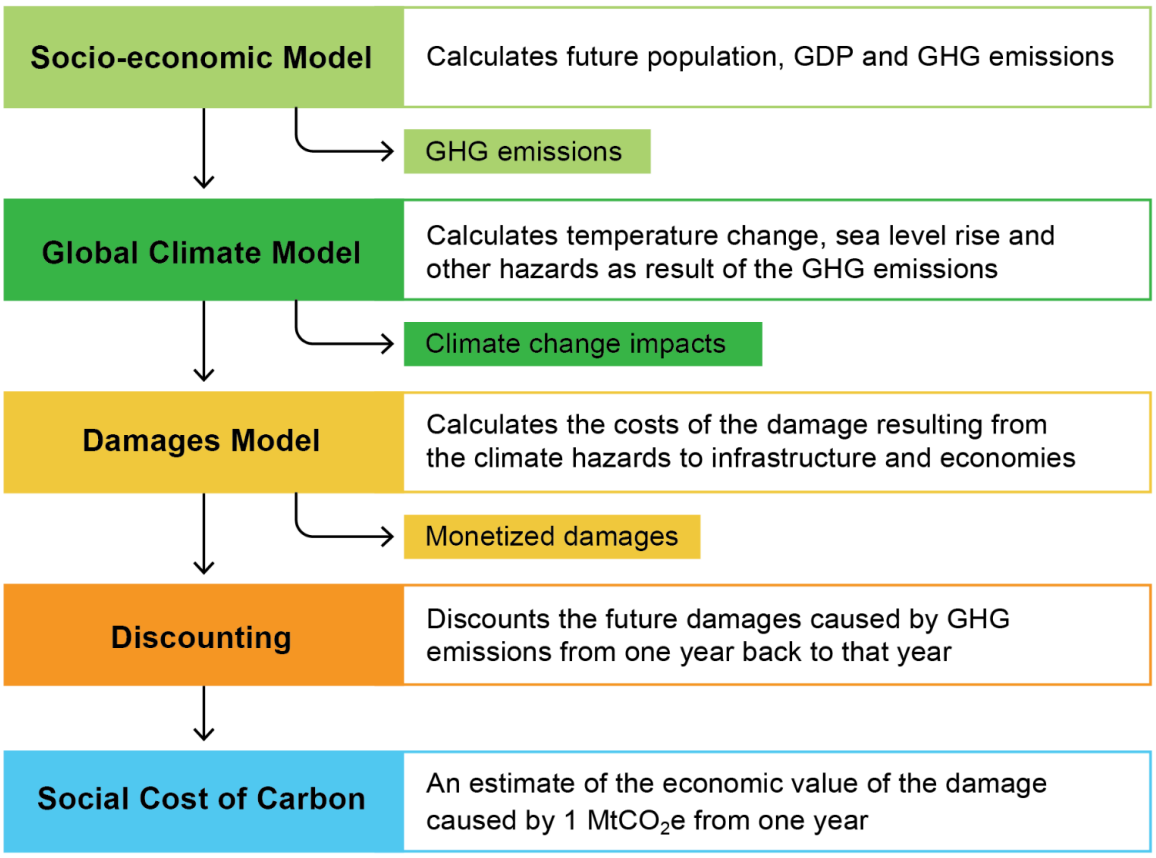
[29] In 2024, Nevada's GDP was $261 billion. Federal Reserve Bank of St. Louis, 2025, Gross Domestic Product: All Industry Total in Nevada. https://fred.stlouisfed.org/series/NVNGSP

6.6.1 Social Cost Carbon

Climate change imposes a growing burden on future generations, and its impacts are complex and difficult to predict. The social cost of carbon (SCC) is a tool used in regulatory processes to quantify the economic damages caused by emitting one additional metric ton of carbon dioxide. While estimates vary and carry uncertainty, the SCC helps incorporate future climate impacts, such as health effects, agricultural losses, property damage, and ecosystem decline, into present-day decision-making.

The SCC is calculated using three different models. A socio-economic model projects population growth and economic activity, resulting in projections of GHG emissions. The GHG emissions are an input into global climate models which project impacts on climate hazards such as temperature increase and sea level rise. A damage model calculates the economic impacts of the hazards on economic activity and infrastructure. The future flow of damages from each year of emissions are discounted back to a present value, which is divided by the GHG emissions for that year to calculate the social cost of carbon.

Figure 6.33. Process for Calculating the Social Cost of Carbon.

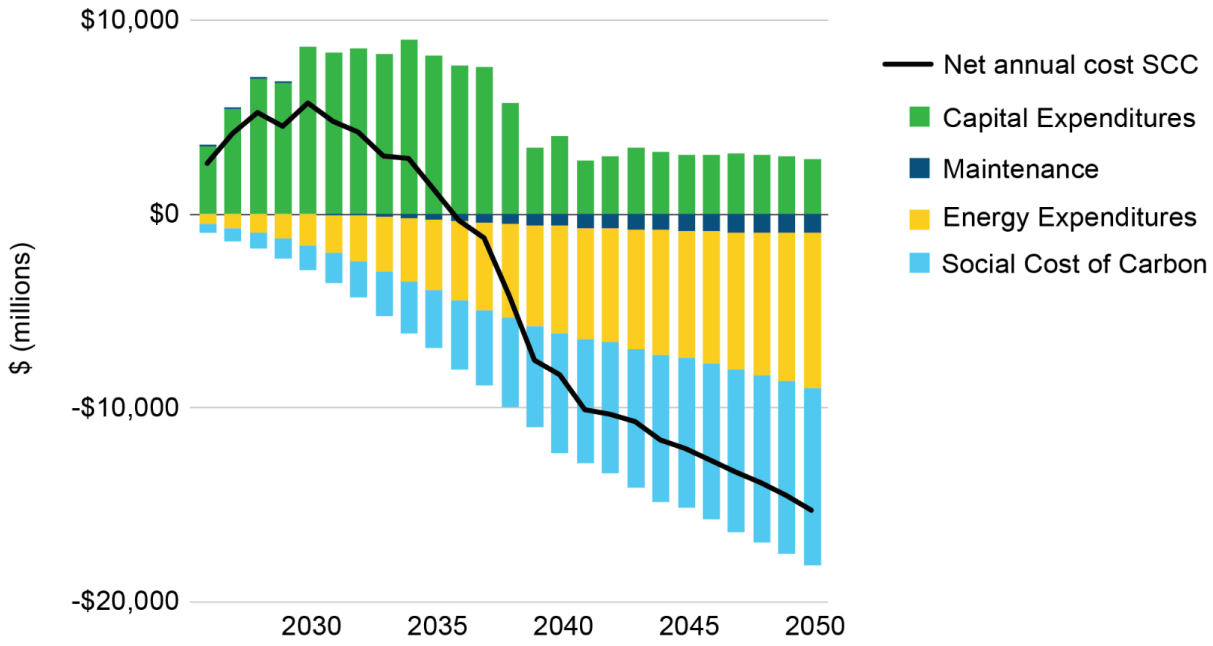


A key component of SCC modeling is the discount rate, which reduces the value of future benefits and costs compared to current benefits and costs. An implication of the discounting in climate policy is that future generations are valued less than current generations. For example, "A 2% pure-time discount rate means that the life of someone born 35 years from now (with given consumption patterns) is deemed half as valuable as that of someone born now (with the same patterns)."[30] The SCC with a 2% discount rate was used for this analysis.

Low carbon pathways tend to be capital intensive early on, generating financial savings over the long run (for example, see figure 6.34); as a result, discounting has the effect of emphasising the costs and deemphasising the benefits of pathways with these characteristics.

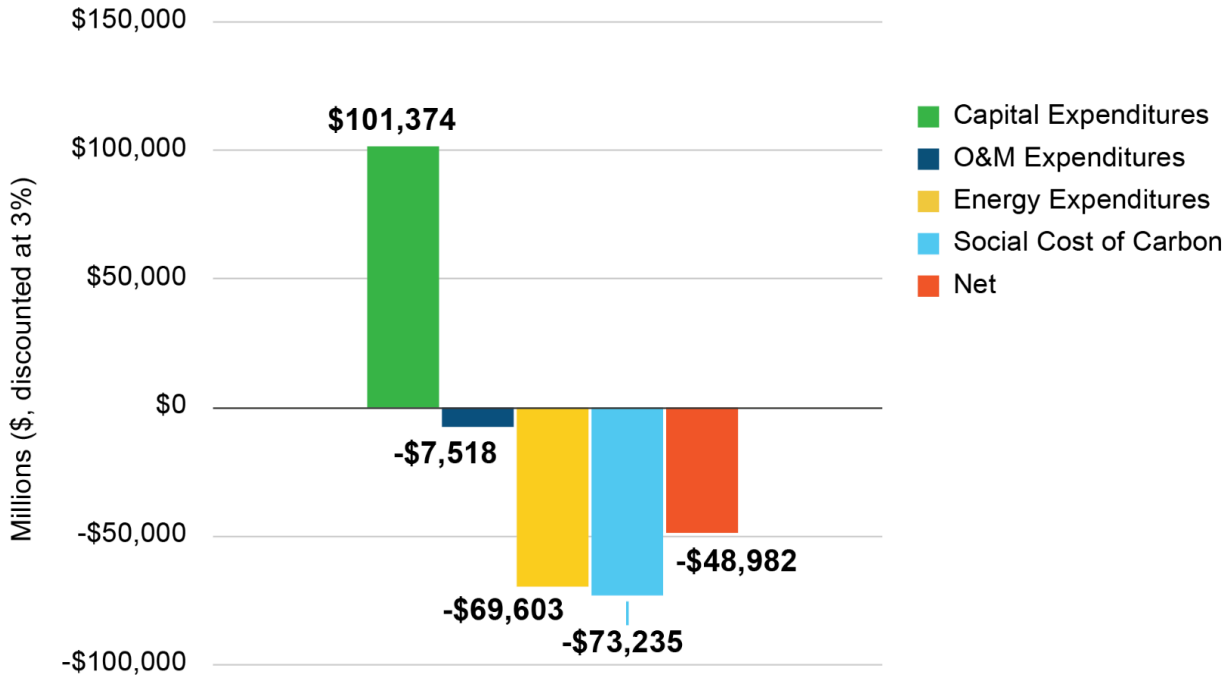
Emission reductions in the LC scenario result in a present value of $73 billion of avoided climate damages between 2026 and 2050. When these avoided costs are factored into the analysis, the NPV of the scenario becomes –$49 billion, meaning the scenario delivers a net benefit to society when climate damages are considered alongside direct financial flows. This reinforces the conclusion that early, ambitious measures yield not only long-term savings in energy and maintenance but also prevent significant environmental harm.

Figure 6.34. Annual Investment and Returns in the LC Scenario, including the SCC, 2026-2050.



[30] Stern, N. (2015). Economic development, climate and values: making policy. Proc. R. Soc. B, 282(1812), 20150820. https://doi.org/10.1098/rspb.2015.0820

Figure 6.35. Present Value of the Cumulative Investment and Returns in the LC Scenario, including the SCC, 3% discounting, 2026-2050.



The MF scenario, with more gradual emissions reductions, avoids approximately a present value of $56 billion in climate damages. The NPV with SCC included is –$10 billion, a quarter of the savings of the LC scenario. This reflects more costly technologies that result in less GHG emissions overall.

Figure 6.36. Annual Investment and Returns in the MF Scenario, including the SCC, 2026-2050.

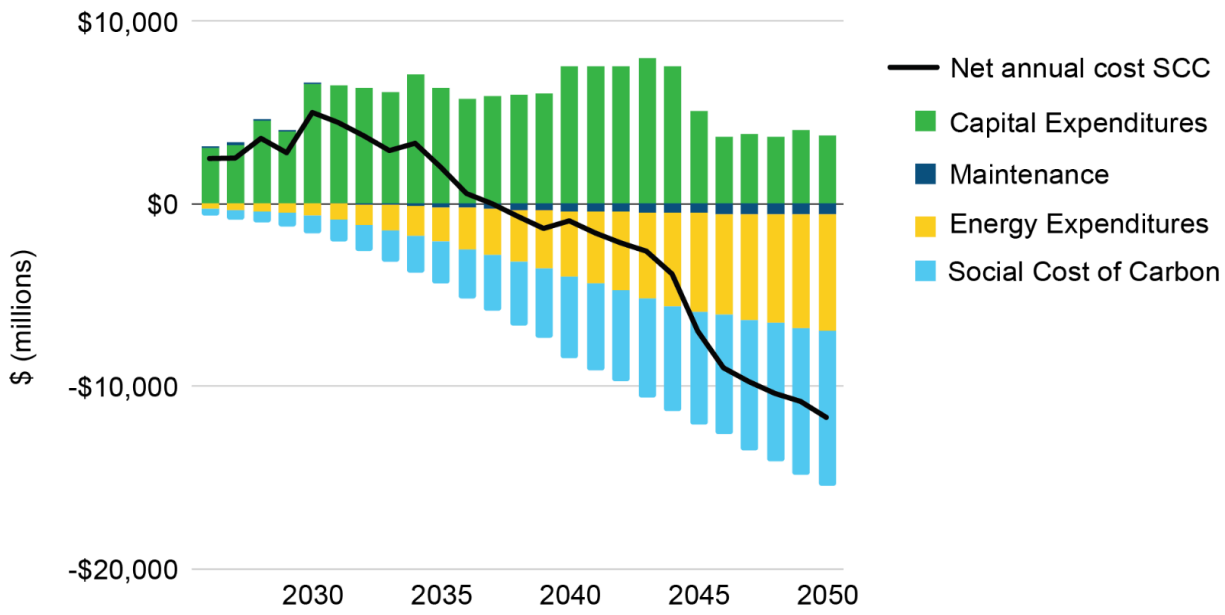
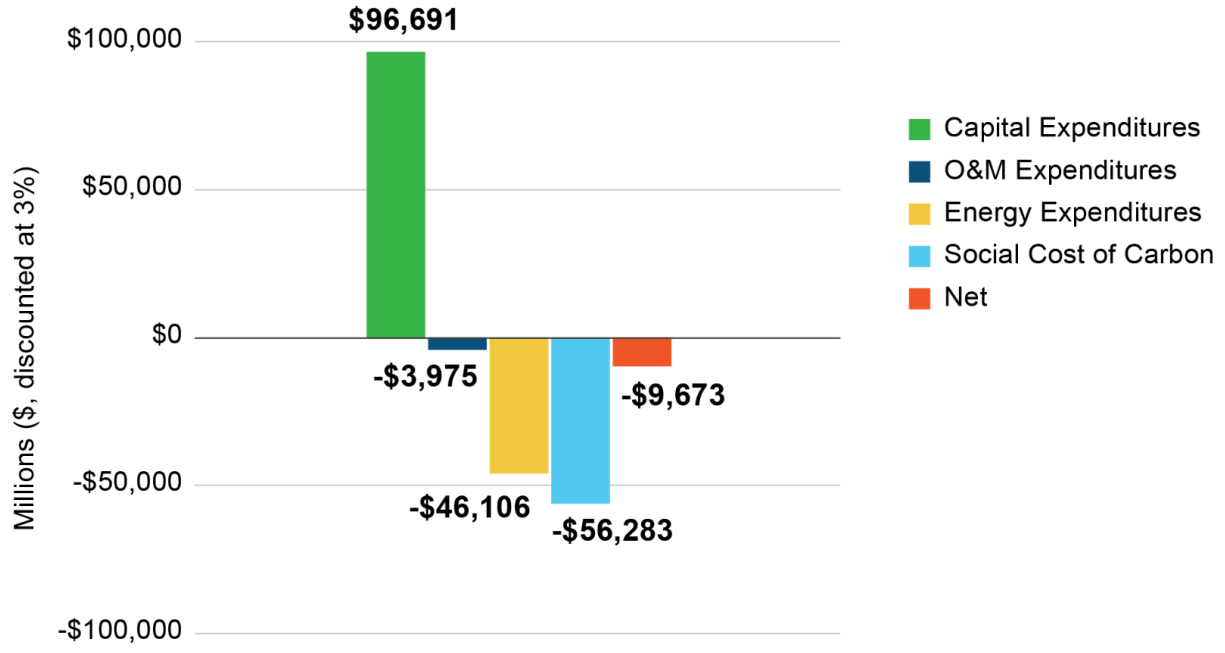


Figure 6.37. Present Value of the Cumulative Investment and Returns in the MF Scenario, including the SCC, 3% discounting, 2026-2050.



The CD scenario yields a present value of $64 billion in avoided climate damages, due to its broad and inclusive decarbonization strategy. With SCC included, the NPV is –$29 billion, indicating that the CD scenario results in significant economic benefits.

Figure 6.38. Annual Investment and Returns in the CD Scenario, including the SCC, 2026-2050.

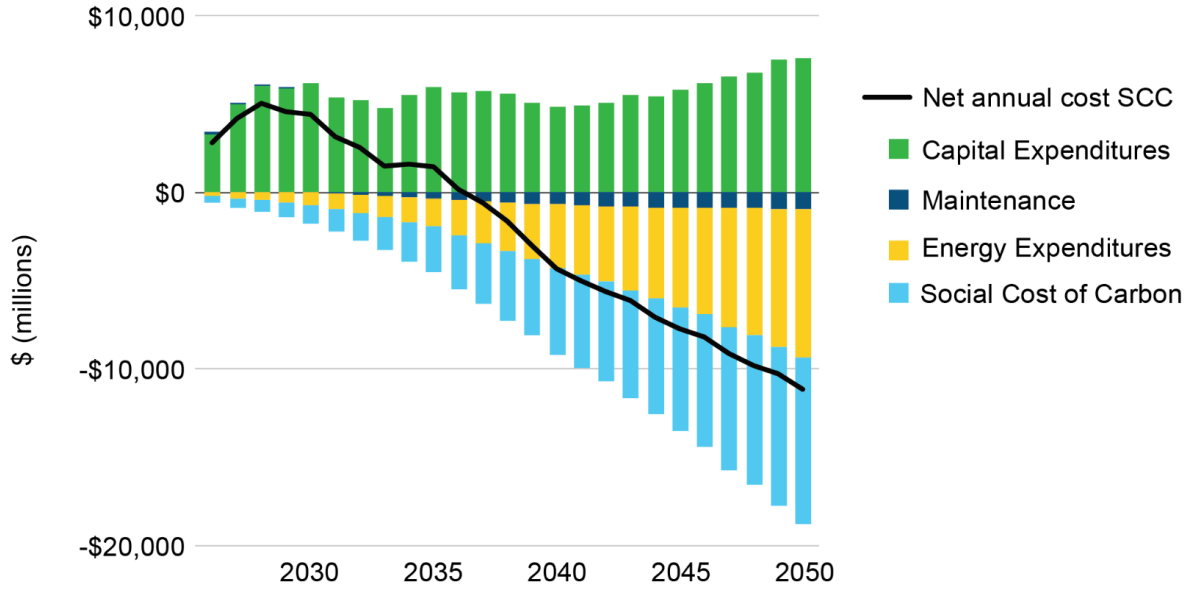
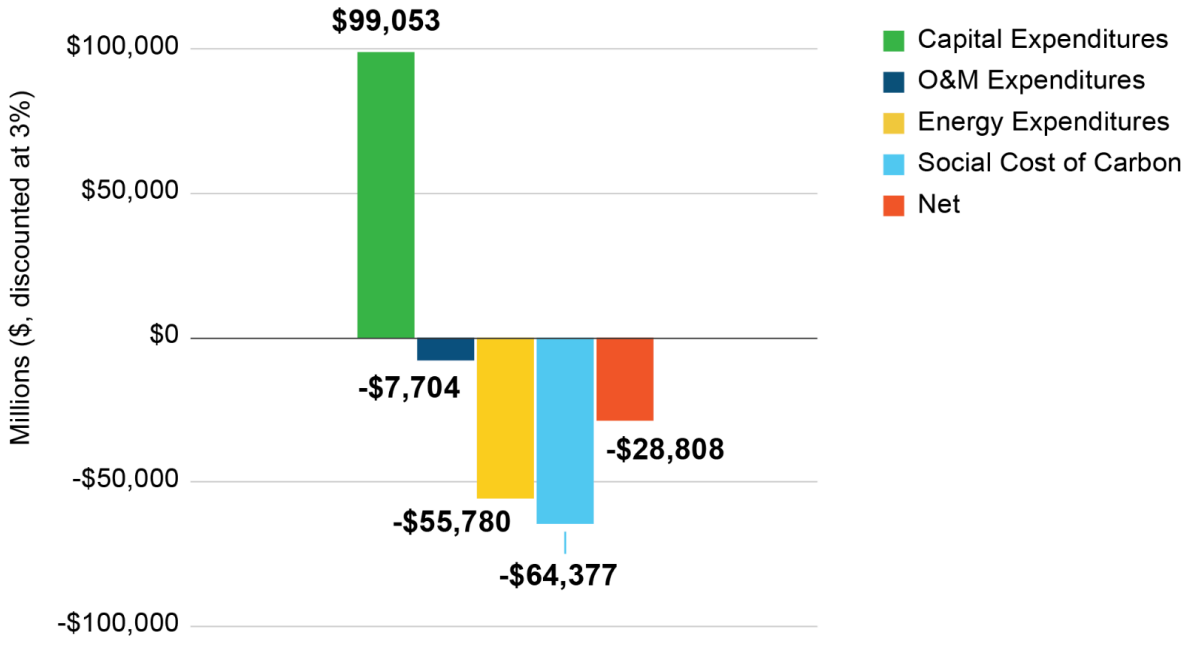
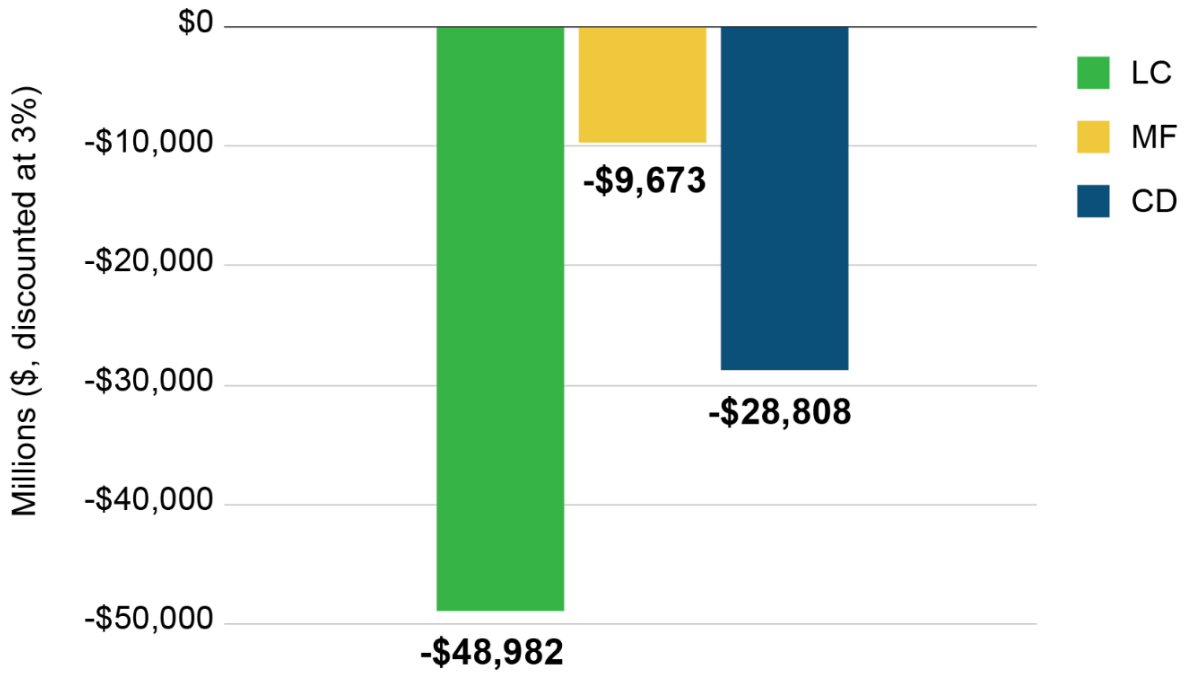


Figure 6.39. Present Value of the Cumulative Investment and Returns in the CD Scenario, including the SCC, 3% discounting, 2026-2050.



Accounting for the social cost of carbon demonstrates the economic case for climate measures in Nevada. When the costs of climate change are included, all three scenarios generate more benefits than costs, with NPVs of -$49 billion, -$10 billion and -$29 billion for the LC, MF and CD scenarios respectively (net present value, 2025-2050) (Figure 6.37). The results with the SCC reinforces the earlier finding that the LC scenario provides the greatest economic benefit to Nevada, indicating a greater benefit from accelerated electrification (as characterised by the LC scenario) over an emphasis on mixed fuels (as characterized by the MF scenario).

Figure 6.40. Net Present Value, All Scenarios, including the SCC, 2026-2050, 3% Discounting.



6.6.2 Abatement Costs

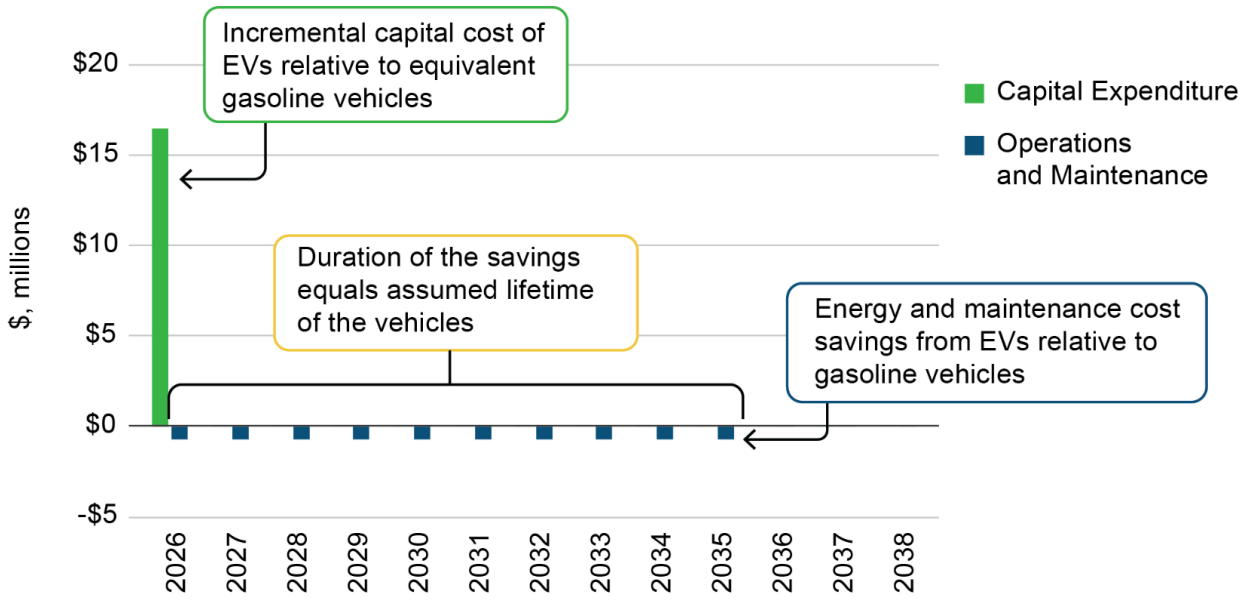
The abatement cost of an action is the estimated cost for that action to reduce one metric ton of GHG emissions, calculated by dividing the action's NPV by the total GHG emissions reductions (tCO2e) resulting from the action. For example, if a project has an NPV of $1,000 and generates 10 tCO2e of savings, its abatement cost is $100 per tCO2e reduced.

The abatement cost is calculated in the Scena model, as illustrated in the following example of EV adoption (Figures 6.41 to 6.44).

Each year EVs are added to the fleet mix according to an adoption curve specified in the scenario. In the initial years EVs have an incremental capital cost over gasoline or diesel vehicles.[31] In 2026, this shows up as an additional capital cost (green bar in Figure 6.41). EVs have a lower maintenance cost and also lower energy costs than the gasoline cars in the BAP scenario, which shows up as reduced energy and maintenance costs over the lifetime of the vehicles, which is assumed to be 10 years (yellow bars).

[31] For details on the cost assumptions, see the Financial Cost Catalogue in Appendix XX.

Figure 6.41. Investments and Savings Resulting from Increased Adoption of EVs in Year 1 of the LC Scenario.



Each year additional EVs are added to the fleet of vehicles on the road with additional capital costs and subsequent stream of savings for the lifetime of the vehicle added in that particular year, as illustrated in Figure 6.39.

Figure 6.42. Investments and Savings Resulting from Increased Adoption of EVs in Year 1-4 of the LC Scenario.

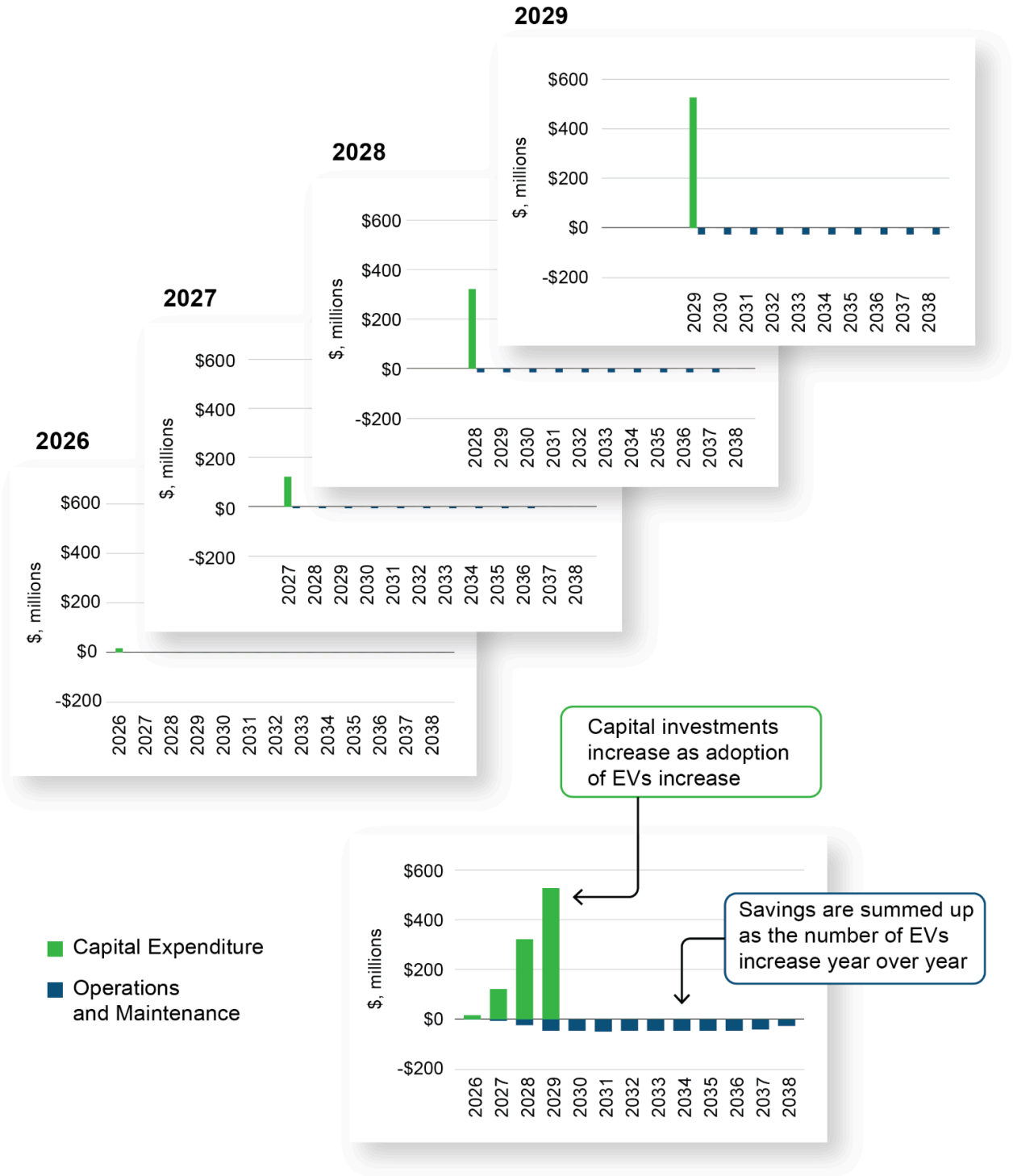
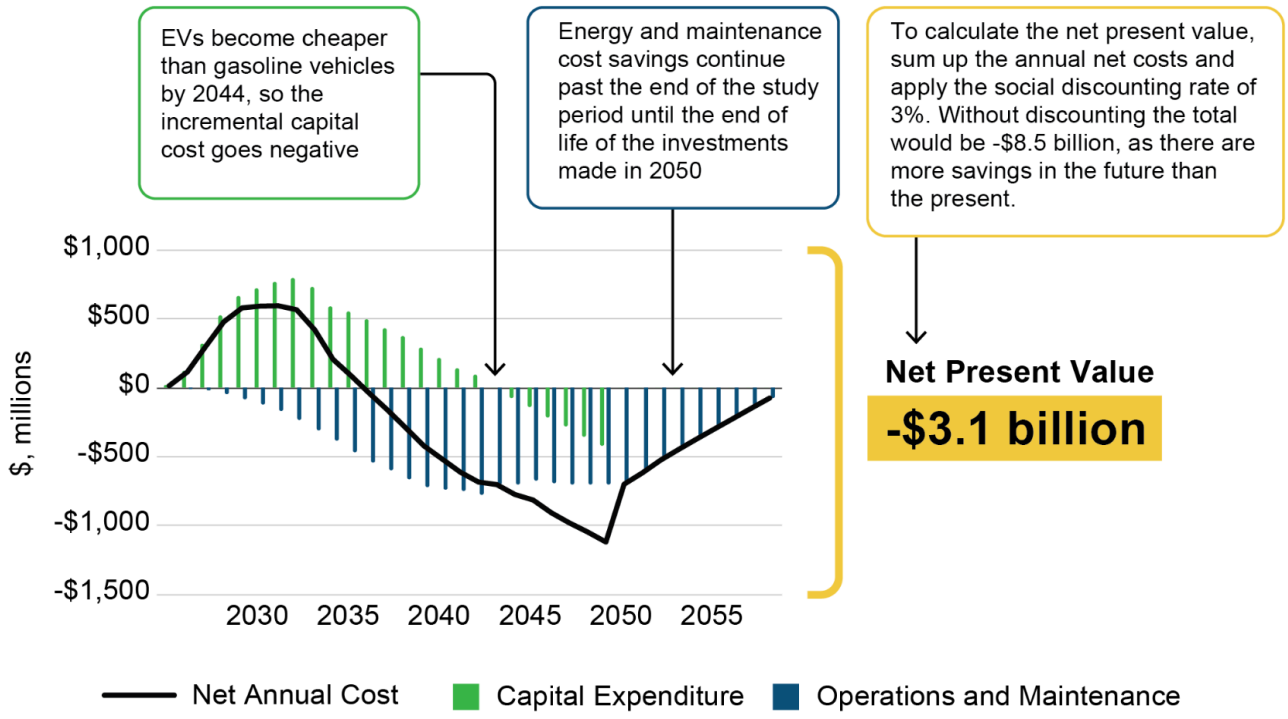


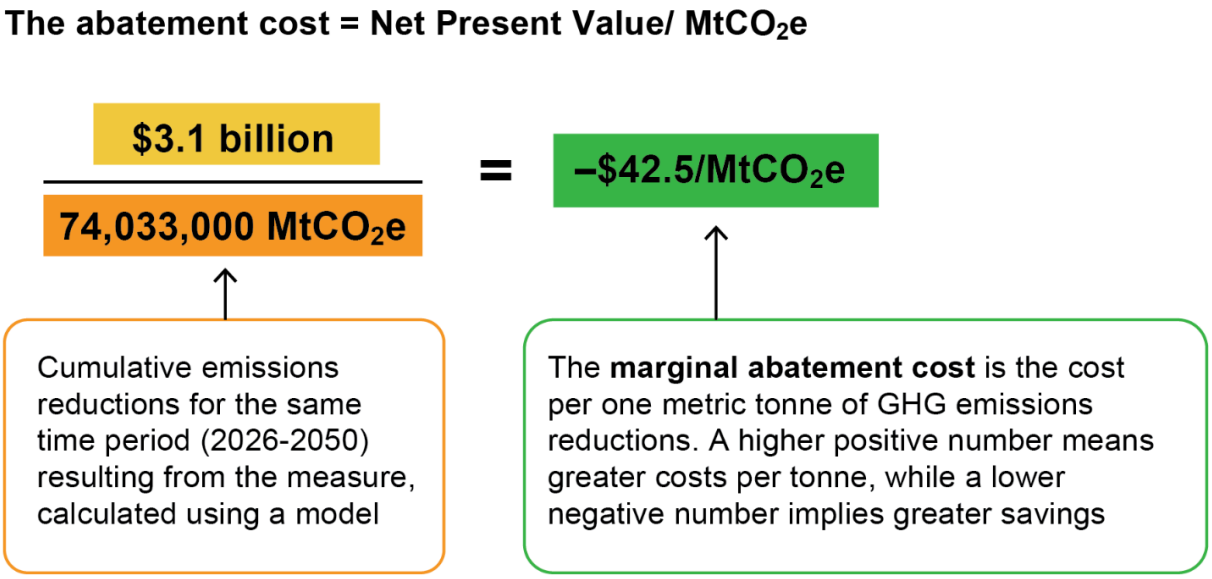
Figure 6.43 shows the incremental investments resulting from EV adoption over the study period (2026 to 2050). The capital cost assumption indicates that EV will become cheaper than gasoline vehicles in 2044 so the incremental cost becomes negative. Savings extend beyond 2050 as they represent benefits from the EVs purchased in the last decade of the study period. The annual net cost or savings is indicated in the black line on the chart. The NPV is calculated by summing up the investments and savings over the period and discounting back to 2025 dollars with a 3% discounting rate.

Figure 6.43. Investments and Savings Resulting from Increased Adoption of EVs over the Study Period (2026-2050) of the LC Scenario.



The final step in calculating the abatement cost is to divide the NPV, in this case -$3.1 billion by the GHG reduction from this measure over the same time period as calculated in the model, which is 74 MMtCO2e, resulting in an abatement cost of -$42.5/MtCO2e. A negative abatement cost that for every tonne of GHG emissions reduced from this measure, $42.50 is saved.

Figure 6.44. Calculation of the Abatement Cost.



The abatement costs of the measures in each of the three scenarios are illustrated in Figures 6.45 to 6.47. Variation in the abatement cost is a function of timing of the implementation of the measure, the extent to which it is implemented. Abatement costs are specific to a scenario, because the GHG emissions reduction for each measure varies by scenario, resulting in greater or lower costs or savings per tonne of emissions reduced. As a result abatement costs for similar measures cannot be compared across scenarios.

The primary purpose of the abatement costs is to provide insight for the development of implementation mechanisms. Measures with positive abatement costs require incentives or other interventions to ensure they are cost effective. Measures with negative abatement costs are cost effective; they save money for every tonne of emissions that is reduced. Regulations or other policies can be used to support implementation to realise the financial and GHG benefits associated with these measures.

Figure 6.45. Abatement Cost of the Measures in the LC Scenario, 2026-2050, 3% discounting rate.

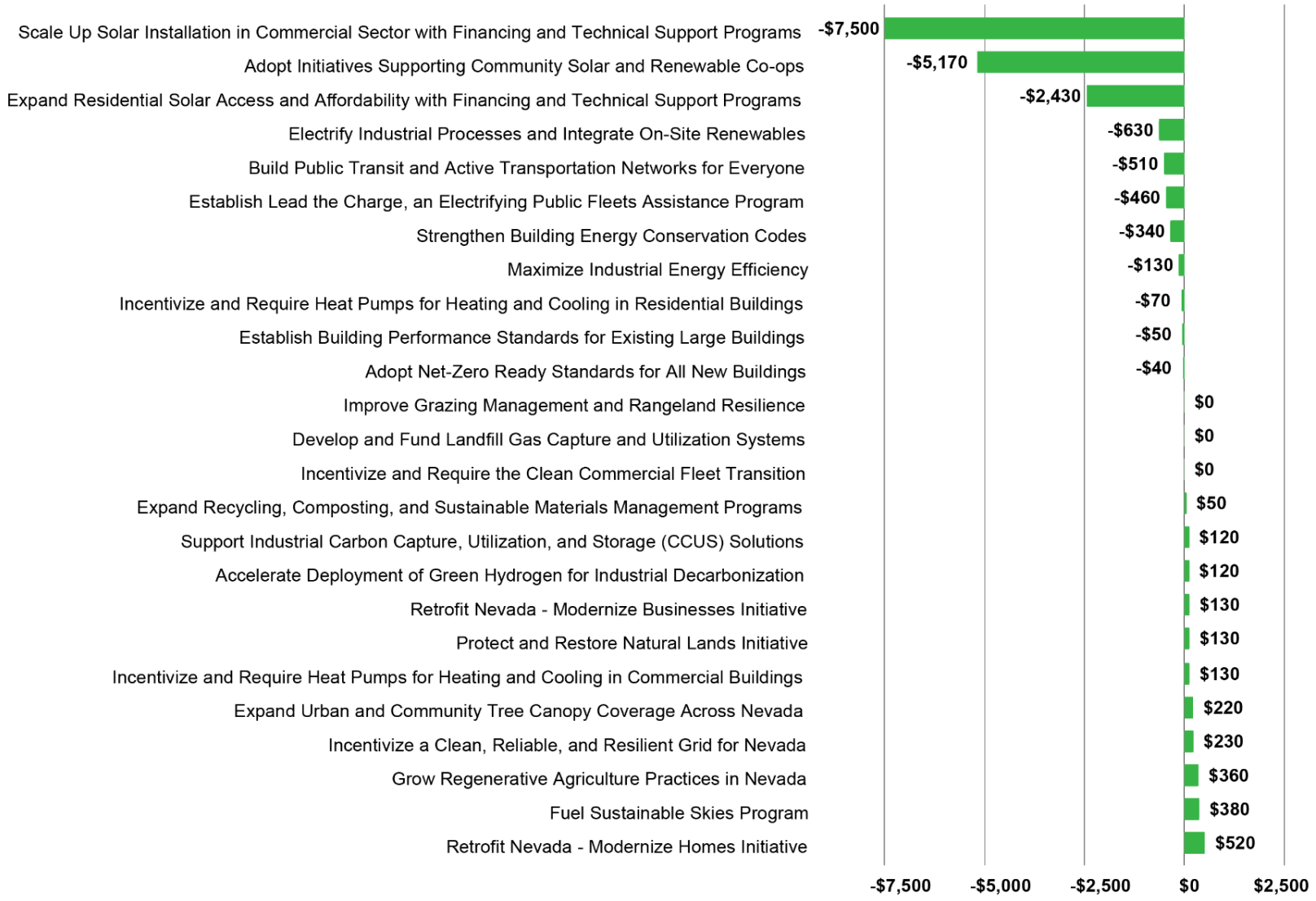


Figure 6.46. Abatement Cost of the Measures in the MF Scenario, 2026-2050, 3% discounting rate.

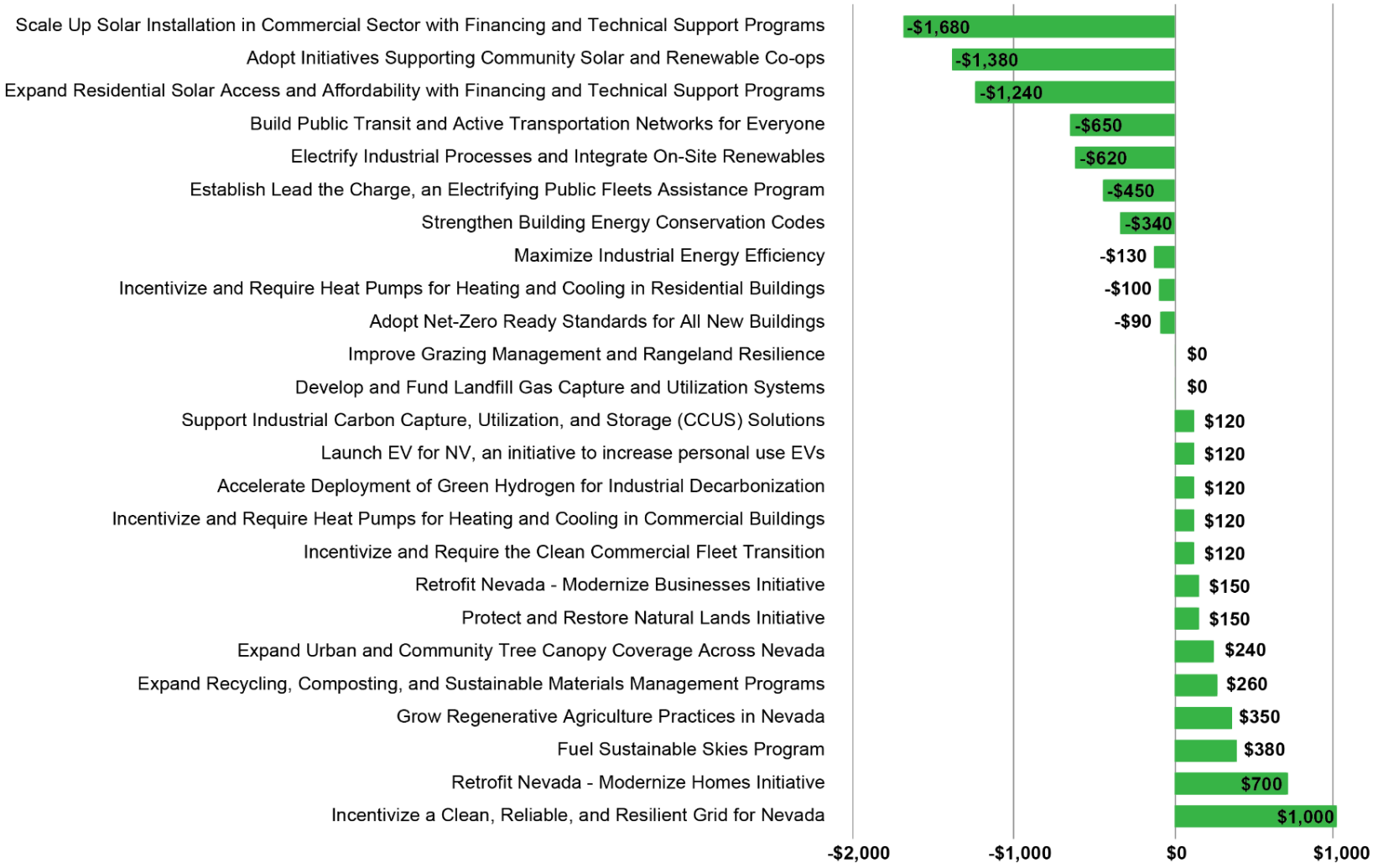
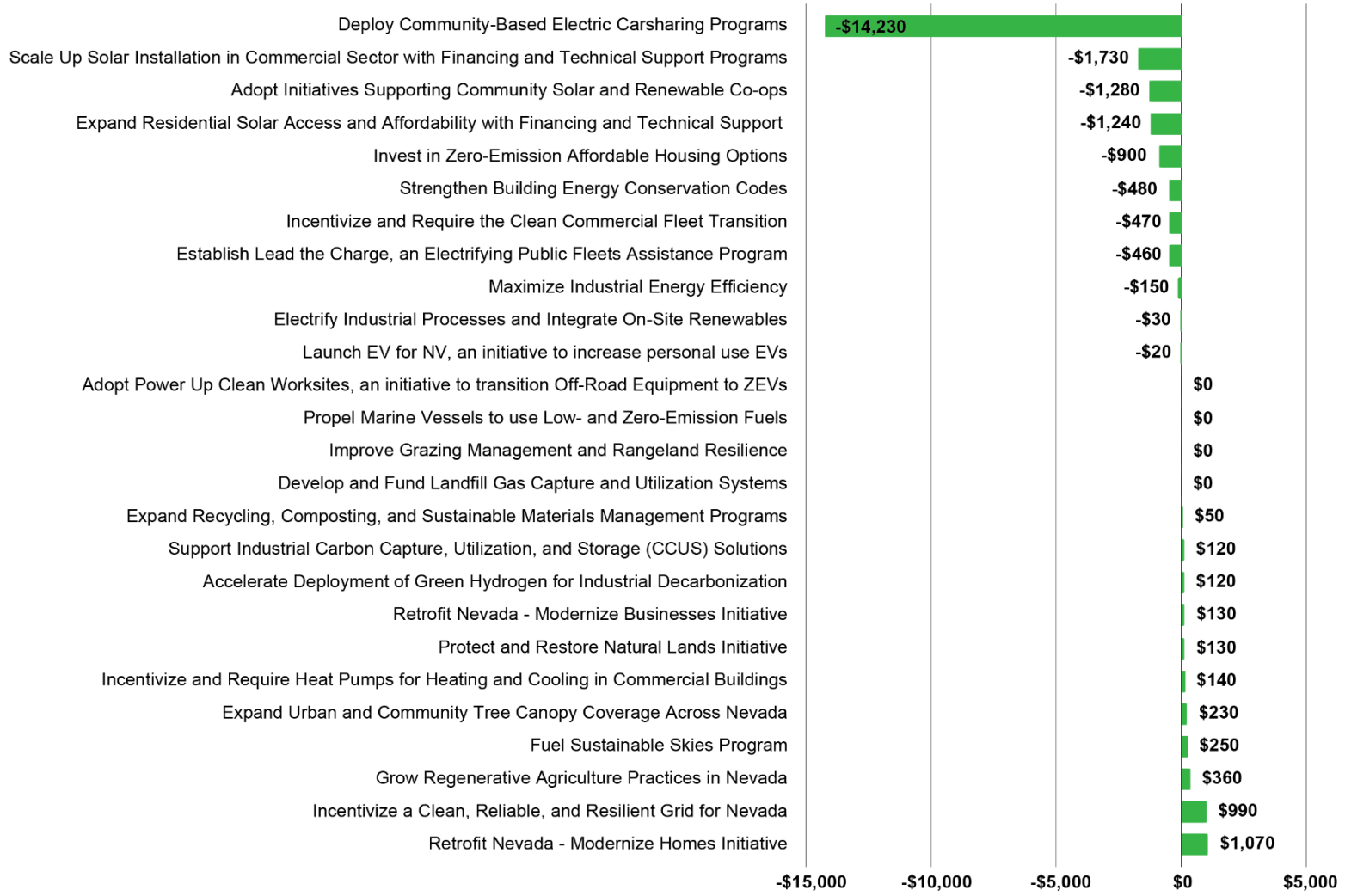


Figure 6.47. Abatement Cost of the Measures in the CD Scenario, 2026-2050, 3% discounting rate.



7 | Pathways to Implementing CCAN Measures

This chapter outlines how the State of Nevada could move from vision to action, identifying options for measures that could achieve the State's GHG targets based on the findings from the technical and engagement processes. **It is important to note that this is not a list of recommendations.**

To implement any of the measures identified in the CCAN, clear authority, financial resources and practical steps would be required. This section provides **examples on how the measures could be implemented,** detailing potential key agencies, their existing authorities, and any additional powers that may be needed. For each measure, the section identifies key implementation steps, example timelines, estimated costs, potential funding sources, and metrics for tracking progress.

The implementation strategies are aligned with the LC Scenario, showing what an ambitious emissions reduction pathway could look like. Note that the timeline of the measures aligns with the LC scenario and adjustments may have implications for the GHG reductions or costs and savings associated with each measure; assessing the impacts of changes would require additional analysis.

The measures are not ranked by priority or ease of implementation, they are presented as options to support informed decision-making. This chapter is not exhaustive and each measure will require further evaluation to understand whether more planning, legal review, economic analysis, or new policies and laws are needed before it could be put into place. A fuller analysis of federal, state and local relevant regulations, policies, and programs, governance structures, implementing entities, implementation mechanisms, and funding opportunities is provided in Appendix E.

How to read this section

Each measure in this chapter is structured to help decision-makers, stakeholders, and the public understand how specific actions could support Nevada's climate goals. These entries do not represent formal recommendations but instead explore possible approaches to emissions reduction. Each measure includes the following components:

- **Measure Title and Description:** A brief explanation of the action, outlining what the measure would do, how it would work, and its intended climate or co-benefit outcomes.

- **Authority to Implement:** An overview of which agencies or entities currently have the legal authority to support or carry out the measure. It also notes where new legislation or regulatory changes may be required.
- **Key Entities and Roles:** A summary of the organizations or institutions that could lead or support implementation, along with a description of their likely contributions based on their mandate or capabilities.
- **Implementation Mechanisms:** Examples of specific programs, policies, or regulatory tools that could be developed or expanded to put the measure into practice.
- **Potential Implementation Timeline and Milestones:** Illustrative milestones and dates to show how the measure could roll out over time, including key decision points, enabling actions, and deployment phases. These are not prescriptive timelines but planning references that align with the LC scenario and the modelled GHG benefits and financial impacts. The listed entities are not assignments or expectations, and inclusion does not imply that these actors are responsible for taking a specific action.
- **Costs and Savings Estimates:** An overview of potential costs and benefits, including the abatement cost and return on investment. A positive abatement cost indicates that the measure costs money, while a negative abatement cost indicates that the measure saves money. A negative ROI indicates that the measure does not generate financial returns. A 2% ROI is similar to a low risk investment, while a higher risk investment would be expected to generate returns of greater than 10% ROI.
- **Funding Strategies:** A list of potential federal, state, and private financing mechanisms that could support implementation, including grants, tax credits, and loan programs.
- **Metrics for Tracking Progress:** Key indicators to assess whether the measure is delivering intended outcomes.

7.1 Power Nevada with Clean Energy

Implement a Clean, Reliable, and Resilient Grid for Nevada

Description

Accelerate Nevada's energy transition by adopting a new Renewable Portfolio Standard, requiring utilities to submit clean energy plans to demonstrate how they will meet targets. Enact a moratorium on new fossil fuel electricity generation and phase out and repurpose existing coal and gas plants through regulatory and financial incentives. Support grid modernization through grants and incentives for advanced technologies as well as expanded transmission to unlock new renewable resources. Launch program to fund innovation in emerging technologies such as geothermal and long-duration storage. Deploy storage incentives to ensure renewable energy is available 24/7.

Authority to Implement

- PUCN has regulatory authority to oversee utility resource planning, rate structures, grid investments, and infrastructure modernization, including approval of transmission and storage projects (NRS Chapters 703–704).
- NV Energy, as the state's primary regulated utility, is authorized to implement infrastructure investments through its Integrated Resource Plan process, subject to PUCN review and approval.
- GOE is authorized to promote renewable energy, energy efficiency, and distributed energy resources. GOE also coordinates with federal agencies and manages renewable energy zones and clean energy workforce initiatives (NRS Chapter 701).
- NCEF can finance clean energy projects, including grid upgrades and energy storage, using blended capital (NRS 701B).

Legislative or regulatory measures may be needed to:

- Establish new Renewable Portfolio Standards.
- Establish a moratorium on new fossil fuel electricity generation.
- Establish firm retirement timelines for fossil assets or require repurposing sites for clean fuels).
- Establish standards or incentives for green hydrogen production, storage and use, as current statutes do not explicitly address hydrogen infrastructure.

Key Entities and Roles

- PUCN – Approves grid modernization plans, oversees transmission investment, energy storage programs, and fossil plant retirement cases.
- NV Energy – Develops and executes integrated grid and resource plans; leads infrastructure deployment with PUCN approval.
- GOE – Facilitates coordination across state agencies, federal partners, and developers; manages renewable energy zones and policy development.
- NCEF – Provides financing mechanisms for renewable generation, storage, and grid resilience projects.
- NDEP – Coordinates GHG reduction tracking, air quality regulation, and potential environmental review of fossil fuel site transitions.
- Federal Agencies (e.g., DOE, FERC) – Collaborate on grid resilience, hydrogen strategy, and interstate transmission integration.

Implementation Mechanisms

Adopt Legislation to Accelerate the Energy Transition: Adopt a mandatory Renewable Portfolio Standard(RPS) of 100% by 2040 accelerate targets set in SB358. Require clean energy plans to be included in RPSs to outline how targets will be met. Regulations should enact a freeze on the approval or construction of any new fossil fuel-powered electricity generation and push for the retirement of coal and natural gas power plants. Regulations should also consider integrating carbon pricing to encourage utilities to pursue grid modernization and decarbonization efforts.

Clean Energy Transmission Investment Zone: Designate high-priority zones for transmission buildout to connect solar/geothermal to demand centers. Offer expedited permitting and financing support through the Grid Modernization Incentives and Grants

Grid Modernization Incentives and Grants: Provide financial incentives and grants to utilities, municipalities, and private entities for upgrading grid infrastructure, including expanding transmission networks and improving connectivity, and deploying of advanced grid technologies like smart meters, sensors, and automation to improve grid reliability and flexibility. Consider performance Incentives for utilities that achieve early compliance with the emissions reduction targets, encouraging proactive efforts toward decarbonization

Clean Power Integration Program: Create a program to support the phased retirement of aging fossil-fuel power plants and incentivize the repurposing of existing infrastructure to operate on clean fuels like green hydrogen or convert brownfields into clean energy hubs.

Storage Deployment Incentives: Offer targeted incentives for the development and deployment of long-duration energy storage systems, particularly those paired with renewable energy projects such as solar and geothermal, to ensure renewable energy is stored and available for use during peak demand.

Innovation and Demonstration Projects: Fund and incentivize research, development, and demonstration projects for innovative renewable energy technologies like geothermal and green hydrogen production, storage, and transportation technologies. Support public-private partnerships to test the viability of technologies.

Example Timeline and Milestones

The following milestones align with the costs and savings results described below.

Example Timeline	Example Milestones	Example Entities
2025–2026	Draft and pass legislation for 100% RPS by 2040, moratorium on new fossil fuel generation, and clean energy planning requirements.	State Legislature, PUCN, GOE
2025–2027	Establish Clean Energy Transmission Investment Zones and initiate expedited permitting pathways.	GOE, NV Energy, PUCN
2027–2028	Launch Grid Modernization Incentives and Grants program for utilities and municipalities.	PUCN, GOE, NCEF
2027–2029	Implement Clean Power Integration Program; begin phased retirement and repurposing of coal/gas plants.	NV Energy, NDEP, PUCN
2027–2032	Expand transmission infrastructure in designated zones; integrate advanced grid technologies.	NV Energy, PUCN, DOE
2028–2035	Deploy long-duration storage incentives and complete pairing with new solar/geothermal installations.	PUCN, GOE, NCEF
2029–2040	Ramp up Innovation and Demonstration Projects in geothermal, green hydrogen, and grid automation.	GOE, DOE, Federal Partners
2040–2050	Achieve 100% RPS compliance, finalize retirement of all fossil fuel plants, and scale clean fuels at repurposed sites.	PUCN, NV Energy, NDEP

Costs and Savings Estimates

Incremental Capital Costs (million USD)	$7,790
Incremental Maintenance Costs (million USD)	$2,350
Incremental Energy Costs (million USD)	$0
Incremental Total Costs (million USD)	$10,140
Return on Investment	-100%
Cumulative Emissions Reduction (kt CO2eq)	43,900
Marginal Abatement Cost ($ / t CO2 eq)	230

Funding Strategies

- Inflation Reduction Act (IRA)
    - Investment Tax Credit (ITC) for energy storage and renewable generation
      Construction must begin before July 4, 2026
    - Section 50144 Grid Innovation Program
      Funds available through September 30, 2026
    - Energy Infrastructure Reinvestment Financing (Title 17 Loan Guarantee Program) for fossil plant repurposing
- State Renewable Energy and Energy Efficiency Investment Programs (SB448) – Utility-authorized investments in storage and transmission infrastructure.
- Nevada Clean Energy Fund (NCEF) – Loan and credit enhancement programs for private and public clean energy investments.
- FERC Transmission Planning Reforms (pending) – May unlock federal coordination and cost-sharing for interregional projects.
- DOE Grid Resilience and Innovation Partnerships (GRIP) Program – Grants for transmission upgrades, smart grid technology, and microgrids.

Metrics for Tracking Progress

- Number of entities participating in programs or incentive uptake
- Amount of clean infrastructure deployed (e.g., MW, miles, buildings)
- Cumulative GHG emissions reduced ($MTCO_2e$)
- Access improvements in low-income and Tribal communities
- Total funding deployed and community benefit benchmarks met

Expand Residential Solar Access and Affordability with Financing and Technical Support Programs

Description

Accelerate the adoption of rooftop solar for homeowners and renters by expanding incentives, financing options, and access to technical assistance, especially in low-income, at-risk, and Tribal communities. Support the pairing of solar with battery storage and demand response technologies to improve household energy management, reduce peak demand, and enhance grid stability. Partner with utilities and local governments to streamline permitting and interconnection processes and ensure grid readiness for increased distributed generation.

Authority to Implement

- PUCN has regulatory authority over distributed energy resource policies, net metering, interconnection, energy storage, and demand response (NRS Chapters 703–704).
- GOE is authorized to administer clean energy incentive programs and promote rooftop solar adoption, especially through partnerships with local governments and Tribes (NRS Chapter 701). GOE previously led the Direct Energy Assistance Loan (DEAL) program which could be reinstated to support this measure.
- NCEF has authority to finance residential solar and storage projects, particularly for low-income households and underserved markets (NRS 701B).
- NV Energy, through PUCN-approved programs, can offer incentives and pilot programs for residential solar, storage, and demand-side management under its IRP and energy efficiency plans.

Creating mandated community benefit targets or performance metrics for utility programs may require legislative updates or new PUCN rulemaking.

Key Entities and Roles

- PUCN – Regulates interconnection standards, utility tariffs, and net metering rules; approves utility solar and storage programs.
- GOE – Administers solar incentive and outreach programs, convenes local permitting reform efforts, and supports market development.
- NCEF – Offers financing tools for solar storage projects, particularly for renters, underserved homeowners, and community-scale installations.
- NV Energy – Implements utility incentive programs, coordinates interconnection, and manages demand response and distributed generation impacts on grid operations.
- Local Governments – Control permitting timelines and zoning standards for rooftop solar; key partners in permitting streamlining and building code updates.
- Tribal Governments and Housing Authorities – Design and implement solar programs tailored to Tribal lands and housing stock, with state and federal technical assistance.

Implementation Mechanisms

Adopt an R-PACE Program: Currently, the Property Assessed Clean Energy in Nevada targets commercial properties. Expanding eligibility to include single-family and multifamily residential homes would facilitate renewable energy installations and energy efficiency upgrades in the housing market, benefiting both property owners and tenants. Both programs could be state administered.

Income-Based Residential Solar and Storage Incentive Program: Administer targeted incentives to support rooftop solar among low income and at risk households include financial support for battery storage as well. Partner with the Nevada Clean Energy Fund to develop criteria and distribute incentives, investigating incentive options for pairing solar with battery storage and demand response technologies. Incentives should be stackable with federal tax credits and rebate programs, like IRA's Residential Clean Energy Credit, Low-Income Communities Bonus Credit, and DOE's Home Energy Rebate Programs to maximize affordability.

Solar and Storage Low-Interest Financing Programs: Develop low-interest financing programs for solar and storage installations through alternative financing mechanisms. Replica State Energy Program Revolving Loan Fund, as proposed in the PCAP. Develop bundled financing packages for solar installation, energy efficiency upgrades, and smart appliances, especially for multifamily and rental properties. Pair with state-backed loan guarantees to reduce risk and attract private lenders.

Solar Permitting Streamlining and Grant Support: Collaborate with local governments, PUCN, and NV Energy to create guidance for expediting permitting and grid connection processes for residential solar. Establish a grant program through the Nevada Governor’s Office of Energy to help local jurisdictions access SolarAPP+, a DOE permitting automation tool.

Solar Technical Assistance and Education Hubs: Develop regional technical assistance hubs in partnership with Tribal governments, regional development authorities, and community-based organizations to help residents assess solar feasibility, navigate incentives, and find qualified contractors. These hubs could be funded through DOE’s Energy Future Grants, State Energy Office appropriations,

Solar Workforce Development Partnerships: Partner with the Governor’s Office of Workforce Innovation (GOWINN), Nevada System of Higher Education (NSHE), and local unions to expand training and apprenticeship programs for solar and battery storage installers, particularly in low-income communities. Align these efforts with Nevada’s Energy Workforce Development Plan and seek support through DOE Career Skills Training and Registered Apprenticeship Programs.

Example Timeline and Milestones

The following milestones align with the costs and savings results described below.

Example Timeline	Example Milestones	Example Entities
2025 - 2027	Establish solar technical assistance and education hubs in priority regions (Tribal communities, low income and at risk communities)	GOE, CBOs, Tribal Governments
2025 - 2027	Launch streamlined permitting pilot program with selected local governments using SolarAPP+	GOE, NV Energy, PUCN, Local Governments
2025 - 2027	Initiate Income-Based Residential Solar and Storage Incentive Program	GOE, NCEF, PUCN
2025 - 2027	Develop and implement R-PACE legislation to expand financing to residential sector	Legislature, GOE
2025 - 2027	Launch bundled low-interest financing programs for solar, storage, and efficiency upgrades	NCEF, GOE
2028-2030	Scale statewide use of SolarAPP+ and streamline permitting across jurisdictions	GOE, PUCN, Local Governments
2025-2030	Expand workforce training and apprenticeship programs for solar installation	GOWINN, NSHE, Labor Unions
2030-2040	Achieve 50% rooftop solar adoption in targeted low-income and at-risk communities	GOE, NCEF, NV Energy
2040-2050	Reach saturation of residential solar + storage systems; integrate widespread demand response	NV Energy, GOE, PUCN

Costs and Savings Estimates

Financial values are represented in present value ($2025, discounted at 3%) for implementation from 2026 to 2050 as modelled in the LC scenario.

Incremental Capital Costs (million USD)	$3,870
Incremental Maintenance Costs (million USD)	$1,260
Incremental Energy Costs (million USD)	-$14,060

Incremental Total Costs (million USD)	-$8,930
Return on Investment	174%
Cumulative Emissions Reduction (kt CO2eq)	3,670
Marginal Abatement Cost ($ / t CO2 eq)	-2,430

Funding Strategies

- Inflation Reduction Act (IRA)
  - Section 50122 – Grants for low-income solar deployment
  - Direct Pay Provisions – Allow governments and nonprofits to access tax credits for installations
- Nevada Clean Energy Fund (NCEF) – Offers on-bill financing, low-interest loans, or credit enhancements for rooftop solar and storage.
- DOE Solar Energy Technologies Office – Provides technical assistance and competitive grants for permitting reform, target community programs, and technology pilots.
- LIHEAP and Weatherization Assistance Program (WAP) – Can support solar integration in energy burden reduction strategies.
- Utility-administered incentives (PUCN-approved) – Funding for battery storage rebates, demand response enrollment, and solar interconnection cost offsets.

Metrics for Tracking Progress

- Number of entities participating in programs or incentive uptake
- Amount of clean infrastructure deployed (e.g., MW, buildings)
- Cumulative GHG emissions reduced ($MTCO_2e$)
- Number of low-income and Tribal participants
- Total funding deployed and community benefit benchmarks met

Adopt Initiatives Supporting Community Solar and Renewable Co-ops

Description

Support the deployment of community-scale renewable energy projects, including solar gardens, shared solar installations, and cooperatives that provide clean energy access to residents and businesses unable to install on-site systems. Prioritize funding for rural areas, Tribal Nations, low income and at-risk communities by offering state, local, or Tribal-backed loans and grants. Encourage the development of community energy

plans and subscription-based models that allow residents to benefit from solar without needing rooftop access.

Authority to Implement

- NCEF has authority to offer financing for community-scale renewable energy projects (NRS 701B).
- GOE has authority to promote distributed generation and develop policies or incentives for community solar and cooperative energy models (NRS Chapter 701).
- PUCN can authorize pilot programs and tariffs related to shared solar, subscription billing models, and community energy access (NRS Chapters 703–704).
- Tribal governments possess the sovereign authority to plan, own, and operate energy infrastructure on Tribal lands, supported by intergovernmental and federal partnerships.

Community solar tariff authority may need to be clarified or expanded through new legislation or PUCN rulemaking to establish statewide frameworks for subscription-based models and/or to require utility participation in shared solar programs

Local and Tribal-backed grant/loan programs may require new enabling legislation or appropriation to create dedicated funds or match requirements for federal programs.

Key Entities and Roles

- GOE – Coordinate state-level strategy, develop guidance for community energy planning, and support Tribal and local governments with technical assistance.
- PUCN – Approve community solar tariffs, resolve cost-sharing and grid access issues, and ensure consumer protections in subscription models. Coordinate grid integration, administer subscription billing if required, and comply with any future shared solar obligations.
- NCEF – Provide low-interest loans and financial products to seed community-scale renewable projects, especially in rural and underserved areas.
- Local Governments & MPOs – Identify suitable sites, lead planning processes, and collaborate with community-based organizations on outreach.
- Tribal Governments – Lead and own renewable energy developments on Tribal lands, leveraging DOE, BIA, and IHS support.

Implementation Mechanisms

Virtual Net Metering Expansion and Reform: Update Nevada's net metering statutes and utility regulations to explicitly allow virtual net metering for all customer classes, enabling renters, multifamily households, and small businesses to subscribe to community solar installations and receive on-bill credits. Legislation should recognize clean energy cooperatives as eligible market participants, allowing them to generate, distribute, and sell renewable energy.

Grid connection Streamlining Initiative: Work with the PUCN and utilities to streamline and standardize interconnection processes for mid-scale solar projects (e.g., <5 MW), reducing timelines, complexity, and costs for community-led installations.

Community Renewable Energy Grants: Establish a dedicated state-administered grant program to fund the planning, permitting, and construction of community solar projects in rural, Tribal, and low-income communities, with a focus on microgrids, projects under 5 MW, and projects that are community-owned or nonprofit-led.

Anchor Subscriber Incentive Program: Provide targeted incentives to public agencies, schools, community organizations, or businesses to serve as "anchor tenants" for community solar projects, helping to de-risk subscriptions and improve project bankability for rural and low-income developments.

Community Solar Performance Tracking: Develop and maintain a statewide database to monitor the geographic distribution, subscriber demographics, energy savings, and reliability performance of community solar projects, ensuring transparent reporting and outcomes.

Example Timeline and Milestones

Example Timeline	Example Milestones	Example Entities
2025 - 2027	Introduce and pass enabling legislation for virtual net metering and shared solar tariff authority.	GOE, State Legislature
2025 - 2027	Launch Grid Connection Streamlining Initiative.	PUCN, NV Energy, GOE
2025 - 2027	Begin development of statewide community solar performance tracking database.	GOE, NCEF, PUCN
2025 - 2027	Convene Community Solar Implementation Task Force.	GOE
2025 - 2027	PUCN adopts rulemaking for subscription-based community solar models.	PUCN

Example Timeline	Example Milestones	Example Entities
2025 - 2027	NCEF launches a pilot Community Renewable Energy Grant Program.	NCEF
2025 - 2027	Local and Tribal governments begin site identification and project planning.	Local Governments, Tribal Governments, MPOs
2025 - 2027	First round of grants awarded to Tribal, rural, and underserved communities.	NCEF, GOE
2025 - 2027	Utilities publish standardized interconnection guidance.	NV Energy, PUCN
2028 -2030	Construction begins on first wave of grant-funded projects.	Local Governments, Tribal Governments, Grant Recipients
2028 -2030	Anchor Subscriber Incentive Program launches; enrolls initial subscribers.	GOE, PUCN, Public Agencies, Schools, Nonprofits
2028 -2030	25 installations complete across at least 8 counties.	Project Developers, Local Governments, Community Groups
2031 - 2035	Expand grant and incentive funding.	GOE, State Legislature, NCEF
2031 - 2035	Reach 100+ MW of installed capacity serving at least 10,000 households.	NCEF, GOE, Utilities, Project Developers
2031 - 2035	Begin annual mandatory reporting on project performance.	GOE, PUCN, Utilities
2036 -2040	Review and adjust tariffs and incentive frameworks.	PUCN, GOE
2036 -2040	Second wave of projects focuses on resilience (e.g., microgrids).	Local Governments, Tribes, Utilities, NCEF
2036 -2040	Integrate community solar into utility resource planning.	PUCN, NV Energy
2041 - 2045	Expand deployment in underserved areas with enhanced incentives.	GOE, NCEF, DOE, Local Governments
2041 - 2045	200+ MW cumulative community solar installed.	NCEF, Project Developers, Utilities
2041 - 2045	40% of installations include storage systems.	NV Energy, Project Developers

Example Timeline	Example Milestones	Example Entities
2046 - 2050	Ensure community solar projects reach all counties.	GOE, Local Governments, Tribal Governments
2046 - 2050	Expand community ownership/subscription models.	Cooperatives, Nonprofits, Local and Tribal Governments
2046 - 2050	Evaluate and report on emissions and energy affordability outcomes.	GOE, PUCN, NDEP

Costs and Savings Estimates

Financial values are represented in present value ($2025, discounted at 3%) for implementation from 2026 to 2050 as modelled in the LC scenario.

Incremental Capital Costs (million USD)	$920
Incremental Maintenance Costs (million USD)	$290
Incremental Energy Costs (million USD)	-$3,330
Incremental Total Costs (million USD)	-$2,120
Return on Investment	174%
Cumulative Emissions Reduction (kt CO2eq)	409
Marginal Abatement Cost ($ / t CO2 eq)	-5,170

Funding Strategies

- Inflation Reduction Act (IRA)
  - Low-Income Communities Bonus Credit (48(e)) – Enhanced incentives for solar in low-income and Tribal areas
  - DOE Community Power Accelerator – Technical assistance and predevelopment support for community solar
- U.S. Department of Energy (DOE) – Solar Energy Technologies Office and Office of Indian Energy support grants for planning, installation, and capacity building.
- USDA Rural Energy for America Program (REAP) – Provides funding for solar cooperatives and renewable installations in rural communities.
- Nevada Clean Energy Fund (NCEF) – Can capitalize revolving loan funds or issue guarantees to reduce risk for developers in underserved markets.
- Tribal Energy Loan Guarantee Program (DOE LPO) – Offers financing support for large-scale or community-led energy projects on Tribal lands.

Metrics for Tracking Progress

- Total installed community solar capacity (MW)
- Number of projects installed
- Number of projects <5MW
- Number of subscribers
- Percentage of projects in low-income, rural, and Tribal communities

Scale Up Solar Installation in Commercial Sector with Financing and Technical Support Programs

Description

Drive clean energy adoption in Nevada's commercial sector by offering performance-based incentives, tax credits, and flexible financing options for solar installations. Support technical assistance and planning resources for businesses to integrate solar into new construction and retrofit projects. Encourage partnerships between businesses, utilities, and local governments to streamline permitting and interconnection processes. Promote the deployment of battery storage and demand response technologies to improve energy resilience and reduce peak demand. Pair storage with commercial solar installations to maximize cost savings and grid benefits.

Authority to Implement

- PUCN has authority to regulate utility tariffs, interconnection standards, and distributed energy resource (DER) programs, including those targeting commercial customers (NRS Chapters 703–704).
- GOE can develop and administer clean energy incentive programs and provide technical assistance for commercial solar and storage integration (NRS Chapter 701).
- NCEF may finance commercial clean energy projects, including rooftop solar, battery storage, and energy efficiency retrofits (NRS 701B).
- Local governments may support permitting and zoning for solar projects through local ordinances and can offer streamlined processes under existing home rule authority.

Key Entities and Roles

- PUCN – Regulates commercial DER rates, demand response programs, and utility storage integration strategies.
- GOE – Develops and administers technical assistance programs, convenes local permitting stakeholders, and advances commercial sector outreach.

- NCEF – Offers tailored financing solutions (e.g., energy-as-a-service, commercial PACE-style loans, credit enhancements) for mid-size and small businesses.
- Local Governments – Streamline permitting, align building codes, and support business outreach through chambers or development agencies.
- NV Energy – Provide interconnection, demand response offerings, time-of-use pricing, and battery storage incentives under regulatory approval.
- Commercial Property Owners and Trade Associations – Serve as implementation partners and hosts for demonstration projects or aggregated procurement efforts.

Implementation Mechanisms

Standardize and Promote the Commercial PACE Financing Program: Develop standardized guidelines and best practices to encourage more local governments to adopt and effectively manage C-PACE programs. Increase program visibility through targeted outreach, marketing, and education efforts to inform commercial property owners, lenders, and contractors of benefits and eligibility.

Streamlined Permitting and Local Government Incentives: Collaborate with local governments and utilities to standardize and expedite permitting procedures and provide options for reduced fees for commercial solar projects. Create guidance and timelines for easy adoption and reduced administrative burdens.

Commercial Energy Storage Incentives: Leverage existing utility and government incentive programs to support the integration of battery storage with commercial solar installations. Incentives should vary based on system size and customer type, with potential rebates covering up to 70% of installed costs, capped at $500,000 for critical infrastructure projects.

Example Timeline and Milestones

Example Timeline	Example Milestones	Example Entities
2025 - 2026	Develop and adopt standardized C-PACE financing guidelines and conduct outreach to local governments and stakeholders.	GOE, NCEF
2025–2027	Launch statewide technical assistance program for commercial solar integration, including education on C-PACE benefits.	GOE
2026–2028	Collaborate with local governments to implement streamlined permitting and zoning policies for commercial solar projects.	GOE, Local Governments

Example Timeline	Example Milestones	Example Entities
2026–2029	Roll out commercial energy storage incentives with tiered rebates based on project scale and infrastructure criticality.	PUCN, NV Energy
2028–2030	Evaluate program participation and revise guidelines for financing, permitting, and incentives based on market uptake and stakeholder feedback.	GOE, PUCN
2030–2040	Expand financing and incentive programs; integrate with energy resilience and demand response initiatives.	GOE, NCEF, NV Energy
2040–2050	Support legacy solar systems with retrofit incentives; assess grid impact and implement load balancing strategies.	PUCN, NV Energy

Costs and Savings Estimates

Financial values are represented in present value ($2025, discounted at 3%) for implementation from 2026 to 2050 as modelled in the LC scenario.

Incremental Capital Costs (million USD)	$990
Incremental Maintenance Costs (million USD)	$320
Incremental Energy Costs (million USD)	-$3,750
Incremental Total Costs (million USD)	-$2,440
Return on Investment	187%
Cumulative Emissions Reduction (kt CO2eq)	326
Marginal Abatement Cost ($ / t CO2 eq)	-7,500

Funding Strategies

- Inflation Reduction Act (IRA)
    - Commercial Clean Energy Investment Tax Credit (48) – Up to 30–50 percent credit for commercial solar, plus bonus credits for energy communities, domestic content, and low-income areas
    - Section 30C Alternative Fuel Infrastructure Credit – May apply for combined solar + EV charging deployments

      Phased out credit availability by June 30, 2026

    - Direct Pay and Transferability Options – Expand access to credits for tax-exempt entities and open credit markets
- DOE Commercial Building Integration and Solar Deployment Programs – Offers grants and tools for solar integration, demand response, and energy efficiency retrofits.
- Nevada Clean Energy Fund (NCEF) – Provides capital for business-owned or leased properties to pursue bundled solar, storage, and energy management improvements.
- USDA Rural Energy for America Program (REAP) – Grants and loan guarantees for eligible rural businesses and agricultural producers to install renewable energy systems.
- Utility-Sponsored Programs (PUCN-approved) – Time-of-use rates, battery storage rebates, and demand response incentives can be structured to support commercial load flexibility.

Metrics for Tracking Progress

- Total MW of commercial solar and battery capacity installed annually
- Number of new commercial solar projects per year
- Number of businesses accessing C-PACE or other financing programs
- Total loan or incentive dollars disbursed for commercial projects

7.2 Build Net Zero New Buildings

Strengthen Building Energy Conservation Codes

Description

Ensure regulatory consistency and maximize statewide energy performance gains by supporting Nevada's counties and municipalities in adopting updated building energy conservation codes in alignment with the state's adoption of the latest International Energy Conservation Code (IECC) every three years. Establish automatic adoption of the most recent IECC codes with a clear, enforceable time limit for local jurisdictions to implement them. This ensures uniformity across the state and strengthens energy efficiency requirements for new buildings and major renovations.

Authority to Implement

- GOE has authority to adopt a minimum statewide energy code for residential, commercial, and public buildings, aligned with the International Energy Conservation Code (NRS Chapter 701). NRS Chapter 701.220 requires GOE to adopt the most recent version of the IECC within three years of publication, with stakeholder input.

- Local governments in Nevada currently retain the authority to adopt and enforce building codes through their own ordinances and permitting processes.
- The State Public Works Division (SPWD) applies the state-adopted IECC standards for public buildings, which can serve as a model for local compliance.

Establishing automatic local adoption of IECC updates would require statutory changes or enabling legislation to:

- Mandate that local governments adopt the state energy code within a specific period (e.g., 12–18 months).
- Authorize GOE or another state agency to enforce compliance or take corrective action if jurisdictions fail to adopt in time.
- Define penalties or incentives for local compliance and include provisions for limited exemptions or delays (e.g., hardship-based waivers).

Key Entities and Roles

- GOE – Leads IECC adoption at the state level, provides technical assistance and outreach to local jurisdictions, and may require expanded authority to enforce local compliance timelines.
- Local Governments – Adopt and enforce building energy codes through local ordinances; responsible for permitting, inspections, and staff training.
- Nevada State Legislature – Enact new legislation establishing automatic local adoption and enforcement mechanisms.
- SPWD – Applies IECC standards for state-owned buildings and can support statewide best practices and compliance tools.
- Professional and Trade Associations (e.g., building officials, contractors) – Help facilitate compliance, workforce training, and public awareness.

Implementation Mechanisms

Automatic IECC Code Adoption Policy: Enact state legislation requiring automatic adoption of the most recent International Energy Conservation Code within a fixed timeline (e.g., 12 months) of state-level approval. Include enforcement provisions to ensure compliance across all jurisdictions.

Local Government Resources: Create statewide enforcement protocols, including verification requirements, inspection standards, and reporting obligations for local code officials and developers. Provide training, workshops, and guidance documents for city and county building departments on new IECC requirements.

Example Timeline and Milestones

Example Timeline	Example Milestones	Example Entities
2026	Draft and introduce legislation for automatic IECC adoption and enforcement. Pass legislation mandating local adoption of state energy code within 12 months.	GOE, Nevada State Legislature
2027	Develop enforcement protocols and compliance tools; initiate local government training.	GOE, SPWD
2028	Ensure all local jurisdictions have adopted 2027 IECC and begin statewide reporting.	GOE, Local Governments
2030	Adopt and implement 2030 IECC update. Update training and compliance guidance.	GOE, Local Governments, SPWD
2033	Adopt and implement 2033 IECC update and conduct statewide compliance audit.	GOE, Local Governments
2036	Adopt and implement 2036 IECC update and enhance local enforcement capabilities.	GOE, Local Governments
2039	Adopt and implement 2039 IECC update.	GOE, Local Governments
2042	Adopt and implement 2042 IECC update and evaluate long-term energy savings.	GOE, SPWD, Local Governments
2045	Adopt and implement 2045 IECC update.	GOE, Local Governments
2048	Adopt and implement 2048 IECC update and report cumulative energy savings and emissions reductions.	GOE, SPWD, Local Governments

Costs and Savings Estimates

Financial values are represented in present value ($2025, discounted at 3%) for implementation from 2026 to 2050 as modelled in the LC scenario.

Incremental Capital Costs (million USD)	$2,830
Incremental Maintenance Costs (million USD)	$0
Incremental Energy Costs (million USD)	-$6,290
Incremental Total Costs (million USD)	-$3,460

Return on Investment	122%
Cumulative Emissions Reduction (kt CO2eq)	10,222
Marginal Abatement Cost ($ / t CO2 eq)	-340

Funding Strategies

- DOE Building Energy Codes Program (via IIJA and IRA) – Provides funding to states for code adoption, implementation, enforcement, and training.
- State Energy Program (SEP) Formula and Competitive Funds – Administered by GOE, supports energy code technical assistance, planning, and stakeholder engagement.
- Utility Energy Efficiency Program Funds (PUCN-approved) – May be used to support compliance tools, training, or code-aligned incentive programs.
- Nevada Clean Energy Fund (NCEF) – Could finance upgrades required by new codes for low-income housing or small developers if paired with implementation grants.
- Private Foundations and Philanthropic Initiatives – May offer technical or financial support to focus code implementation efforts in low-income and at risk communities.

Metrics for Tracking Progress

- % of jurisdictions that have adopted the latest IECC within the required timeframe
- Number or % of building permits reviewed for energy code compliance
- Number of code compliance inspections conducted annually
- Number of local jurisdictions submitting annual compliance reports to GOE
- Number of training sessions or technical assistance workshops held
- Number of code enforcement staff trained

Adopt Net-Zero Ready Standards for All New Buildings

Description

Require that all new residential, commercial, and industrial buildings in Nevada be built to net-zero-ready standards. These standards will include energy-efficient design and technologies that allow buildings to generate as much energy as they consume on an annual basis.

Authority to Implement

- GOE is authorized to adopt statewide minimum energy efficiency standards and building energy codes, including the IECC, which can be used as a foundation for net-zero-ready requirements (NRS Chapter 701).
- SPWD has authority to apply the state energy code to public buildings and can implement net-zero-ready design for state-funded facilities.
- PUCN can authorize utility energy efficiency and demand-side management programs that support net-zero-ready compliance, such as demand response, efficient electrification, and time-of-use pricing (NRS Chapters 703–704).

New legislation may be needed to authorize state enforcement or oversight authority.

Key Entities and Roles

- GOE – Leads the development of net-zero-ready standards, coordinates rulemaking and stakeholder engagement, and supports training and enforcement resources.
- State Legislature – Would need to pass enabling legislation establishing the requirement and defining scope, enforcement mechanisms, and deadlines.
- SPWD – Implements and models net-zero-ready design in public construction; may assist with statewide compliance support.
- Local Governments – Responsible for code enforcement and permitting; may adopt earlier or more stringent net-zero-ready codes locally.
- PUCN and NV Energy – Support energy efficiency, distributed generation, and electrification programs that reduce compliance costs and enhance grid integration.
- Developers and Builders – Key partners in pilot programs, training, and material supply chains necessary to meet net-zero-ready standards at scale.

Implementation Mechanisms

Statewide Net-Zero Ready Code Mandate: Adopt a statewide building code for all new residential and commercial buildings to meet net-zero ready standards including minimum requirements for rooftop solar and battery storage installations and wiring and panels sized for electric HVAC, water heating, cooking, and vehicle charging.

Technical Assistance for Local Governments, Builders, and Developers: Create a taskforce with the Governor's Office of Energy, local governments, utilities, housing agencies, and developers to coordinate implementation timelines, compliance monitoring, and workforce needs. Taskforce will support local governments enforce the new code requirements, develop building design templates and construction toolkits tailored to Nevada's climate zones and building types, and establish a training program homebuilders, contractors, and architects on net-zero-ready design and construction practices.

Incentivize early adopters: Offer tax credits for developers that build to net-zero-ready standards before the mandatory compliance date.

Example Timeline and Milestones

Example Timeline	Example Milestones	Example Entities
2026	Draft enabling legislation for statewide net-zero-ready mandate. Begin stakeholder engagement and research best practices.	GOE, State Legislature
2027	Introduce and pass legislation requiring all new buildings meet net-zero-ready standards by 2030. Launch GOE-led taskforce for implementation planning.	State Legislature, GOE
2028 - 2030	Develop technical guidance, compliance protocols, and training programs for local governments, developers, and contractors.	GOE, SPWD, Local Governments, Utilities
2030	Mandatory compliance begins for all new residential and commercial buildings. Establish monitoring and enforcement protocols.	GOE, Local Governments, SPWD, Developers
2035	Scale support for workforce training.	Workforce Development Partners
2040	Expand standards to include industrial facilities and require on-site renewable integration or equivalent energy contracts.	GOE, PUCN, SPWD, Industrial Sector Stakeholders
2045	Conduct statewide review and update of standards based on technological and market advancements.	GOE, Local Governments
2050	Evaluate program effectiveness, including emissions reduction and energy savings; publish cumulative impact report and revise standards as needed.	GOE, SPWD, PUCN, Research Institutions

Costs and Savings Estimates

Financial values are represented in present value ($2025, discounted at 3%) for implementation from 2026 to 2050 as modelled in the LC scenario.

Incremental Capital Costs (million USD)	$3,340
Incremental Maintenance Costs (million USD)	-$620
Incremental Energy Costs (million USD)	-$3,790
Incremental Total Costs (million USD)	-$1,070
Return on Investment	31%
Cumulative Emissions Reduction (kt CO2eq)	28,061
Marginal Abatement Cost ($ / t CO2 eq)	-40

Funding Strategies

- Inflation Reduction Act (IRA)
  - DOE Energy Efficiency and Conservation Block Grants (EECBG) – May support code adoption and workforce development.
  - High-Efficiency Electric Home Rebates and HOMES Programs – May be adapted to new construction incentives in low-income or multifamily settings. *HEEHR Program runs through September 30, 2031 or until funds are exhausted.*
- DOE Building Technologies Office – Offers technical assistance and pilot funding for advanced building codes and high-performance design.
- Nevada Clean Energy Fund (NCEF) – Can support financing tools for builders, particularly for affordable housing or small business developments.
- Utility-Sponsored Energy Efficiency Programs (PUCN-approved) – May include incentives for heat pumps, smart panels, or envelope improvements that support net-zero-readiness.
- State Appropriations or Bonding (future authority) – Legislative action could establish a state fund to support compliance for small builders or at-risk communities.

Metrics for Tracking Progress

- Date of statewide code adoption
- % of jurisdictions that have adopted the net-zero ready code
- # of public buildings constructed to net-zero ready standards
- % of new buildings equipped with infrastructure for solar, battery storage, EV charging
- Number of builders and contractors trained in net-zero ready construction

Invest in Zero-Emission Affordable Housing Options

Description

Support the creation and expansion of zero-emission affordable housing by increasing investment in Community Land Trusts (CLTs) and developing new state-supported rental housing that meets high energy-efficiency and electrification standards.

Authority to Implement

- Nevada Housing Division (NHD) has the authority to finance affordable housing development, including through the Low-Income Housing Tax Credit (LIHTC), HOME Investment Partnerships Program, and state housing trust funds (NRS Chapter 319).
- GOE can promote high-performance building standards and administer energy-efficiency incentive programs relevant to affordable housing (NRS Chapter 701).
- NCEF, is authorized to provide financing for clean energy upgrades and all-electric housing, including for affordable and multifamily properties (NRS 701B).
- Local governments may establish or support CLTs using local housing funds, land donations, or development incentives under municipal authority.

New legislation may be required to:

- Establish minimum energy performance requirements or incentives for state-funded rental housing (e.g., IECC 2021+, ENERGY STAR, all-electric design).
- Authorize or expand direct state investment in zero-emission housing construction (e.g., through a green housing trust fund or sustainability set-aside in housing programs).
- Create a statewide Community Land Trust support program, including technical assistance and startup funding for local or regional CLTs.

Key Entities and Roles

- NHD – Administers financing programs for affordable housing and could embed electrification or zero-emission standards into funding criteria.
- GOE – Supports development and adoption of high-efficiency design standards and may coordinate technical assistance for zero-emission housing.
- NCEF – Provides financial tools to support clean energy features in CLT homes and publicly funded rental housing projects.
- Local Governments and Housing Authorities – Can sponsor or partner on CLTs, provide land or fee waivers, and support alignment of zoning and incentives.

- Community-Based Organizations – Lead CLT formation, resident engagement, and housing stewardship aligned with energy and community benefit goals.

Implementation Mechanisms

Net-Zero Ready Standards in State Housing Programs: Require all new affordable housing projects developed by State programs meet net-zero ready standards, including all-electric design, high-performance envelopes, on-site renewables , and vehicle charging. Leverage federal programs such as the Inflation Reduction Act's HOMES and HEAR rebates to reduce project costs.

Statewide CLT Support Framework: Develop a policy and administrative framework to grow the capacity and presence of Community Land Trusts across Nevada. Framework should include grants, low-interest loans, and technical assistance to build net-zero homes.

Example Timeline and Milestones

Example Timeline	Example Milestones	Example Entities
2026	Launch planning for statewide CLT support program; draft legislation for net-zero standards in state housing programs	NHD, GOE, NCEF
	Propose and advocate for legislative changes to establish green housing fund and minimum energy standards for state-funded housing	NHD, State Legislature
2027	Initiate pilot projects for zero-emission affordable housing with CLTs and local governments	NHD, Local Governments, CBOs
2028	Adopt and begin implementation of net-zero ready standards for all new affordable housing funded by the state	NHD, GOE
2029	Launch technical assistance and low-interest loan programs for CLTs; expand NCEF support for all-electric multifamily housing	GOE, NCEF
2030	Evaluate early outcomes of pilot projects; publish guidance for CLTs developing zero-emission homes	NHD, GOE, CBOs
2035	Evaluation of policy impacts; adjust funding and performance criteria based on outcomes	NHD, GOE, NCEF

Example Timeline	Example Milestones	Example Entities
2040	Major expansion of CLTs and zero-emission housing program; track GHG reductions from housing sector	NHD, Local Governments
2045	Reassess progress towards housing affordability and emissions reduction targets; propose program updates as needed	NHD, GOE
2050	Achieve widespread adoption of zero-emission standards in affordable housing; finalize impact report	NHD, GOE, NCEF, Local Governments

Costs and Savings Estimates

Financial values are represented in present value ($2025, discounted at 3%) for implementation from 2026 to 2050 as modelled in the LC scenario.

Incremental Capital Costs (million USD)	$210
Incremental Maintenance Costs (million USD)	$60
Incremental Energy Costs (million USD)	-$740
Incremental Total Costs (million USD)	-$470
Return on Investment	182%
Cumulative Emissions Reduction (kt CO2eq)	526
Marginal Abatement Cost ($ / t CO2 eq)	-900

Funding Strategies

- Inflation Reduction Act (IRA)
    - High-Efficiency Electric Home Rebates and HOMES Program – Support electrification in new affordable housing and deep retrofits
    - Low-Income Communities Bonus Credit (48(e)) – Incentivizes solar and storage for affordable housing projects
- Low-Income Housing Tax Credits (LIHTC) – Can be paired with utility or DOE incentives to support energy upgrades and all-electric construction.
- Nevada Affordable Housing Trust Fund – May be adapted or expanded to prioritize zero-emission housing or support CLT-aligned projects.
- Nevada Clean Energy Fund (NCEF) – Can finance solar, battery storage, and efficient systems for nonprofit developers and CLTs.

- HUD Programs (e.g., HOME, CDBG) – May support energy-aligned construction costs when housing affordability standards are met.

Metrics for Tracking Progress

- Number and location of net-zero ready affordable housing units built annually by the state.
- % of new state-funded affordable housing units meeting net-zero ready design standards.
- Number and location of new CLT homes developed.
- % of CLT homes incorporating clean energy features (e.g., solar, heat pumps, EV chargers).
- Number of Tribal and rural communities participating in CLT or zero-emission housing initiatives.

7.3 Transform Existing Buildings

Establish Building Performance Standards for Existing Large Buildings

Description

Develop and implement phased Building Performance Standards (BPS) requiring large commercial and multifamily buildings to meet specific energy use intensity (EUI) and emission reduction targets over time, supported by compliance pathways, technical assistance, and data transparency tools.

Tiered approach:

- Buildings over 200,000 sqft: Reduce emissions by 40% by 2030.
- Buildings 100,000–200,000 sqft: Reduce emissions by 40% by 2032.
- Buildings 25,000–100,000 sqft: Reduce emissions by 40% by 2035
- Buildings must reduce emissions by 10% every five years after initial target date.

Authority to Implement

- GOE is authorized to promote energy efficiency in buildings and may lead the development of Building Performance Standards (BPS) through rulemaking or legislation (NRS Chapter 701).
- PUCN oversees energy efficiency programs that could support BPS compliance through utility incentives and demand-side management offerings (NRS Chapters 703–704).

- Local governments have zoning and permitting authority and can adopt BPS ordinances for buildings in their jurisdictions under home rule authority, particularly for large commercial and multifamily buildings.
- SPWD can apply performance-based standards to state-owned or funded facilities, serving as a model for broader implementation.

A statewide BPS program would require new enabling legislation to:

- Establish compliance mechanisms, penalties, and exemptions (e.g., for affordable housing).
- Authorize GOE to collect benchmarking data, enforce compliance, and manage transparency tools.
- Require utility data sharing for benchmarking purposes and to protect customer privacy.

Key Entities and Roles

- GOE – Leads program design, stakeholder engagement, rulemaking, and ongoing administration of the BPS, including benchmarking and compliance tracking.
- PUCN – Aligns utility demand-side management programs with BPS compliance needs and supports cost-effective program design.
- Local Governments – May implement local BPS ordinances or serve as compliance partners in outreach and enforcement.
- NV Energy – Provides energy use data, supports customer outreach, and delivers relevant incentive programs (e.g., retro-commissioning, efficient HVAC upgrades).
- NCEF – Offers financing for retrofit projects required to meet BPS targets, particularly in underserved or small-building markets.
- Building Owners and Operators – Responsible for meeting targets and submitting compliance documentation; key partners in pilot programs and feedback loops.

Implementation Mechanisms

Building Performance Standard Legislation: Adopt statewide legislation that sets mandatory EUI reduction targets for covered buildings, phased by size and use type. The law should designate a managing entity and include enforcement provisions and preemption limits to enable local jurisdictions to go further. Legislation should include mandatory annual energy benchmarking and public disclosure requirements for all applicable building types using ENERGY STAR Portfolio Manager or equivalent tools. Require third-party data verification at regular intervals. Flexible compliance options such as demonstrated energy use reduction, prescriptive retrofit pathways, or performance-based alternative metrics (e.g., GHG reductions) can accommodate different building types while maintaining rigor.

BPS Compliance Incentive Fund: Create a state-administered fund to provide grants and low-interest loans to assist building owners, particularly small businesses, nonprofits, and affordable housing operators, in complying with BPS requirements. **Statewide BPS Technical Assistance Center:** Establish a resource center to provide technical assistance to building owners on benchmarking, retrofit planning, and incentive options.

Example Timeline and Milestones

Example Timeline	Example Milestones	Example Entities
2025	Pass enabling legislation for Building Performance Standards (BPS), including benchmarking and compliance authority	Nevada Legislature, GOE
2026	Launch Statewide BPS Technical Assistance Center. Begin benchmarking data collection for buildings >200,000 sqft.	GOE
2027	Implement annual benchmarking and public disclosure requirements for buildings >200,000 sqft.	GOE, Local Governments
2028	Finalize EUI targets and compliance pathways for buildings >200,000 sqft. Launch BPS Compliance Incentive Fund	GOE, NCEF
2030	Buildings >200,000 sqft. must achieve 40% emissions reductions	Building Owners, GOE
2032	Buildings 100,000–200,000 sqft. must achieve 40% emissions reductions	Building Owners, GOE
2035	Buildings 25,000–100,000 sqft. must achieve 40% emissions reductions	Building Owners, GOE
2040	First 10% emissions reduction cycle due for all covered buildings post initial deadline	Building Owners, GOE
2045	Second 10% emissions reduction cycle due for all covered buildings	Building Owners, GOE
2050	Third 10% emissions reduction cycle due for all covered buildings	Building Owners, GOE

Costs and Savings

Financial values are represented in present value ($2025, discounted at 3%) for implementation from 2026 to 2050 as modelled in the LC scenario.

Incremental Capital Costs (million USD)	$1,370
Incremental Maintenance Costs (million USD)	$0
Incremental Energy Costs (million USD)	-$1,490
Incremental Total Costs (million USD)	-$120
Return on Investment	9%
Cumulative Emissions Reduction (kt CO2eq)	2,451
Marginal Abatement Cost ($ / t CO2 eq)	-50

Funding Strategies

- Inflation Reduction Act (IRA)
  - State-Based Home Energy Efficiency Contractor Training Grants – Support workforce readiness to implement building upgrades
    Program runs through September 30, 2031 or until funds are exhausted.
  - DOE Building Upgrade Prize (Buildings UP) – Technical and financial support for building retrofit strategies, including BPS pilots
- DOE Building Technologies Office – Offers technical assistance, modeling tools, and peer network support for jurisdictions developing BPS.
- Nevada Clean Energy Fund (NCEF) – Can provide capital for building owners to finance improvements required to meet BPS benchmarks.
- Utility DSM and Custom Retrofit Programs (PUCN-approved) – Rebates and technical assistance for deep energy retrofits, benchmarking tools, and Energy Use Intensity (EUI) modeling.
- State General Fund or Appropriations – Could support implementation staffing, technical assistance hubs, or incentive layering for community benefit-focused compliance pathways.

Metrics for Tracking Progress

- % of covered buildings enrolled in benchmarking and reporting programs.
- % of covered buildings in compliance with performance standards by milestone years (2030, 2032, 2035, etc.).

- Average Energy Use Intensity (EUI) reduction across building cohorts (by sq. ft. category).
- % reduction in total site and source energy use from baseline year.
- $ of funds issued from the BPS Compliance Incentive Fund.
- # of building owners receiving technical assistance through the Statewide BPS Technical Assistance Center.

Retrofit Nevada - Modernize Homes Initiative

Description

Launch a statewide initiative that provides energy efficiency retrofits, electrification upgrades, and on-site renewables to residential buildings. Build off of existing programs like Home Energy Retrofit Opportunity for Seniors and Weatherization Assistance Program.

Authority to Implement

- NHD administers the Weatherization Assistance Program (WAP) and Home Energy Retrofit Opportunity for Seniors (HEROS), providing energy efficiency retrofits to income-qualified households (NRS Chapter 319).
- GOE is authorized to promote residential energy efficiency, clean energy technologies, and support the integration of state and federal funding for home upgrades (NRS Chapter 701).
- NCEF is authorized to finance residential energy improvements, including electrification and rooftop solar for low- and moderate-income households (NRS 701B).
- PUCN has authority over utility programs, including energy efficiency incentives and demand-side management offerings for residential customers (NRS Chapters 703–704).

Implementation of this measure may require new enabling legislation or executive order to:

- Authorize a new statewide residential retrofit program, with blended funding, long-term planning authority, and interagency coordination.
- Establish a formal clearinghouse or hub model for application intake, contractor deployment, and community engagement could require new statutory guidance or funding authority.

Key Entities and Roles

- NHD – Continues to lead WAP and HEROS and could expand its role in residential electrification and whole-home retrofits under a unified statewide program.
- GOE – Coordinates interagency strategy, manages state-level program design, and supports outreach, training, and technical assistance.
- NCEF – Offers low-interest loans, inclusive financing, and credit enhancements for homeowners and landlords not eligible for income-restricted programs.
- PUCN & Utilities – Align utility DSM programs with retrofit and electrification goals, including rebates for heat pumps, insulation, and solar.
- Community-Based Organizations and Contractors – Serve as delivery partners, particularly in underserved communities, for outreach, installation, and workforce development.

Implementation Mechanisms

Nevada Retrofit Strategy: Develop a comprehensive state retrofit strategy with specific targets by building type (e.g., single-family, multifamily, public, and commercial) and geography. Include goals for electrification, envelope performance, and renewable integration. Strategy should establish a framework that designates a lead agency (e.g., Nevada Housing Division) to coordinate all residential retrofit efforts across programs, ensuring consistency in eligibility, outreach, and reporting.

Integrate Retrofit Standards into Building Codes: Incorporate electrification and energy efficiency performance requirements into code update triggers for major renovations.

Streamline Permitting for Electrification and Rooftop Solar: Collaborate with local governments and utilities to standardize and expedite permitting procedures and provide options for reduced fees for electrification and solar projects. Create guidance and timelines for easy adoption and reduced administrative burdens.

Retrofit Nevada Grant and Financing Program: Create a state-funded residential retrofit program offering grants and no-cost upgrades for income-qualified homeowners and renters, modeled after HEROS and WAP. Expand eligibility for moderate-income households and prioritize whole-home, decarbonization-aligned retrofits. Offer low-interest financing or on-bill repayment for moderate- and higher-income households. Design the process to be a simple application with same-day approvals, eliminate any up front costs, where possible, and provide vetted contractor sale offerings to ensure strong consumer protections. Specific funding should be allocated to provide financing to customers facing unplanned HVAC and water heater replacements so urgent equipment replacements can still be met with low-emission options.

State-Local Retrofit Implementation Partnerships: Work with cities, counties, and Tribal governments to tailor program delivery to local housing stock and climate zones, and to co-fund and administer outreach and service delivery.

Example Timeline and Milestones

Example Timeline	Example Milestones	Example Entities
2025	Launch Retrofit Nevada Strategy and designate NHD as lead agency.	GOE, NHD
2026	Develop retrofit targets by building type and region. Reduce energy use by 40% in retrofit buildings, and install heat pumps to replace natural gas use as the baseline. Launch public outreach campaign.	GOE, NHD, Local Governments
2027	Expand HEROS and WAP statewide. Initiate Retrofit Nevada Grant and Financing Program.	NHD, NCEF, PUCN, Utilities
2028	Begin integration of retrofit standards into major renovation building codes.	GOE, Local Governments
2030	Achieve 20% of targeted residential retrofits statewide.	NHD, Local Governments
2032	Review and update of retrofit targets and funding mechanisms.	GOE, NHD, NCEF
2035	Achieve 50% of targeted residential retrofits; evaluate program impact	NHD, CBOs, Contractors
2040	Expand statewide retrofit program to include new technologies (e.g., induction, battery storage).	GOE, NHD, NV Energy
2045	Achieve 100% of targeted residential retrofits	NHD, Local Governments

Costs and Savings Estimates

Financial values are represented in present value ($2025, discounted at 3%) for implementation from 2026 to 2050 as modelled in the LC scenario.

Incremental Capital Costs (million USD)	$25,230

Incremental Maintenance Costs (million USD)	$0
Incremental Energy Costs (million USD)	-$15,420
Incremental Total Costs (million USD)	$9,810
Return on Investment	-39%
Cumulative Emissions Reduction (kt CO2eq)	18,936
Marginal Abatement Cost ($ / t CO2 eq)	520

Funding Strategies

- Inflation Reduction Act (IRA)
  - Home Electrification and Appliance Rebates (HEEHR) – Point-of-sale rebates for low- and moderate-income households
    Program runs through September 30, 2031 or until funds are exhausted.
  - HOMES Program – Whole-house retrofit incentives, performance-based
  - Low-Income Communities Bonus Credit (48(e)) – Additional solar incentives for on-site renewables in at-risk communities
- Weatherization Assistance Program (WAP) – Ongoing formula funding to support building envelope and efficiency measures.
- LIHEAP – Can help address high energy burdens and support coordination with electrification upgrades.
- NCEF – Offers financing for households above income limits for federal programs and landlords seeking to electrify or improve tenant-occupied housing.
- Utility DSM Programs – Provide rebates and technical assistance for envelope improvements, appliance upgrades, and smart energy management.

Metrics for Tracking Progress

- Number of homes retrofitted annually
- Total square footage of retrofitted buildings
- % of income-qualified households served
- Energy savings - kWh and therms saved per year (pre- and post retrofit evaluations)
- Jobs created and sustained

Retrofit Nevada - Modernize Businesses Initiative

Description

Launch a statewide initiative that provides energy efficiency retrofits, electrification upgrades, and on-site renewables to commercial buildings. Expand and coordinate with Commercial Property Assessed Clean Energy (C-PACE) and the Weatherization Assistance Program.

Authority to Implement

- The GOE administers the state's Commercial Property Assessed Clean Energy (C-PACE) program and is authorized to promote energy efficiency and renewable energy in commercial buildings (NRS Chapter 701).
- NCEF has broad authority to finance commercial energy upgrades through loans, credit enhancements, and project aggregation strategies (NRS 701B).
- NHD administers the Weatherization Assistance Program (WAP), which focuses on residential properties but could be expanded to small nonprofit-owned commercial buildings (e.g., community centers, shelters) (NRS Chapter 319).
- PUCN has authority to regulate utility energy efficiency and demand-side management programs, including commercial-sector rebates and technical support (NRS Chapters 703–704).

Key Entities and Roles

- GOE – Oversees C-PACE program expansion, leads interagency coordination, and may house the initiative's technical assistance hub.
- NCEF – Finances commercial retrofits and electrification upgrades for property owners not able to use C-PACE or seeking alternative capital sources.
- PUCN & NV Energy – Align and expand utility DSM programs to support heat pumps, envelope improvements, demand response, and commercial solar installations.
- Local Governments – Facilitate adoption of C-PACE-enabling ordinances (required for participation), offer project development support, and coordinate with zoning/permitting departments.
- Chambers of Commerce & Trade Associations – Partner on outreach to commercial building owners, especially in small business and rural sectors.
- Contractors and ESCOs – Deliver turnkey retrofit projects, including performance contracts and bundled energy services.

Implementation Mechanisms

Nevada Retrofit Strategy: Develop a comprehensive state retrofit strategy with specific targets by building type (e.g., single-family, multifamily, public, and commercial) and geography. Include goals for electrification, envelope performance, and renewable integration.

Building Performance Standards Legislation: Adopt Building Performance Standards to mandate building retrofits that reduce EUI in large commercial and public buildings. See measure for more details.

Streamline Permitting for Electrification and Rooftop Solar: Collaborate with local governments and utilities to standardize and expedite permitting procedures and provide options for reduced fees for commercial electrification and solar projects. Create guidance and timelines for easy adoption and reduced administrative burdens.

Technical Assistance Hub: Develop a centralized technical assistance program to help commercial building owners understand retrofit options, evaluate ROI, connect with financing, and identify qualified contractors. The Hub should be connected to other retrofit initiative resources like the BPS and residential retrofits.

Expanded C-Pace and other financing: Expand Nevada's C-PACE program to finance retrofits, electrification upgrades, renewable energy installation. battery storage capital costs, and structural improvements to support renewable energy. Offer on-bill financing or revolving loans to help small and medium-sized businesses switch to energy-efficient electric equipment (e.g., HVAC, water heating, cooking).

Implementation Timeline and Milestones

Example Timeline	Example Milestones	Example Entities
2025-2026	Develop and publish statewide retrofit strategy for commercial buildings.	GOE
2025-2027	Expand C-PACE program eligibility and streamline local adoption processes.	GOE, Local Governments
2026-2028	Launch Technical Assistance Hub for commercial retrofits.	GOE
2026-2029	Collaborate with local governments to streamline permitting for electrification and rooftop solar	GOE, Local Governments

Example Timeline	Example Milestones	Example Entities
2027-2030	Expand utility DSM programs to include broader commercial sector offerings	PUCN, NV Energy
2028-2035	Scale deployment of performance contracts and bundled energy services	Contractors, ESCOs
2028-2040	Monitor and report BPS compliance and commercial retrofit uptake	GOE, PUCN
2030-2045	Integrate retrofit targets into broader building codes and enforcement	GOE, Nevada Legislature
2040-2050	Evaluate long-term GHG reductions and economic impacts of program	GOE, PUCN, NCEF

Costs and Savings Estimates

Financial values are represented in present value ($2025, discounted at 3%) for implementation from 2026 to 2050 as modelled in the LC scenario.

Incremental Capital Costs (million USD)	$16,510
Incremental Maintenance Costs (million USD)	$0
Incremental Energy Costs (million USD)	-$13,400
Incremental Total Costs (million USD)	$3,110
Return on Investment	-19%
Cumulative Emissions Reduction (kt CO2eq)	24,432
Marginal Abatement Cost ($ / t CO2 eq)	130

Funding Strategies

- Commercial Property Assessed Clean Energy (C-PACE) – Long-term, low-cost financing secured by property tax assessments for energy efficiency and renewable improvements.
- Inflation Reduction Act (IRA)
    - Section 48 Investment Tax Credit (ITC) – Applies to commercial solar, battery storage, and some HVAC systems
      Construction must begin before July 4, 2026

- DOE Building Technologies Office and Buildings UP – Provides competitive funding and technical assistance for commercial retrofit initiatives.
- Nevada Clean Energy Fund (NCEF) – Offers flexible capital products, particularly for businesses not served by traditional lenders or seeking off-balance-sheet solutions.
- Utility DSM Programs (PUCN-approved) – Offer rebates and performance incentives for energy-efficient lighting, HVAC, envelope measures, and solar integration.
- State Bonding or Revolving Loan Fund (future) – Legislative authority could establish a Nevada commercial clean buildings fund using public capital and loan repayment revenue.

Metrics for Tracking Progress

- Total commercial buildings retrofitted annually (by size, sector, and region)
- Average energy use intensity (EUI) reduction (%) per participating building
- Number and % of commercial buildings electrified
- Share of retrofitted buildings incorporating on-site renewables and battery storage
- Number of jurisdictions adopting C-PACE-enabling ordinances
- Number of C-PACE projects initiated and completed
- Total C-PACE investment deployed ($)
- Average payback period or ROI for retrofitted commercial buildings
- Number of small businesses and nonprofits receiving technical assistance

Incentivize and Require Heat Pumps for Heating and Cooling in Residential Buildings

Description

Accelerate the widespread deployment of heat pumps for space and water heating and cooling in residential and commercial buildings by incentivizing heat pump purchases and requiring new or replacement air conditioning units be high-efficiency heat pumps.

Authority to Implement

- GOE is authorized to develop incentive programs and lead outreach and education for heat pump adoption in residential and commercial buildings (NRS Chapter 701).
- NCEF may finance upfront costs of heat pump installations and provide low-interest loans or inclusive financing for building owners (NRS 701B).

- PUCN has authority TO regulate utility energy efficiency and demand-side management programs, which can include rebates for high-efficiency heat pumps (NRS Chapters 703–704).
- Local governments can establish building code amendments that exceed state minimum standards (e.g., requiring high-efficiency or all-electric replacements), subject to local ordinance authority.

Requiring that all new or replacement air conditioning units be high-efficiency heat pumps would require:

- Legislation or state-level rulemaking to set minimum efficiency or equipment type standards for HVAC systems at the time of replacement or permitting.
- Coordination with state building code authorities and local jurisdictions to integrate this requirement into permitting processes or energy codes.

Statutory authority may also be needed to:

- Prohibit the installation of standalone AC units that do not meet heat pump thresholds.
- Allow for hardship-based exemptions or phased implementation to address market availability and workforce capacity.

Key Entities and Roles

- GOE – Develops statewide heat pump adoption strategy, administers incentives, and leads public education campaigns.
- PUCN – Approves and oversees utility rebate and demand response programs that include heat pump incentives.
- NV Energy and Southwest Gas – Implement customer-facing programs for heat pump adoption, including contractor coordination and demand-side integration.
- NCEF – Provides upfront financing options for residential and commercial customers, with targeted offerings for LMI households and small businesses.
- Local Governments and Code Officials – Enforce new equipment standards via permitting and inspections, and may adopt additional ordinances to accelerate adoption.
- HVAC Contractors and Suppliers – Serve as primary implementers, requiring expanded training and support to meet demand and ensure quality installation.

Implementation Mechanisms

AC to Heat Pump Replacement Mandate: Require that all new or replacement air conditioning systems in residential and commercial buildings be high-efficiency heat pumps. Update state building code to align. Phase out the sale of standalone AC units based on target years of mandate adoption.

Incentives and Financing Options for Heat Pumps: Offer targeted rebates for homeowners of up to $4,000 with enhanced financing for low-income households and renters of up to $7,500. Deliver rebates upfront at point-of-sale through approved contractors. Create incentives that can be stacked with federal programs like the Inflation Reduction Act's HEAR program and utility-run DSM (Demand-Side Management) programs to lower upfront costs and simplify application processes. Partner with utilities to offer on-bill financing for customers switching to heat pumps.

Bulk Purchasing Heat Pumps: Establish a state- or utility-led bulk purchasing program for residential and commercial contractors, local governments, public agencies, and affordable housing developers.

HVAC Contractor Training and Certification Program: Fund and require statewide training on heat pump installation, commissioning, and servicing. Partner with local unions, community colleges, and workforce boards. Require utilities and contractors to certify participation as a condition of rebate eligibility.

Example Timeline and Milestones

Example Timeline	Example Milestones	Example Entities
2025	Launch public education campaign on heat pumps for homeowners and renters. Begin designing an income-based rebate program.	GOE, PUCN
2026	Adopt legislation or rulemaking for AC-to-heat pump replacement requirements in residential buildings. Develop on-bill financing programs.	GOE, PUCN, NV Energy
2027	Launch statewide rebate program with targeted support for iow-income households and renters. Establish contractor network for residential installations.	GOE, PUCN, NCEF

Example Timeline	Example Milestones	Example Entities
2028	Implement permitting updates for heat pump installations. Begin bulk purchasing initiative for heat pumps targeting residential contractors.	GOE, Local Governments, Utilities
2030	Initiate phased enforcement of AC-to-heat pump replacement mandate. Launch technical assistance hubs for residents and contractors.	GOE, Local Governments
2032	Evaluate initial program outcomes. Adjust incentive levels and outreach as needed to meet goals.	GOE, PUCN
2035	Expand contractor training capacity and workforce readiness.	GOE, GOWINN
2040	Introduce advanced performance-based incentives for high-efficiency models.	GOE, PUCN

Costs and Savings Estimates

Financial values are represented in present value ($2025, discounted at 3%) for implementation from 2026 to 2050 as modelled in the LC scenario.

Incremental Capital Costs (million USD)	$390
Incremental Maintenance Costs (million USD)	-$200
Incremental Energy Costs (million USD)	-$680
Incremental Total Costs (million USD)	-$490
Return on Investment	122%
Cumulative Emissions Reduction (kt CO2eq)	7,297
Marginal Abatement Cost ($ / t CO2 eq)	-70

Funding Strategies

- Inflation Reduction Act (IRA)
  - High-Efficiency Electric Home Rebate Program (HEEHR) – Point-of-sale rebates for low- and moderate-income households adopting heat pumps *Program runs through September 30, 2031 or until funds are exhausted.*
  - Home Energy Performance-Based, Whole-House Rebates (HOMES) – Supports comprehensive retrofits, including heat pumps

    - Section 25C Tax Credit – Covers 30 percent of heat pump costs for residential installations
      Terminated availability by December 31, 2025.

- Utility Demand Side Management (DSM) Funds (PUCN-approved) – Used to support residential and commercial heat pump rebates, load management, and technical support.
- Nevada Clean Energy Fund (NCEF) – Offers flexible financing for upfront costs, especially in multifamily, small commercial, and underserved markets.
- DOE State Energy Program (SEP) – Can provide planning and technical assistance funding for heat pump deployment strategy and workforce development.
- HUD Weatherization and Energy Assistance Programs – May integrate heat pumps into eligible retrofits for affordable and public housing.

Metrics for Tracking Progress

- Number of heat pumps installed annually
- Share of households using heat pumps for heating/cooling (statewide and by region)
- Number and percentage of low-income households receiving incentives
- Share of rebates or loans going to rural and Tribal communities
- Utilization rate of on-bill financing and state-backed loan programs

Incentivize and Require Heat Pumps for Heating and Cooling in Commercial Buildings

Description

Accelerate the widespread deployment of heat pumps for space and water heating and cooling in commercial buildings by incentivizing heat pump purchases and requiring new or replacement air conditioning units be high-efficiency heat pumps.

Authority to Implement

- GOE is authorized to promote energy-efficient technologies and administer programs encouraging the use of high-efficiency electric systems, including heat pumps (NRS 701B).
- PUCN has authority to regulate utility energy efficiency and demand-side management programs, which may include residential and commercial heat pump incentives (NRS Chapters 703–704).

- NCEF may finance the purchase and installation of heat pumps through accessible loan products and inclusive financing tools (NRS 701B).
- Local governments, under home rule authority, can incorporate efficiency standards into permitting processes or local building codes, including equipment-specific rules.

Key Entities and Roles

- GOE – Leads statewide policy development, incentive program design, and education/outreach campaigns to promote consumer and contractor adoption.
- PUCN – Approves utility rebate structures and ensures alignment with state heat pump deployment targets and community benefit goals.
- Utilities (e.g., NV Energy, Southwest Gas) – Deliver financial incentives, coordinate demand response programs, and provide customer and contractor engagement.
- NCEF – Provides financing for residential and commercial property owners, especially for customers not eligible for rebates or tax incentives.
- Local Building Departments – Integrate enforcement of replacement standards into HVAC permitting and inspection processes.
- HVAC Industry and Trade Allies – Provide installation, training, and compliance support as the primary implementers of the transition.

Implementation Mechanisms

AC to Heat Pump Replacement Mandate: Require that all new or replacement air conditioning systems in residential and commercial buildings be high-efficiency heat pumps. Update state building code to align. Phase out the sale of standalone AC units based on target years of mandate adoption.

Incentives and Financing Options for Heat Pumps: Offer targeted rebates for homeowners and businesses with enhanced financing for low-income households, renters, and small businesses. Create incentives that can be stacked with federal programs like the Inflation Reduction Act's HEAR program and utility-run DSM (Demand-Side Management) programs to lower upfront costs and simplify application processes. Partner with utilities to offer on-bill financing for customers switching to heat pumps.

Bulk Purchasing Heat Pumps: Establish a state- or utility-led bulk purchasing program for residential and commercial contractors, local governments, public agencies, and affordable housing developers.

Example Timeline and Milestones

Example Timeline	Example Milestones	Example Entities
2025	Launch statewide heat pump education campaign and design incentive and financing programs.	GOE
2027	Adopt legislation for AC-to-heat pump replacement mandate.	GOE
2028	Develop contractor training and certification requirements Collaborate with utilities to launch utility rebate and on-bill financing programs.	GOE
2029	Begin implementation of replacement mandate in government buildings Bulk purchasing program launched for public agencies and commercial contractors.	GOE
2030	Mandate becomes effective for all commercial AC replacements.	GOE
2031	Monitor adoption rates and expand outreach in underserved regions.	GOE
2032	Evaluate program effectiveness and update incentive levels as needed.	GOE
2033	Expand financing tools via NCEF to support mid-sized commercial retrofits.	GOE
2035	Report on progress of uptake and adjust based on findings and criteria. Expand mandate to include water heating systems.	GOE
2040	Introduce second phase of contractor training for new tech models. Align utility DSM programs with broader electrification goals.	GOE
2043	Statewide standard enforcement through permitting departments. Review mandate impacts; adjust based on market and technology readiness	GOE
2045	Ongoing support, compliance tracking, and market monitoring. Continue data collection, reporting, and program adjustment.	GOE

Costs and Savings Estimates

Financial values are represented in present value ($2025, discounted at 3%) for implementation from 2026 to 2050 as modelled in the LC scenario.

Incremental Capital Costs (million USD)	$1,020
Incremental Maintenance Costs (million USD)	$70
Incremental Energy Costs (million USD)	-$240
Incremental Total Costs (million USD)	$850
Return on Investment	-78%
Cumulative Emissions Reduction (kt CO2eq)	6,427
Marginal Abatement Cost ($ / t CO2 eq)	130

Funding Strategies

- Commercial Property Assessed Clean Energy (C-PACE) – Long-term, low-cost financing for heat pump installations and other energy efficiency upgrades through property tax assessments
- Inflation Reduction Act (IRA)
    - Section 48 Investment Tax Credit (ITC): Provides a tax credit for qualifying HVAC technologies, including some commercial heat pumps, especially when installed alongside solar PV or energy storage systems.
      Construction must begin before July 4, 2026
- DOE Building Technologies Office and Buildings UP – Offers competitive funding, technical assistance, and implementation support for large-scale HVAC and building envelope retrofits, including commercial heat pump systems.
- Nevada Clean Energy Fund (NCEF) – Offers flexible capital products, particularly for businesses not served by traditional lenders or seeking off-balance-sheet solutions.
- Utility DSM Programs (PUCN-approved) – Offer rebates and performance incentives for energy-efficient lighting, HVAC, envelope measures, and solar integration.
- State Bonding or Revolving Loan Fund (future) – Legislative authority could establish a Nevada commercial clean buildings fund using public capital and loan repayment revenue to provide low-interest loans for HVAC electrification, leveraging repayment revenues to recycle capital.

Metrics for Tracking Progress

- Annual number of commercial HVAC systems replaced with high-efficiency heat pumps
- Share of total commercial buildings using heat pumps for heating/cooling
- Number of jurisdictions enforcing AC-to-heat-pump replacement standards through permitting
- Number of commercial buildings using bulk purchasing programs
- Total incentive dollars distributed
- Total loan and financing dollars distributed through NCEF or utility programs

7.4 Move with Active and Public Transit

Build Public Transit & Active Transportation Networks for Everyone

Description

Expand public transit and active transportation infrastructure to provide safe, sustainable, and robust mobility options across Nevada. Improve access to reliable and affordable public transportation by building out connected networks, enhancing connectivity to essential services, and fast-tracking pedestrian and bicycle infrastructure. Prioritize funding existing local and Tribal plans and incentivizing e-mobility options.

Authority to Implement

State entities have sufficient authority to plan, support, and/or implement this measure, but Nevada does not have a dedicated state funding stream for public transit operations and State transportation revenue (e.g., fuel taxes) is constitutionally restricted to highway purposes.

- NDOT has authority to develop transportation plans and provide financial and technical assistance to local and regional agencies, including for pedestrian and bicycle facilities when integrated into highway projects (NRS Chapter 408).
- NDEP has authority to apply for and receive grant funding and take measures to abate air pollution and to cooperate and contract with other governmental entities (NRS 445B.230 and NRS 277.180).
- Regional Transportation Commissions (e.g., RTC of Southern Nevada, RTC Washoe) have authority to operate transit systems, construct transportation infrastructure, and fund multimodal improvements (NRS Chapter 373 and local legislation).

- GOE and NDEP can support climate-related transportation projects through energy and emissions programs (NRS 701 and NRS 445B).
- Tribal governments have authority to independently plan and implement transit and active transportation improvements on Tribal lands using federal and intergovernmental funding sources.
- NDOT and MPOs are authorized to fund transit, bike/pedestrian infrastructure, and mobility safety improvements (Federal programs under 23 U.S.C. and 49 U.S.C.).

New legislation would be necessary to create a state funding stream (state transit trust fund or multimodal investment account) and a statutory amendment may be needed to allow NDOT to fund active transportation projects outside of state highway rights-of-way.

Key Entities and Roles

- NDOT – Administer new grant programs, coordinate statewide planning, and manage federal formula and discretionary funds for transportation alternatives and transit infrastructure.
- MPOs and RTCs – Design and deliver shovel-ready projects, integrate multimodal infrastructure into regional transportation plans, and operate expanded transit service.
- Local Governments – Provide local match, maintain sidewalks and bike infrastructure, implement transit-oriented zoning and land use changes.
- Tribal Governments – Implement projects through direct federal funds and collaborate with NDOT on statewide initiatives.
- NDEP / GOE – Support coordination with climate and air quality programs; identify co-benefits for emissions reduction.
- CBOs – Lead education and outreach campaigns, co-design infrastructure with residents, and support first/last-mile solutions.

Implementation Mechanisms

Climate-Resilient Zoning Reform: Require all local comprehensive plans to incorporate emissions reduction and climate risk maps by 2028 to show community planning efforts are aligned with the State's goal of reaching net-zero by 2050. Tie state transportation and housing funding to compliance.

Multimodal Mobility Implementation Grants: Provide funding to local, Tribal, and regional transit transportation agencies for shovel-ready projects. Prioritize projects that connect isolated communities to essential services, promote transit-oriented development, and create safe environments for transit users (e.g. shade, water fountains, bollards, bike parking, lighting, etc.). Funding can support constructing protected bike lanes, upgrading sidewalks, crosswalks, among other initiatives.

Public Transit Expansion Funding: Establish a dedicated fund to support expansion of urban and rural transit systems, including new routes, increased frequency, ADA accessibility improvements, first/last-mile service connections, and safe stops with shade and water access.

Education and outreach campaigns: Partner with transit agencies and community organizations encourage walking, biking, and public transit use.

Example Timeline and Milestones

Example Timeline	Example Milestones	Example Entities
2025	Launch planning for statewide multimodal network and initiate Climate-Resilient Zoning Reform policy development.	NDOT, GOE, Local Governments
2026	Develop guidance for local governments on emissions and climate risk mapping and begin zoning reform technical assistance.	NDOT, GOE
2027	Launch Multimodal Mobility Implementation Grants and fund pilot active transportation projects in low-income and Tribal communities.	NDOT, MPOs, RTCs
2028	Deadline for all local comprehensive plans to include climate-aligned zoning elements.	Local Governments, GOE
2030	Scale implementation of bike and pedestrian infrastructure in major metro areas. Establish dedicated public transit expansion fund and begin phase-in of new rural and urban routes.	Nevada Legislature, NDOT
2035	Expand multimodal infrastructure to all major intercity corridors; integrate with e-mobility options.	RTCs, MPOs, NDOT, NDEP
2040	Publish evaluation of project and grant impacts.	NDOT, MPOs

Costs and Savings Estimates

Financial values are represented in present value ($2025, discounted at 3%) for implementation from 2026 to 2050 as modelled in the LC scenario.

Incremental Capital Costs (million USD)	$3,170
Incremental Maintenance Costs (million USD)	-$6,400
Incremental Energy Costs (million USD)	-$5,310
Incremental Total Costs (million USD)	-$8,540
Return on Investment	270%
Cumulative Emissions Reduction (kt CO2eq)	16,720
Marginal Abatement Cost ($ / t CO2 eq)	-510

Funding Strategies

Nevada does not currently provide a dedicated state funding stream for public transit operations and State transportation revenue (e.g., fuel taxes) is constitutionally restricted to highway purposes.

- Federal Transit Administration (FTA) Programs
  - Urbanized Area Formula Grants (5307)
  - Rural Area Formula Grants (5311)
  - Capital Investment Grants (CIG/Small Starts)
  - Mobility for All and Enhanced Mobility of Seniors & Individuals with Disabilities (5310)
- Infrastructure Investment and Jobs Act (IIJA)
  - Transportation Alternatives Set-Aside
  - PROTECT Program (for climate-resilient bike/ped and transit infrastructure)
  - RAISE Grants for rebuilding American infrastructure
- Congestion Mitigation and Air Quality (CMAQ) Program – Funds transit expansions and bike/ped projects that reduce emissions.
- State and Local Options (if authorized)
  - Local sales tax allocations via RTCs or special districts.
  - Potential creation of a Nevada Multimodal Mobility Fund via new legislative action.
- Use of general fund appropriations or bonding authority for capital investments.

Metrics for Tracking Progress

- Percentage of population within 0.5 miles of frequent transit or active transportation options
- Miles of new sidewalks, bike lanes, and transit routes built or upgraded annually
- Number of new transit stops with shade, water fountains, and ADA accessibility
- GHG emissions reduced from vehicle miles traveled and increased mode shift
- Percentage change in transit ridership
- Percentage change in biking/walking commute rates
- Number of jurisdictions updating comprehensive plans to include climate-resilient zoning
- Total federal, state, and local investment deployed for transit and active transportation

7.5 Accelerate Adoption of Zero Emissions Vehicles for All

Launch ZEV for NV, an initiative to increase personal use ZEVs

Description

Develop a comprehensive strategy to accelerate the adoption of zero-emission vehicles (ZEVs). Offer targeted rebates and incentives for new and used ZEVs, particularly for low-income communities. Increase investment in home, workplace, and public charging infrastructure by aligning with Nevada's NEVI Deployment Plan and providing technical and financial support to local governments and community partners. Ensure that ZEV ownership is accessible, affordable, and supported by a reliable, statewide charging network.

Authority to Implement

- NDEP leads the Clean Cars Nevada initiative, which will sunset after model year 2025, and can develop an incentive program to support ZEV adoption.
- GOE is authorized to promote ZEV adoption, manage federal funding alignment (e.g., NEVI), and coordinate cross-agency ZEV infrastructure strategy (NRS Chapter 701).
- Nevada Public Utilities Commission (PUCN) may approve ratepayer-funded ZEV infrastructure programs (NRS Chapters 703–704).

- NCEF can finance ZEVs and ZEV charging stations through loans or inclusive financing (NRS 701B).
- Local governments have authority over local zoning, permitting, and public fleet electrification.

Legislative or executive action may be needed to:

- Mandate community benefit performance standards for utility and state ZEV infrastructure programs to ensure investments reach low income and at risk communities
- Create a comprehensive statewide ZEV infrastructure plan beyond NEVI, covering residential, workplace, and community-based charging needs
- Expand existing statutory definitions and eligibility for used ZEV incentives, shared mobility programs, and non-car ZEVs (e.g., e-bikes, motorcycles)

Key Entities and Roles

- NDEP – Leads Clean Cars Nevada implementation, coordinates with EPA and automakers, and tracks vehicle emissions compliance.
- GOE – Oversees charging infrastructure strategy, aligns state programs with NEVI, and provides technical assistance to local governments.
- PUCN & Utilities – Approve and implement utility transportation electrification investments (e.g., charging make-ready infrastructure, rate design).
- NCEF – Offers low-interest loans or on-bill repayment programs for ZEVs and chargers, especially for income-eligible residents and small businesses.
- Local Governments – Install public chargers, update zoning codes, and partner on outreach and community benefit-focused deployment.
- Community-Based Organizations – Engage in ZEV education, outreach, and equitable program design with historically underserved populations.

Implementation Mechanisms

Statewide Financial Incentive Platform: Create an integrated incentive system that combines point-of-sale rebates for new and used ZEVs with enhanced support for low income and at risk communities, rebates for home, multifamily, and workplace ZEV charger installations, including mobile or off-grid solutions in rural or Tribal areas, and incentives for e-bikes, e-cargo bikes, e-motorcycles, and e-scooters for individuals and businesses.

Community Charging and Infrastructure Access Grants: Provide funding to local governments, Tribes, community organizations, and small businesses to plan, install, and maintain publicly accessible ZEV charging infrastructure.

Technical Assistance and Simplified Permitting Hub: Establish a state-supported hub to provide model ordinances, pre-approved technology lists, and vendor procurement support. Assist local agencies and property owners with planning, siting, and permitting of ZEV chargers and offer guidance on utility interconnection and grid readiness.

Example Timeline and Milestones

Example Timeline	Example Milestones	Example Entities
2025	Launch ZEV for NV initiative with interagency coordination and stakeholder engagement.	GOE, NDEP
2026	Establish Statewide Financial Incentive Platform and begin ZEV rebate disbursement.	GOE, NCEF
2027	Deploy Technical Assistance and Simplified Permitting Hub for local governments and developers.	GOE
2028	Award first round of Community Charging and Infrastructure Access Grants.	GOE, Local Governments, NGOs
2030	Achieve 50% ZEV rebate access for low income and at risk communities; expand used ZEV incentives	NCEF, GOE, PUCN
2035	Reach 75% residential and workplace charging infrastructure target under state ZEV plan	PUCN, Utilities, Local Governments
2040	90% of local governments adopt ZEV-ready zoning and streamlined permitting	Local Governments, GOE
2045	Achieve near-universal statewide access to ZEV charging infrastructure	GOE, NDEP, Utilities

Costs and Savings Estimates

Financial values are represented in present value ($2025, discounted at 3%) for implementation from 2026 to 2050 as modelled in the LC scenario.

Incremental Capital Costs (million USD)	$8,380
Incremental Maintenance Costs (million USD)	-$7,100
Incremental Energy Costs (million USD)	-$3,100

Incremental Total Costs (million USD)	-$1,820
Return on Investment	22%
Cumulative Emissions Reduction (kt CO2eq)	73,513
Marginal Abatement Cost ($ / t CO2 eq)	-20

Funding Strategies

- Inflation Reduction Act (IRA)/Bipartisan Infrastructure Law (BIL)
    - Section 30D Clean Vehicle Tax Credit – Up to $7,500 for new ZEVs and $4,000 for used ZEVs, with income and price eligibility criteria
    - NEVI Program (BIL) – Federal funding for highway corridor fast chargers and state-level ZEV infrastructure implementation
    - ECJ Block Grants – May support LMI-focused ZEV access and charging deployment in overburdened communities
      Funds remain available until September 30, 2026
- PUCN-Approved Utility Programs – Fund make-ready infrastructure, residential charging rebates, and demand management programs.
- Nevada Clean Energy Fund (NCEF) – Finances ZEVs and charging stations for households, businesses, and community organizations.
- State Appropriations or Future Legislative Authority – Could establish a Nevada ZEV Rebate Program or Green Mobility Fund.

Metrics for Tracking Progress

- Annual percentage of new light-duty vehicle sales that are ZEVs
- Cumulative number of ZEVs registered in Nevada
- ZEV market penetration by income bracket and zip code
- Number of publicly accessible ZEV chargers installed statewide
- Total incentive dollars distributed, disaggregated by:
    - New vs. used ZEVs
    - Vehicle type (e.g., passenger car, e-bike, etc.)
    - Recipient income level or zip code

Establish Lead the Charge, an Electrifying Public Fleets Assistance Program

Description

To support AB 262 and accelerate the transition of publicly-owned vehicles and transit fleets to zero-emissions, develop "Lead the Charge" assistance program to provide financial and technical support to state agencies, local governments, school districts, and transit authorities. Offer grants, rebates, and low-interest loans to support vehicle procurement, infrastructure upgrades, and workforce training.

Authority to Implement

- NDEP has authority to administer mobile source emission reduction programs and leads the implementation of AB 262 2023 (NRS Chapter 445B).
- GOE is authorized to promote clean transportation, provide technical assistance, and support public-sector fleet electrification efforts through coordination with utilities and local agencies (NRS Chapter 701)
- NCEF can offer financing tools such as low-interest loans or leasing arrangements for vehicle procurement and infrastructure investments by public entities (NRS 701B).
- NDOT and transit authorities (e.g., RTC of Southern Nevada, RTC Washoe) have authority over public transportation planning and may manage or coordinate transit fleet electrification.

Key Entities and Roles

- NDEP – Leads program design and administration of grants and emissions tracking; ensures alignment with AB 262 timelines and GHG reduction targets.
- GOE – Provides technical assistance, training, and infrastructure planning support to state and local fleet managers.
- NCEF – Offers low-interest financing, lease-to-own options, and credit enhancements to support public fleet electrification projects.
- NDOT and Transit Authorities – Coordinate zero-emission transit deployment, align routes with infrastructure development, and apply for vehicle and charger grants.
- School Districts and Local Governments – Procure eligible vehicles, install charging equipment, and participate in workforce training and data-sharing initiatives.

Implementation Mechanisms

Low-Interest Public ZEV Loan Fund: Establish a revolving loan fund for public agencies to finance fleet electrification and infrastructure projects.

Toolkits and Trainings: Provide playbooks and pre-approved designs to help agencies work with utilities to upgrade infrastructure and manage fleet charging needs. Offer trainings to public agency mechanics and operations staff in maintenance and charging equipment servicing.

Transition Reporting: For agencies receiving state funding, require annual reporting of vehicle purchasing and ZEV integration.

Example Timeline and Milestones

Example Timeline	Example Milestones	Example Entities
2026	Launch 'Lead the Charge' program.	NDEP, GOE, NCEF
2027	Establish Public ZEV Loan Fund & distribute initial grants/loans. Release toolkit and conduct statewide training for public fleet managers	NCEF, GOE, NDEP
2028	First wave of ZEV procurement for school districts and local governments.	School Districts, Local Governments
2029	Begin reporting of ZEV integration progress for state-funded agencies.	NDEP
2030	All major transit authorities submit electrification plans. 100% of all light duty vehicle purchases are ZEVs.	Transit Authorities, NDOT, All public entities
2035	Milestone: 75% of public fleets transitioned to ZEVs	All public entities
2040	Majority of infrastructure upgrades for depot and in-route charging complete	Utilities, Local Governments
2045	100% of all medium and heavy vehicle purchases are ZEVs.	All public entities

Costs and Savings Estimates

Financial values are represented in present value ($2025, discounted at 3%) for implementation from 2026 to 2050 as modelled in the LC scenario.

Incremental Capital Costs (million USD)	$30
Incremental Maintenance Costs (million USD)	-$200

Incremental Energy Costs (million USD)	-$70
Incremental Total Costs (million USD)	-$240
Return on Investment	840%
Cumulative Emissions Reduction (kt CO2eq)	516
Marginal Abatement Cost ($ / t CO2 eq)	-460

Funding Strategies

- Inflation Reduction Act (IRA)
    - Section 30C Alternative Fuel Infrastructure Credit – Tax incentives for public charging and hydrogen fueling stations
      Phased out credit availability by June 30, 2026
- Volkswagen (VW) Settlement Funds – Can be used for school bus and transit vehicle replacement with zero-emission models.
- Nevada Clean Energy Fund (NCEF) – Provides long-term financing for public fleets and associated infrastructure.
- State Transportation and Climate Resilience Funds (future) – Legislative appropriations could create a dedicated fleet transition grant program.
- PUCN-Approved Utility Programs – May support charging infrastructure installation and fleet-specific demand management strategies.

Metrics for Tracking Progress

- Number of public agencies enrolled in the "Lead the Charge" assistance program (state, local, school districts, transit authorities).
- Amount of funding distributed through grants, loans, and rebates for fleet electrification.
- Number and share of ZEVs in public fleets (segmented by state, local, school district, and transit).
- Number of electric school buses and transit buses deployed.
- Number of charging stations installed to support public fleets (Level 2, DC Fast Chargers).
- Cost savings or fuel cost reduction for public agencies from transitioning to ZEVs.

Deploy Community-Based Electric Car Sharing Programs

Description

Support the launch and expansion of zero-emission vehicle car sharing programs through grants, technical assistance, and public education. Prioritize deployments in low income and at risk communities to increase access to clean, affordable transportation options. Partner with local governments, transit agencies, and community-based organizations to develop and promote shared mobility services that reduce the need for personal vehicle ownership.

Authority to Implement

- NDEP has authority to administer air quality and mobile source emissions programs and may support ZEV deployment through targeted grantmaking and partnerships with local jurisdictions (NRS Chapter 445B).
- GOE is authorized to promote clean transportation strategies and could lead technical assistance and infrastructure coordination for ZEV carsharing (NRS Chapter 701)
- NCEF can finance ZEV carsharing infrastructure and fleet acquisition through community-based investment strategies (NRS 701B).
- Local governments and MPOs have authority to implement shared mobility programs, allocate public parking or right-of-way access, and support public education initiatives.

Key Entities and Roles

- NDEP – Administers grant funding, evaluates emissions benefits, and monitors program compliance and reporting.
- GOE – Provides planning, permitting, and technical support to local carsharing programs and helps coordinate charging infrastructure needs.
- NCEF – Offers inclusive financing tools for carsharing fleet acquisition, especially in community-driven or nonprofit models.
- Local Governments – Facilitate siting and permitting for ZEV chargers, manage outreach and education campaigns, and help integrate carsharing with local transit.
- Transit Agencies and MPOs – Collaborate on multimodal planning, co-locate carsharing at transit hubs, and integrate payment and access platforms.
- CBOs – Lead community engagement, ensure equitable design and access, and host pilot programs.

Implementation Mechanisms

Partnerships for Deployment: Develop public-private partnerships with carshare operators to provide ZEVs in Nevada cities, leveraging public incentives in exchange for

community service requirements. Collaborate with affordable housing providers and nonprofits to host carshares on-site. Provide incentives for developments that include ZEV carsharing as an amenity.

Carshare Planning Toolkits for Local Governments: Develop a toolkit that includes siting guidance, partnership models, legal considerations, insurance templates, and community outreach strategies.

Example Timeline and Milestones

Example Timeline	Example Milestones	Example Entities
2026	Design carshare program framework and funding structure.	GOE, NDEP, NCEF
	Develop and publish a local government carshare toolkit.	GOE
2027	Launch pilot programs in at least 5 low-income communities, including Tribal and rural communities.	Local Governments, NGOs, NDEP
	Deploy charging infrastructure for initial pilot programs	Local Governments, GOE
2028	Evaluate pilot outcomes and develop statewide deployment strategy.	NDEP, GOE
2029	Expand carsharing to 10 additional communities.	Local Governments, Transit Agencies
2030	Integrate carsharing access into transit hubs in major cities.	Transit Agencies, MPOs
2032	Launch state-supported community carshare financing products.	NCEF
2035	Carsharing availability in all urbanized areas of Nevada	Local Governments, NGOs

Costs and Savings Estimates

Financial values are represented in present value ($2025, discounted at 3%) for implementation from 2026 to 2050 as modelled in the CD scenario.

Incremental Capital Costs (million USD)	-$6,740

Incremental Maintenance Costs (million USD)	-$1,460
Incremental Energy Costs (million USD)	-$160
Incremental Total Costs (million USD)	-$8,360
Return on Investment	No direct financial return
Cumulative Emissions Reduction (kt CO2eq)	587
Marginal Abatement Cost ($ / t CO2 eq)	-14,230

Funding Strategies

- Inflation Reduction Act (IRA)
    - ECJ Block Grants – Target funding for clean mobility in low income and at risk communities.
      Funds remain available until September 30, 2026
    - Section 30D Clean Vehicle Credit (used ZEVs) – May support cost-effective fleet acquisition for carsharing programs
- DOE Vehicle Technologies Office & Clean Cities Coalition – Technical support and competitive grants for shared mobility innovation and ZEV adoption.
- State or Local Appropriations (future authority) – Could fund pilot programs and establish a Nevada Clean Mobility Grant Program.
- Nevada Clean Energy Fund (NCEF) – Finances vehicles and infrastructure for shared mobility programs, especially those with social benefit goals.
- PUCN-Approved Utility Programs – May provide rebates for shared-use charging stations and community-based ZEV pilots.

Metrics for Tracking Progress

- Number of electric car share programs launched statewide and by region
- Total number of ZEVs deployed in car share fleets.
- Percent of car share locations located in low-income communities.
- Number of ZEV charging stations installed for car share programs in multi-family and commercial buildings.
- Total number of users.
- Total number of ZEV car share trips per month or year.

7.6 Drive Sustainable Transport of Goods

Incentivize and Require the Clean Commercial Fleet Transition

Description

Accelerate the transition of commercial fleets including light-, medium-, and heavy-duty vehicles to zero-emission technologies through grants, loans, infrastructure support, and strategic partnerships. Partner with fleet operators and logistics companies to develop transition plans, install charging and hydrogen fueling infrastructure along major freight corridors, and pilot technologies like battery swapping. Support planning, piloting, and implementation of vehicle and fueling infrastructure upgrades in coordination with the NEVI Deployment Plan.

Authority to Implement

State entities have sufficient authority to offer incentives to encourage clean commercial fleet transitions:

- NCEF has authority to provide funding for clean transportation initiatives, including loans for vehicle electrification and infrastructure projects (NRS Chapter 701B).
- NDEP has authority over air quality (NRS Chapter 445B).
- NV Energy is authorized to invest in electric vehicle infrastructure, including commercial fleet charging (Senate Bill 448)
- NDOT and GOE have authority to deploy EV infrastructure due to Nevada's participation in the NEVI Program/IIJA.

In order to implement *requirements for* ZEV adoption by private commercial fleets, new statutory authority would be required to:

- Enforce ZEV purchase requirements for certain fleet sizes or sectors, or
- Authorize state agencies to develop or mandate fleet transition plans.

Obtaining necessary authority would likely require new legislation that amends NRS 445B.

Key Entities and Roles

- NDEP – Administer incentive programs, monitor compliance, and coordinate with EPA.
- GOE – Lead infrastructure planning, coordinate NEVI-funded deployments, and engage partners on site readiness and corridor strategy.

- NDOT – Support corridor planning and provide ROW access for charging and fueling infrastructure through the Alternative Fueling Infrastructure Plan.
- NV Energy / PUCN – Approve and implement utility-side investments in fleet charging, demand management, and grid integration under existing regulatory frameworks.
- NCEF – Finance vehicle purchases, depot upgrades, and private-sector infrastructure through loans and blended capital programs.
- Local Governments and MPOs – Help identify fleet operators, assess local infrastructure constraints, and align fleet transitions with air quality and economic development goals.

Implementation Mechanisms

Clean Fleet Financing and Incentives: Provide grants to fleet operators to support vehicle procurement, charging infrastructure, and power upgrades. In addition to grants, establish a revolving loan fund to help businesses finance ZEV purchases and installation of charging and refueling stations. Offer point-of-sale rebates, vouchers, or tax credits to further reduce upfront costs with higher discounts for medium and heavy-duty vehicles. Provide higher grant and incentive amounts to operators that retire and turn over older, high-polluting vehicles to remove them from the used market.

Technical Assistance and Planning Support: Create a state-operated hub to help fleet operators access financing and incentives, understand best practices and innovative technologies. Provide matchmaking and planning assistance for fleet operators to coordinate with utilities on grid upgrades, managed charging, and demand-response strategies.

ZEV Freight Corridor Infrastructure: Fund planning, siting, and construction of charging and hydrogen fueling stations along Nevada's major freight corridors (e.g., I-15, I-80, U.S. 95), with rest stop or logistics hub access. Partner with large shippers, retailers, and logistics firms to pool investments in fueling infrastructure.

Adopt the Advanced Clean Trucks Regulation: Require truck manufacturers to sell an increasing percentage of zero-emission vehicles (ZEVs) in classes 2b through 8. Aiming for 100% of medium and heavy-duty vehicles be ZEV by 2035. As a part of this regulation, require hydrogen producers to submit a Fugitive Hydrogen Emissions Risk Reduction Plan, modeled on the UK Low Carbon Hydrogen Standard, to minimize leakage and ensure climate benefits are fully realized for hydrogen-powered freight.

Example Timeline and Milestones

Example Timeline	Example Milestones	Example Entities
2026-2027	Develop statewide commercial fleet transition strategy.	NDEP, GOE, Legislature
	Launch Clean Fleet Financing and Incentive Program and establish a revolving loan fund.	NCEF, NDEP
	Establish Technical Assistance Hub for fleet operators.	GOE, NDEP
	Begin planning ZEV Freight Corridor Infrastructure with stakeholders.	GOE, NDOT, NV Energy
	Launch pilot ZEV commercial fleet programs with major operators.	NDEP, NCEF
2027-2029	Construct the first wave of charging and hydrogen stations along I-15 and I-80.	NDOT, GOE, NV Energy
	Adopt Advanced Clean Trucks Rule and initiate compliance monitoring systems.	NDEP, Legislature
	Offer first round of planning grants and infrastructure incentives to fleet operators.	NCEF, GOE
2030-2034	Expand corridor infrastructure statewide and enable public-private partnerships.	NDOT, NV Energy, GOE
	Support deployment of battery swapping and managed charging systems.	Utilities, GOE
2035	Target 100% of new light-duty vehicle sales to be ZEV. Target 50% of new medium and heavy-duty vehicle sales to be ZEV.	NDEP, PUCN
2035-2040	Continue infrastructure buildout to meet demand from commercial operators.	NDOT, NV Energy
	Ensure availability of financial products for small business fleets.	NCEF
2045	Target 100% of new medium and heavy-duty vehicle sales to be ZEV.	NDEP, PUCN

Example Timeline	Example Milestones	Example Entities
2041-2050	Ongoing monitoring of emissions reductions and infrastructure performance.	NDEP, GOE, NDOT
2041-2050	Adapt policies and incentives based on market evolution and technological advancements.	GOE, Legislature, PUCN

Costs and Saving

Financial values are represented in present value ($2025, discounted at 3%) for implementation from 2026 to 2050 as modelled in the LC scenario.

Incremental Capital Costs (million USD)	$2,110
Incremental Maintenance Costs (million USD)	-$790
Incremental Energy Costs (million USD)	-$1,230
Incremental Total Costs (million USD)	$90
Return on Investment	-4%
Cumulative Emissions Reduction (kt CO2eq)	20,730
Marginal Abatement Cost ($ / t CO2 eq)	0

Funding Strategies

- Inflation Reduction Act (IRA)/Bipartisan Infrastructure Law (BIL)
  - Inflation Reduction Act Tax Credits – Includes §45W commercial clean vehicle credit and §30C alternative fuel infrastructure credit
    CCV - Terminates September 30, 2025
    SAF - Funds available until September 30, 2026.
  - NEVI Formula Program (BIL) – Funds DC fast charging infrastructure along designated corridors.
- Carbon Reduction Program (23 U.S.C. § 175) – Funds commercial fleet upgrades through congestion mitigation and emissions reduction.
- EPA Clean Heavy-Duty Vehicle Program – Competitive grants and rebates for zero-emission truck purchases and related infrastructure.
- DOE Vehicle Technologies Office – Provides pilot and deployment funding through Clean Cities and other applied R&D initiatives.
- State Transportation Electrification Investments (SB448) – NV Energy's authorized investments support large-scale fleet charging projects.

Metrics for Tracking Progress

- Number of fleet transition assessments completed
- Technical assistance requests fulfilled
- Number of ZEVs in commercial fleet registrations
- Number of grants/loans awarded through NCEF
- Miles of corridor equipped with fueling/charging infrastructure
- Total emissions reduced from commercial vehicles (MTCO2e)
- Rate of ACT compliance among manufacturers
- Annual ZEV sales by class (light, medium, heavy-duty)
- Percentage of commercial fleets complying with ZEV standards
- Utilization rates of charging/refueling infrastructure

Adopt Power Up Clean Worksites, an initiative to transition Off-Road Equipment to ZEVs

Description

Accelerate the replacement of ICE off-road and industrial equipment with zero-emissions alternatives across sectors like construction, mining, industry, landscaping, and agriculture. Establish sales targets for zero-emission off-road equipment. Provide grants, rebates, and workforce training to businesses and workers to support deployment of electric and hydrogen-powered equipment and fueling infrastructure. Launch demonstration projects and public-private partnerships to scale up deployment.

Authority to Implement

State entities have sufficient authority to offer incentives to encourage clean commercial fleet transitions:

- NCEF has authority to provide funding for clean transportation initiatives, including loans for vehicle electrification and infrastructure projects (NRS Chapter 701B).
- NDEP has authority over air quality and mobile source emissions programs (NRS Chapter 445B).
- NV Energy is authorized to invest in electric vehicle infrastructure, including commercial fleet charging (Senate Bill 448).
- NDOT and GOE have authority to deploy EV infrastructure due to Nevada's participation in the NEVI Program/IIJA.

In order to implement requirements for ZEV adoption by private commercial fleets, new statutory authority would be required to:

- Create and enforce emissions standards for commercial operators.
- Enforce ZEV purchase requirements for certain fleet sizes or sectors.
- Authorize state agencies to develop or mandate fleet transition plans.

Obtaining necessary authority would likely require new legislation that amends NRS 445B.

Key Entities and Roles

- **NDEP** – Administer incentive programs, develop emissions reporting standards, monitor compliance, and coordinate with EPA.
- **GOE** – Lead infrastructure planning, coordinate NEVI-funded deployments, and engage partners on site readiness and corridor strategy.
- **NDOT** – Support corridor planning and provide ROW access for charging and fueling infrastructure through the Alternative Fueling Infrastructure Plan.
- **NV Energy / PUCN** – Approve and implement utility-side investments in fleet charging, demand management, and grid integration under existing regulatory frameworks.
- **NCEF** – Finance vehicle purchases, depot upgrades, and private-sector infrastructure through loans and blended capital programs.
- **Local Governments and MPOs** – Help identify fleet operators, assess local infrastructure constraints, and align fleet transitions with air quality and economic development goals.

Implementation Mechanisms

ZEV Off-Road Sales Target: Adopt a state goal to increase the percentage of zero-emission off-road equipment sales over time, e.g.100% by 2040, with optional early action credits.

Clean Contracting Standards for Public Projects: Require use of zero-emission or low-emission off-road equipment in state- funded construction, transportation, or maintenance projects.

Fleet Conversion Program: Package equipment grant funding, charger installation support, and workforce training into one-stop "Clean Worksite Kits" for easy adoption.

Public-Private Innovation Partnerships: Support collaborative demonstration projects between manufacturers, universities, public agencies, and private operators to trial next-generation clean off-road technologies.

Example Timeline and Milestones

Example Timeline	Example Milestones	Example Entities
2025 - 2029	Develop 'Power Up Clean Worksites' strategy and secure initial funding.	NDEP, GOE, NCEF
	Establish ZEV off-road sales targets and begin Clean Worksite Kit pilot program.	NDEP, GOE
	Deploy Clean Contracting Standards for state-funded projects and publish annual reporting requirements.	NDEP, NDOT
	Initiate public-private partnerships for demonstration projects and expand workforce training programs.	GOE, Universities, Industry Partners
2030	25% of new off-road equipment sales are ZEVs. Expand infrastructure support.	NDEP, NV Energy, Local Governments
2032	Assessment and adjustment of grant programs and technical assistance.	NDEP, GOE, PUCN
2035	50% of new off-road equipment sales are ZEVs. Statewide availability of Clean Worksite Kits.	NDEP, GOE, NCEF
2045	Achieve 100% ZEV sales target for off-road equipment. Complete transition of public-funded worksite fleets to zero-emissions equipment.	NDEP NDOT, Local Governments
2050	Publish cumulative emissions reductions and economic impact.	NDEP, GOE

Costs and Savings Estimates

Due to insufficient and unreliable financial data, providing accurate cost estimates for this measure would involve making too many assumptions, resulting in significant uncertainty. Therefore, no cost estimates have been provided.

Funding Strategies

- Inflation Reduction Act (IRA)/Bipartisan Infrastructure Law (BIL)
- IRA Tax Credits – Includes §45W commercial clean vehicle credit and §30C alternative fuel infrastructure credit.

  CCV - Terminates September 30, 2025

  SAF - Funds available until September 30, 2026
- NEVI Formula Program (BIL) – Funds DC fast charging infrastructure along designated corridors.
- Carbon Reduction Program (23 U.S.C. § 175) – Funds commercial fleet upgrades through congestion mitigation and emissions reduction.
- EPA Clean Heavy-Duty Vehicle Program – Competitive grants and rebates for zero-emission truck purchases and related infrastructure.
- DOE Vehicle Technologies Office – Provides pilot and deployment funding through Clean Cities and other applied R&D initiatives.
- State Transportation Electrification Investments (SB448) – NV Energy's authorized investments support large-scale fleet charging projects.

Metrics for Tracking Progress

- % of off-road equipment sales that are zero-emission
- Total number of ICE units retired or replaced
- Number and dollar amount of grants or rebates issued
- Utilization rate of "Clean Worksite Kits" and other bundled programs
- Number of public projects using clean contracting standards
- Number of off-road charging/fueling stations installed statewide

Fuel Sustainable Skies Program

Description

Support the production, adoption, and deployment of sustainable aviation fuel (SAF) by providing financial and technical assistance to producers, distributors, and airport operators. Encourage the use of SAF at commercial and regional airports across Nevada by aligning incentives with federal programs, supporting infrastructure upgrades, and creating procurement partnerships with airlines and public sector stakeholders. Promote research and development of feedstocks and production technologies suitable for Nevada, and prioritize SAF projects that reduce lifecycle emissions and deliver local economic and environmental benefits.

Authority to Implement

- Nevada Governor's Office of Energy (GOE) – May coordinate interagency efforts on SAF through climate and energy strategy planning.
- Nevada Department of Transportation (NDOT) – Can support infrastructure integration at airports aligned with transportation planning.
- Nevada Clean Energy Fund (NCEF) – Has statutory authority under NRS 701B to finance clean fuel infrastructure.
- Additional enabling authority for fuel standards or mandates may require legislation or regulatory changes.

Key Entities and Roles

- GOE – Coordinate statewide SAF goals and strategy, align programs with federal incentives, and manage cross-sector planning.
- NDOT – Integrate SAF infrastructure into state transportation plans and capital programs for airports.
- Airport Operators (e.g., Reno-Tahoe, Harry Reid International) – Lead site-level planning and facilitate infrastructure upgrades.
- Private Sector Partners (Airlines, SAF Producers) – Invest in production and usage pilots and provide lifecycle data for emissions tracking.
- NCEF – Provide financing for blending facilities, storage tanks, and distribution equipment.

Implementation Mechanisms

Require SAF Integration into Future Aviation Planning: Adopt a target of SAF fuel use at all major airports - e.g. 20% of fuel use by 2050. Mandate that all airports in Nevada include

SAF infrastructure in their master plans or capital improvement programs. Create a centralized, publicly accessible system that tracks the production, sale, transfer, and use of SAF, along with the associated emissions reductions. Use lifecycle emissions assessments to measure SAF emission reductions.

Sustainable Skies Taskforce: Form a coalition of public agencies, airlines, airport operators, and SAF producers to set goals for SAF usage, support demonstration projects, develop strategies to mitigate implementation challenges, engage producers to avoid negative ecological and community consequences, and promote lifecycle emission assessments to prevent overcounting emission reductions.

Tech Innovation Grants: Fund R&D and prototyping on alternative technologies like aviation electrification and hydrogen fuel cell use.

Example Timeline and Milestones

Example Timeline	Example Milestones	Example Entities
2026	Launch Sustainable Skies Taskforce with GOE, NDOT, major airports, airlines, and SAF producers	GOE, NDOT, Airport Operators
2027	Begin SAF feasibility assessments and infrastructure needs evaluations at major airports.	Airport Operators, NDOT
	Establish SAF targets and integration standards into aviation master plans.	GOE, NDOT, Airport Operators
2028	Launch SAF Tech Innovation Grant Program for R&D.	GOE, NCEF
2030	Initiate infrastructure upgrades for blending and storage at major airports.	Airport Operators, NCEF, NDOT
2032	Pilot SAF blending at Reno-Tahoe and Harry Reid International Airports.	Airport Operators, SAF Producers
2038	Scale up SAF production facilities in Nevada with state-supported financing.	NCEF, Private Producers
2045	Expand SAF usage to regional airports and smaller carriers.	GOE, NDOT, Regional Airports

Costs and Savings Estimates

Due to insufficient and unreliable financial data, providing accurate cost estimates for this measure would involve making too many assumptions, resulting in significant uncertainty. Therefore, no cost estimates have been provided.

Funding Strategies

- Inflation Reduction Act (IRA)
    - Tax credits for SAF production (§45Z)
    - Federal Aviation Administration (FAA) SAF Infrastructure Grant Program (SAF Grand Challenge)
      Funds available until September 30, 2026
- Department of Energy (DOE) Bioenergy Technologies Office (BETO)
- Nevada Clean Energy Fund low-interest financing for SAF infrastructure
- Private capital through green bonds or public-private partnerships

Metrics for Tracking Progress

- % of total aviation fuel that is SAF at Nevada airports
- Annual gallons of SAF dispensed at Nevada airports.
- Number of airports with SAF-compatible infrastructure
- # of airlines operating SAF-powered or electric flights from Nevada airports.

Propel Marine Vessels to use Low- and Zero-Emission Fuels

Description

Support the transition of marine vessels to low- and zero-emission alternatives by incentivizing the use of sustainable marine fuels (SMFs) such as green gasoline and e-gasoline. Promote the sale and use of alternative-energy non-commercial vessels including hybrid electric, battery electric, and hydrogen fuel cell vessels. Prioritize the electrification and hydrogen conversion of high-use boats. Begin development of shoreline charging and hydrogen refueling infrastructure, with incentives and technical assistance to encourage early adoption and innovation in the marine sector.

Authority to Implement

- NDEP has authority to regulate emissions from mobile sources and administer incentive programs to reduce emissions from marine vessels through transition to alternative fuels and zero-emission technologies (NRS Chapter 445B).

- NDOW can license, register, and track private watercraft and manage oversight of boating in state waters (NRS Chapter 488).
- GOE is authorized to promote clean transportation and alternative fuel technologies, including shoreline electrification and hydrogen infrastructure development (NRS Chapter 701)
- NCEF can finance zero-emission marine equipment and refueling infrastructure through public-private partnerships or direct financing to early adopters (NRS 701B).

Key Entities and Roles

- NDEP – Administer emissions reduction programs and funding; tracks air quality co-benefits from marine transitions.
- NDOW – Support registration tracking and outreach to vessel owners; may collaborate on outreach to boaters and policy development for vessel classification and incentives.
- GOE – Lead shoreline infrastructure planning, coordinates incentive design, and supports hydrogen and electric system integration.
- NCEF – Provide financing for vessel conversion, equipment purchases, and marina charging or hydrogen systems.
- Local Governments and Marina Operators – enable establishment of shoreline charging and refueling infrastructure through local planning and permitting.
- Tourism Industry and Private Operators – Participate in early adoption and pilot projects, especially in high-traffic recreational zones (e.g., Lake Tahoe, Lake Mead).

Implementation Mechanisms

Develop Shoreline Charging and Refueling Infrastructure: Provide funding to develop shoreline charging stations and refueling facilities at key locations, such as Lake Mead and Lake Tahoe. Offer support to marina operators and local governments in planning and implementing the necessary infrastructure.

Incentivize Adoption of Sustainable Marine Fuels and Zero Emission Alternatives: Offer rebates for hybrid electric, battery electric, and hydrogen fuel cell recreational boats. Establish state-level tax credits and grants for marine operators who retrofit or purchase vessels powered by SMFs like green gasoline and e-gasoline.

Raise Awareness and Encourage Early Adoption: Launch educational campaigns to share the benefits and availability of alternative-energy marine vessels.

Example Timeline and Milestones

Example Timeline	Example Milestones	Example Entities
2025 - 2030	Launch public awareness campaign on zero-emission marine technologies.	GOE, NDEP, NDOW
	Develop statewide infrastructure planning toolkit for marina electrification.	GOE, NCEF
	Track and publish baseline emissions and registration data for marine vessels in state waters.	NDEP, NDOW
	Roll out state rebate and tax credit programs for hybrid and zero-emission marine vessels.	NDEP, GOE
	Initiate pilot shoreline charging and hydrogen refueling infrastructure projects at Lake Mead and Lake Tahoe.	GOE, NCEF, Local Governments
2030 - 2035	Expand incentives to include green gasoline and e-gasoline retrofits.	NDEP, GOE
	Complete installation of charging/refueling infrastructure at 50% of high-use marinas.	Local Governments, NCEF
	Require new commercial marine vessels in state waters to use low or zero-emission propulsion.	Legislature, NDOW, NDEP
2040	Achieve 75% market share of zero-emission recreational vessel sales	GOE, NDOW
2045	Phase out sale of fossil-fuel-only recreational marine vessels	State Legislature, NDEP

Costs and Savings Estimates

Due to insufficient and unreliable financial data, providing accurate cost estimates for this measure would involve making too many assumptions, resulting in significant uncertainty. Therefore, no cost estimates have been provided.

Funding Strategies

- Inflation Reduction Act (IRA)
    -
    - ECJ Block Grants – May support community-scale marina upgrades and early vessel electrification in at-risk regions
      Funds remain available until September 30, 2026

    - Section 30C Alternative Fuel Infrastructure Credit – May be applied to hydrogen and electric refueling stations at marina locations
      Phased out credit availability by June 30, 2026

- EPA Clean Ports Program / Diesel Emissions Reduction Act (DERA) – May support vessel retrofits or repowering with low- or zero-emission systems.
- Nevada Clean Energy Fund (NCEF) – Offers financing for shoreline infrastructure and alternative-energy marine technology.
- State or Regional Tourism Funds (future authority) – Could support clean boating transitions in high-traffic tourism areas through grants or public-private partnerships.
- Utility Transportation Electrification Programs (PUCN-approved) – May support marina charging stations as part of broader clean transportation goals.

Metrics for Tracking Progress

- Number of zero-emission vessels registered annually (e.g., battery-electric, hydrogen fuel cell)
- Percentage of new vessel registrations that are low- or zero-emission.
- Number of shoreline electric charging stations and hydrogen refueling stations installed
- Percentage of major marinas with zero-emission fueling infrastructure
- Number of outreach campaigns or events held

7.7 Decarbonize Industry

Maximize Industrial Energy Efficiency

Description

Prioritize the implementation of energy efficiency measures in manufacturing and other high-energy-use facilities to reduce emissions and improve competitiveness in Nevada's industrial sector. This includes optimizing process efficiency, upgrading outdated equipment, recovering waste heat, and improving system-level integration.

Authority to Implement

- GOE is authorized to support energy efficiency and conservation in all sectors, including industrial and manufacturing. GOE may coordinate technical assistance and incentives for process improvements and equipment upgrades (NRS Chapter 701).

- NCEF is empowered to finance energy efficiency, waste heat recovery, and electrification projects in commercial and industrial sectors (NRS 701B).
- PUCN oversees demand-side management and custom efficiency programs offered by utilities to large energy users (NRS Chapters 703–704).
- Nevada Governor's Office of Economic Development (GOED) can provide targeted incentives or tax abatements for manufacturers implementing clean energy or energy-saving technologies.

New legislation may be required to mandate energy benchmarking or audits for large energy users above a certain threshold, with confidentiality protections and pathways to improvement.

Key Entities and Roles

- GOE – Leads statewide coordination, program development, and stakeholder outreach for industrial energy efficiency initiatives.
- NCEF – Provides accessible financing for capital-intensive industrial projects, including long-payback investments like waste heat recovery and cogeneration.
- PUCN – Approve and implement industrial DSM and custom energy efficiency offerings, and evaluate performance outcomes.
- GOED – Aligns clean manufacturing incentives with economic development policy and supports advanced manufacturing recruitment.
- Manufacturers and Facility Operators – Lead project implementation, reporting, and participation in technical assistance or incentive programs.
- DOE Industrial Assessment Centers (IACs) – May support technical assessments and workforce training in partnership with Nevada institutions.

Implementation Mechanisms

Adopt an industrial emissions reduction target and require energy benchmarking: Adopt a law that requires the state's industrial sector to reduce its GHG emissions 25% by the year 2032. Require large industrial facilities to report energy use and emissions through annual benchmarking for public accountability.

Industrial Energy Efficiency Challenge: Create a voluntary program to bring together state agencies, utilities, technical experts, and industry operators to increase industrial energy efficiency. Set targets for increases, host peer-to-peer learning and technical assistance, and rewards for verified GHG reductions from energy efficiency upgrades with performance-based incentives. Develop resources like Efficiency Opportunity Identification Toolkits and Sector-Specific Energy Efficiency Playbooks based on experiences and lessons learned from the Challenge.

Low-Interest Loans and Green Bonds for Industrial Efficiency: Establish or expand access to clean energy revolving loan funds (e.g., via the State Energy Program or PACE) for manufacturers seeking to finance upgrades with long payback periods.

Energy Efficiency Workforce Training Program: Partner with community colleges, unions, and trade organizations to develop programs in energy auditing, industrial systems optimization, and smart building controls.

Example Timeline and Milestones

Example Timeline	Example Milestones	Example Entities
2025 - 2030	Establish statewide coordination team and launch Industrial Energy Efficiency Challenge pilot program.	GOE, PUCN, GOED, NCEF
	Introduce legislation to mandate energy benchmarking and set 25% GHG reduction target by 2032.	GOE, Nevada Legislature, PUCN
	Launch statewide benchmarking and reporting system. Begin peer-learning and technical assistance events under the 'Challenge.'	GOE, DOE IACs, NCEF, PUCN
2030-2032	Deploy sector-specific toolkits and distribute performance-based incentives for verified GHG reductions.	GOE, GOED, PUCN, NCEF
2032	Evaluate progress towards 25% GHG reduction target. Publish results and best practices.	GOE, PUCN, DOE IACs
2033-2035	Expand loan and green bond financing for advanced efficiency upgrades and heat recovery systems.	NCEF, GOE, PUCN
2035-2040	Scale up workforce training programs for energy auditing, systems optimization, and smart controls.	GOE, Community Colleges, Trade Orgs
2040-2050	Continue Challenge program with revised targets. Support transition to next-gen energy efficiency and electrification.	GOE, NCEF, PUCN, Manufacturers

Costs and Savings Estimates

Financial values are represented in present value ($2025, discounted at 3%) for implementation from 2026 to 2050 as modelled in the LC scenario.

Incremental Capital Costs (million USD)	$15,470
Incremental Maintenance Costs (million USD)	$0
Incremental Energy Costs (million USD)	-$21,100
Incremental Total Costs (million USD)	-$5,630
Return on Investment	36%
Cumulative Emissions Reduction (kt CO2eq)	43,134
Marginal Abatement Cost ($ / t CO2 eq)	-130

Funding Strategies

- Inflation Reduction Act (IRA)
    - Advanced Industrial Facilities Deployment Program (DOE) – Competitive funding for decarbonization, process efficiency, and electrification in energy-intensive industries
    - Section 48C Advanced Energy Project Credit – Tax credit for re-equipping or retrofitting manufacturing facilities for cleaner energy use
- DOE Industrial Efficiency and Decarbonization Office (IEDO) – Offers grants, technical assistance, and public-private partnerships for systems integration, CHP, and waste heat recovery.
- PUCN-Approved Utility Programs – Custom incentives and rebates for process upgrades, system redesigns, and metering.
- Nevada Clean Energy Fund (NCEF) – Can underwrite retrofits, modernization, and grid-interactive load flexibility investments.
- GOED Tax Abatement and Grant Programs – May be adapted to include efficiency and emissions-reduction criteria for industrial projects.

Metrics for Tracking Progress

- Number of benchmarking reports completed annually
- Total industrial energy consumption (MMBtu/year)
- Reduced energy use intensity (EUI) by facility type or sector
- Number of industrial facilities participating in the Energy Efficiency Challenge

Accelerate Deployment of Green Hydrogen for Industrial Decarbonization

Description

Support the development and adoption of green hydrogen to reduce emissions from hard-to-abate industrial sectors such as chemicals, refining, steel, and high-temperature processing. Green hydrogen, produced via electrolysis using renewable electricity, offers a scalable, zero-emissions energy carrier that can replace fossil fuels in key applications.

Authority to Implement

- GOE is authorized to promote the development and integration of renewable energy technologies, including emerging clean fuels like green hydrogen (NRS Chapter 701).
- PUCN has authority to regulate utility resource planning and oversee pilot projects or tariff structures related to hydrogen production and use (NRS Chapters 703–704).
- NCEF is empowered to finance clean energy infrastructure projects, including electrolyzer deployment and hydrogen-compatible upgrades (NRS 701B).
- GOED may provide support through tax incentives or site development for hydrogen infrastructure and industrial transition.
- Federal agencies (DOE, EPA, DOT) regulate hydrogen safety, distribution, and use under federal statutes, including the Clean Air Act, Hydrogen Energy Act, and applicable pipeline and transportation regulations.

Nevada may need new statutory or regulatory authority to:

- Create incentive programs or procurement policies that encourage hydrogen adoption in industrial and transportation applications.
- Set hydrogen blending standards or enable pipeline access in coordination with utilities and federal regulators.
- Clarify permitting and environmental review procedures for electrolyzers and large-scale hydrogen production, including water use considerations.

Key Entities and Roles

- GOE – Leads strategic planning, stakeholder engagement, and coordination of hydrogen-related initiatives across state agencies and private partners.
- PUCN – Oversees utility participation in hydrogen production and use, and may approve tariffs or integrated resource planning involving electrolyzers or hydrogen storage.
- NCEF – Provides financing for infrastructure, industrial retrofits, or pilot deployments related to green hydrogen.
- GOED – Supports industrial decarbonization through hydrogen project siting, incentives, and coordination with advanced manufacturing efforts.

- NDEP – Evaluates environmental impacts, especially air quality, associated with hydrogen production and end use.
- Private Sector & Research Institutions – Drive technology deployment, pilot testing, and industrial integration, especially in sectors such as refining, cement, and metals.

Implementation Mechanisms

Financial Incentives & Funding Tools: Provide state-level incentives that complement federal clean hydrogen tax credits (e.g., IRA 45V - available through 2027) to boost in-state hydrogen production projects. Offer grants and low-interest loans to industrial facilities for hydrogen production equipment and retrofitting thermal systems for hydrogen use.

Industrial Hydrogen Challenge: Create a voluntary program to bring together state agencies, technical experts, and industry operators to increase hydrogen production and use. Set targets for increases, host peer-to-peer learning and technical assistance, and rewards for verified GHG reductions from green hydrogen integration with performance-based incentives. Develop resources like Hydrogen Opportunity Toolkits and Hydrogen Deployment Playbooks based on experiences and lessons learned from the Challenge.

Example Timeline and Milestones

Example Timeline	Example Milestones	Example Entities
2025-2030	Launch Industrial Hydrogen Challenge and identify priority sectors.	GOE, GOED
	Establish state-level financial incentives and funding programs aligned with IRA 45V.	GOE, NCEF
	Begin siting and permitting framework for large-scale hydrogen production.	NDEP, GOE
	Deploy first round of electrolyzer pilot projects in industrial settings.	Private Sector, GOE, NCEF
2030-2040	Expand hydrogen-compatible infrastructure (pipelines, storage, transmission).	NDOT, GOE, PUCN
	Scale up commercial hydrogen use across refining, cement, and heavy industry. Mandate GHG emissions intensity reduction targets incorporating hydrogen fuel use.	Industry, GOED, GOE GOE, NDEP, Legislature

Example Timeline	Example Milestones	Example Entities
2040-2050	Achieve near-full substitution of fossil fuels with green hydrogen in hard-to-abate industries.	GOE, Industry, Research Institutions

Costs and Savings Estimates

Financial values are represented in present value ($2025, discounted at 3%) for implementation from 2026 to 2050 as modelled in the LC scenario.

Incremental Capital Costs (million USD)	$0
Incremental Maintenance Costs (million USD)	$0
Incremental Energy Costs (million USD)	$1,020
Incremental Total Costs (million USD)	$1,020
Return on Investment	No direct financial return
Cumulative Emissions Reduction (kt CO2eq)	8,669
Marginal Abatement Cost ($ / t CO2 eq)	120

Funding Strategies

- Inflation Reduction Act (IRA)
  - Clean Hydrogen Production Tax Credit (45V) – Up to $3/kg for qualifying clean hydrogen production, based on lifecycle emissions
    Available through 2027
  - Section 48 Investment Tax Credit (ITC) – May apply to hydrogen electrolyzers and renewable generation paired with hydrogen
    Construction must begin before July 4, 2026
  - DOE Regional Clean Hydrogen Hubs (H2Hubs) – Multi-state funding opportunity to support hydrogen infrastructure and offtake agreements
- DOE Hydrogen and Fuel Cell Technologies Office – Supports R&D, demonstration projects, and safety standards development for hydrogen.
- Nevada Clean Energy Fund (NCEF) – Can finance early infrastructure and industrial equipment conversion to hydrogen-compatible systems.
- GOED & State Appropriations (future) – May support capital investment, site preparation, or workforce development related to hydrogen clusters.
- Public-Private Partnerships – Hydrogen deployment may be accelerated through co-investment strategies involving utilities, industrial offtakers, and infrastructure developers.

Metrics for Tracking Progress

- Number of industrial facilities participating in the Green Hydrogen Challenge.
- Capacity fo green hydrogen installed statewide
- Amount of green hydrogen consumed annually by industrial facilities
- # of industrial sites using hydrogen for thermal or feedstock purposes

Electrify Industrial Processes and Integrate On-Site Renewables

Description

Accelerate the electrification of industrial systems and integrate on-site renewable energy generation to reduce greenhouse gas emissions from manufacturing, processing, and high-temperature operations through the development of a statewide industrial electrification task force that brings together key actors for industrial decarbonization in the state. Provide technical assistance, incentives, and funding for pilot and demonstration projects. Collaborate with NV Energy and others to support industrial on-site renewable energy and electrification. Mandate clean energy standards for the industrial sector and explore a carbon pricing mechanism.

Authority to Implement

- GOE is authorized to lead statewide energy planning and coordination efforts, including convening stakeholders, supporting industrial decarbonization, and promoting renewable and efficient technologies (NRS Chapter 701).
- PUCN has authority to regulate utility resource planning and infrastructure investment and may authorize programs or tariffs that support electrification and on-site renewables in industrial facilities (NRS Chapters 703–704).
- NCEF is authorized to finance industrial-scale renewable energy projects, electrification retrofits, and technology demonstrations (NRS 701B).
- GOED is empowered to support clean manufacturing and advanced energy projects through site selection, capital investment incentives, and workforce development coordination.

Establishing a statewide industrial electrification task force can be initiated by executive order or legislation; however, for enforceable outcomes, new legislation would be required to mandate clean energy standards or emissions performance benchmarks for the industrial sector.

Key Entities and Roles

- GOE – Leads taskforce formation and coordination; administers state-led technical assistance, funding programs, and clean energy standard development.
- PUCN – Approves utility offerings that facilitate electrification (e.g., industrial rate structures, demand response programs, renewable interconnection).
- NCEF – Provides low-cost capital or blended finance options for large-scale industrial electrification and on-site renewable energy systems.
- GOED – Aligns economic development efforts with decarbonization goals, supports clean tech site development, and incentivizes industrial innovation.
- NV Energy and Southwest Gas – Partner with industries to support load planning, renewable integration, and electrification upgrades.
- Industrial Facilities and Trade Associations – Collaborate on demonstration projects, provide technical input to the taskforce, and help scale successful strategies.

Implementation Mechanisms

Clean Energy Standards for Industry: Develop sector-specific emissions intensity standards that require incremental shifts to electrified and renewable-powered systems. Set compliance milestones (e.g., 15% electrification by 2032; 50% by 2040) for large emitters.

Carbon Pricing Exploration: Conduct a feasibility study for a Nevada-specific carbon fee or cap-and-invest program, targeting industrial emissions and funding decarbonization rebates.

Nevada Industrial Electrification Taskforce: Include NV Energy, major manufacturers, renewable developers, state agencies (GOED, NDEP), Tribes, and labor unions. Develop a roadmap for industrial electrification with milestones, funding strategies, and workforce plans.

Launch a joint industrial electrification initiative with NV Energy: Initiative will fund demand-side electrification retrofits, deploy renewable energy microgrids at industrial parks, pilot time-of-use and flexible demand pricing for electrified processes, and support demonstration projects.

Example Timeline and Milestones

Example Timeline	Example Milestones	Example Entities
2025 - 2030	Form Nevada Industrial Electrification Taskforce via Executive Order or Legislation.	GOE, Governor's Office
	Publish Industrial Electrification Roadmap with goals and strategies.	Taskforce (GOE, NV Energy, Industry Reps)

Example Timeline	Example Milestones	Example Entities
	Launch technical assistance and grant program for pilot projects.	GOE, NCEF
	Begin utility planning for electrification-friendly tariffs and interconnection.	PUCN, NV Energy
	Initiate demand-side electrification pilots in selected industrial parks.	NV Energy, Industrial Facilities
2030 - 2035	Implement Clean Energy Standards: 15% electrification for large emitters	GOE, NDEP
	Conduct carbon pricing feasibility study and stakeholder consultation.	GOE, External Consultants
	Expand technical support and workforce training programs.	GOED, Community Colleges
2035 - 2040	Adopt Clean Energy Standards: 30% electrification target.	GOE, PUCN
	Complete industrial microgrid and on-site solar pilots.	NV Energy, Industrial Partners
2040 - 2050	Achieve 50% electrification standard for large industrial emitters.	GOE, NDEP
	Scale statewide incentives and financing tools for industrial electrification.	NCEF, GOE
	Evaluate progress and publish final industrial decarbonization outcomes report.	Taskforce, GOE, NDEP

Costs and Savings Estimates

Financial values are represented in present value ($2025, discounted at 3%) for implementation from 2026 to 2050 as modelled in the LC scenario.

Incremental Capital Costs (million USD)	$5,900
Incremental Maintenance Costs (million USD)	$1,500
Incremental Energy Costs (million USD)	-$19,280

Incremental Total Costs (million USD)	-$11,880
Return on Investment	158%
Cumulative Emissions Reduction (kt CO2eq)	18,873
Marginal Abatement Cost ($ / t CO2 eq)	-630

Funding Strategies

- Inflation Reduction Act (IRA)
    - Advanced Industrial Facilities Deployment Program (DOE) – Competitive grants for electrification, process efficiency, and fuel switching
    - Section 48 Investment Tax Credit (ITC) – For on-site solar, storage, and electrification infrastructure
      Construction must begin before July 4, 2026
- DOE Industrial Efficiency and Decarbonization Office (IEDO) – Technical assistance, R&D support, and funding for pilot projects and electrification planning.
- Nevada Clean Energy Fund (NCEF) – Capital support for equipment retrofits, electric boiler and heat pump systems, and storage integration.
- PUCN-Approved Utility Programs – Tariff design, custom electrification incentives, and strategic electrification pilots for large energy users.
- State Legislative Appropriations (future authority) – May be used to create a Nevada Industrial Electrification Innovation Fund or support the taskforce's operations and grantmaking authority.

Metrics for Tracking Progress

- % of industrial processes electrified (by facility, sector, or process type)
- Reduction in fossil fuel use for process heat or operations (therms, gallons, etc.)
- Number of industrial facilities converting to electric equipment (e.g., boilers, furnaces)
- MW of on-site renewable energy capacity installed at industrial facilities
- Number of facilities operating renewable microgrids or battery storage systems
- Number of recommendations implemented from the Taskforce

Support Industrial Carbon Capture, Utilization, and Storage Solutions

Description

Advance research, commercialization, and deployment of cost-effective Carbon Capture, Utilization, and Storage (CCUS) technologies in Nevada's industrial sector, especially for hard-to-abate emissions sources. Prioritize funding for the development and manufacturing of advanced CO2 capture materials to improve efficiency and reduce costs, as well as innovations in the utilization of captured CO2 for manufacturing new products such as fuels, chemicals, and construction materials. Establish incentive programs, public-private partnerships, and permitting pathways to accelerate CCUS adoption. Encourage integration of CCUS at large emitters and coordinate with regional carbon transport and storage infrastructure efforts.

Authority to Implement

- PUCN has regulatory authority over carbon capture systems to the extent they intersect with utility regulation, infrastructure, and ratepayer impacts. This includes oversight of utility investments in CCUS projects and integration with the electric or gas grid (NRS Chapter 704).
- GOE can promote emerging clean energy technologies and can support policy coordination, interagency collaboration, and research and innovation of carbon capture, utilization, and storage (CCUS) planning and partnerships (NRS Chapter 701).
- NCEF is authorized to finance CCUS infrastructure, equipment retrofits, and carbon utilization technologies at industrial facilities (NRS 701B).
- GOED may support commercialization and manufacturing of CO_2-derived products through incentives and site development support.

Key Entities and Roles

- GOE – Coordinates statewide CCUS strategy, manages stakeholder engagement, and pursues federal funding and public-private partnerships.
- PUCN – Oversees utility investments in CCUS projects and its integration with the energy grid.
- NCEF – Finances eligible CCUS projects and can support commercialization efforts in manufacturing or CO_2 utilization applications.
- GOED – Supports CO_2-based product development through innovation and manufacturing initiatives, including incentives for construction materials, fuels, or industrial inputs.
- University of Nevada / DRI – Conducts R&D, pilot testing, and technology validation in partnership with public and private sector entities.
- Industrial Emitters – Collaborate on capture demonstrations, host on-site utilization projects, and participate in regional carbon management networks.

Implementation Mechanisms

Nevada CCUS Working Group: Create a cross-sectoral task force including state agencies, national labs (e.g., LLNL, INL), industry, and universities to guide CCUS strategy. Support academic and industry research collaborations and public-private partnerships. Identify challenges and opportunities to deployment. Leverage DOE and DOE-FECM Initiatives. Develop materials to evaluate capture readiness and utilization options for Nevada industries.

CCUS Research and Deployment Grants: Create a Nevada CCUS Innovation Fund to support development of advanced capture materials, utilization R&D in concrete, synthetic fuels, and CO_2-based chemicals, and demonstration-scale projects.

Implementation Timeline and Milestones

Example Timeline	Example Milestones	Example Entities
2025 - 2030	Establish Nevada CCUS Working Group and begin stakeholder engagement.	GOE, UNR/DRI
	Develop Nevada CCUS Strategy Roadmap and identify priority sectors.	GOE, CCUS Working Group
	Adopt permitting guidance and draft legislative recommendations for CO2 storage.	GOE
	Launch Nevada CCUS Innovation Fund and open applications for R&D grants.	GOE, NCEF
	Initiate first pilot demonstrations for capture/utilization at industrial sites.	UNR/DRI, Industrial Partners
2030 - 2040	Evaluate pilot project results and scale up successful technologies	GOE, NCEF, GOED
	Coordinate with DOE/FECM to plan regional CO2 transport/storage infrastructure.	GOE
	Begin construction of carbon storage and transport demonstration projects.	GOE, Industrial Emitters
2040 - 2050	Enable commercial-scale CCUS deployment at large emitting industrial sites.	GOE, NCEF, GOED
	Conduct comprehensive evaluation of statewide CCUS performance and emissions reductions.	NDEP, GOE

Example Timeline	Example Milestones	Example Entities
	Achieve integration of CCUS in all eligible hard-to-abate sectors.	GOE, Industrial Emitters

Costs and Savings Estimates

Financial values are represented in present value ($2025, discounted at 3%) for implementation from 2026 to 2050 as modelled in the LC scenario. The cost for CCUS is represented as a per tCO2e cost as a result of the uncertainty around the development of CCUS facilities and their costs.

Incremental Capital Costs (million USD)	$710
Incremental Maintenance Costs (million USD)	$0
Incremental Energy Costs (million USD)	$0
Incremental Total Costs (million USD)	$710
Return on Investment	No direct financial return
Cumulative Emissions Reduction (kt CO2eq)	6,111
Marginal Abatement Cost ($ / t CO2 eq)	120

Funding Strategies

- Inflation Reduction Act (IRA)
  - 45Q Carbon Capture Tax Credit – Up to $85/ton for industrial capture and storage; $60/ton for utilization
    Wind eligible through 2027, all other uses valid through 2032.
  - DOE CarbonSAFE and CCUS R&D Programs – Funding for regional storage hubs, permitting, and capture demonstration projects
  - Advanced Industrial Facilities Deployment Program – Supports CCUS integration at high-emitting industrial facilities
- DOE Office of Fossil Energy and Carbon Management (FECM) – Offers technical assistance, funding, and partnerships for CCUS infrastructure and innovation.
- Nevada Clean Energy Fund (NCEF) – Provides loans or blended finance options for CCUS deployment and CO_2-based manufacturing ventures.
- USDA/DOE Bioenergy and CO_2 Utilization Programs – Potential funding for CO_2-based fuel and chemical production.

- State Legislative Action (future) – Could establish a Nevada Carbon Management Fund or tax credit to spur early CCUS adoption and R&D.

Metrics for Tracking Progress

- Number of CCUS demonstration projects initiated and completed
- Number of industrial facilities with operational CCUS systems
- Total CO_2 captured annually (metric tons)
- Tons of CO_2 used in commercial products (e.g., concrete, fuels, chemicals)
- Number of Nevada-based companies manufacturing CO_2-derived products
- State funding awarded for CCUS research and pilot projects
- Number of public-private R&D partnerships formed

7.8 Divert and Reuse Waste

Expand Recycling, Composting, and Sustainable Materials Management Programs

Description

Accelerate waste reduction and landfill diversion by adopting new diversion targets and requirements. Support local governments in scaling recycling, composting, and sustainable materials management programs. Support zero waste commitments, promote alternatives to single-use plastics, incentivize food waste recovery, and launch business engagement and construction sector outreach programs.

Authority to Implement

- NDEP oversees solid waste management and recycling programs and is authorized to establish landfill diversion goals, issue guidance, and coordinate with local jurisdictions on waste reduction strategies (NRS Chapter 444).
- Local governments have primary authority over waste collection, recycling, and composting programs and may establish local diversion goals, zero waste commitments, and single-use product regulations through ordinances or franchise agreements.
- GOE and GOED may support sustainable materials management initiatives by aligning procurement, economic development incentives, and climate goals with waste reduction outcomes.

New legislative or regulatory action may be needed to:

- Establish new statewide landfill diversion targets (e.g., 50–75 percent by 2035) with interim benchmarks.
- Mandate organics diversion or food waste separation in commercial and institutional sectors.
- Create statewide standards or bans for single-use plastics, including packaging and food service items.
- Fund and formalize a Zero Waste Technical Assistance Program to support planning, implementation, and innovation at the local level.

Key Entities and Roles

- NDEP – Develops statewide diversion goals and reporting requirements, provides grants and technical assistance to local governments, and tracks progress.
- Local Governments – Expand recycling and composting services, adopt zero waste goals, and enforce local ordinances to reduce landfill-bound waste.
- GOED – Supports market development for recycled and composted materials, and engages businesses and the construction sector in diversion innovation.
- GOE – Coordinates with NDEP on integrating waste-related emissions reduction into broader climate planning and energy recovery efforts.
- Business and Industry Partners – Participate in food waste recovery programs, comply with diversion mandates, and pilot reuse and recycling initiatives.

Implementation Mechanisms

Recycling and Diversion Targets: Adopt updated statewide recycling targets. Increase the target diversion rate from 25% to 50% by 2030, 75% by 2040, and 95% by 2050. Encourage circular economy planning and material recovery strategies that prioritize reduction, reuse, and remanufacturing over landfilling or incineration.

Organic Waste and Single-Use Plastics Ban: Adopt legislation and targets for diverting organic waste from landfills and incinerators, including residential, commercial, and agriculture sectors. Complement this with restrictions and phase-outs of single-use plastics, paired with requirements producers of packaging, paper products, and single-use plastic to fund collection, recycling, and processing.

Grants for Local Waste Diversion: Provide competitive grants to local governments, Tribal communities, and regional waste authorities to fund the development of composting facilities, material recovery upgrades, new collection programs, and circular economy pilot projects like repair centers and reuse hubs.

State-Local Waste Diversion Task Force: Create a multi-agency task force to coordinate efforts between the state, local governments, Tribes, and private haulers to streamline materials management strategies and align standards.

Bulk Purchasing of Composting and Recycling Equipment: Pool purchasing across jurisdictions to lower the cost of bins, carts, signage, and processing equipment for composting and recycling programs.

Sustainable Construction & Demolition Toolkit for Builders: Develop a toolkit with strategies for reducing construction and demolition waste, using recycled materials, and best practices for discarding materials. Disseminate through workshops, builder networks, and trade organizations.

Example Timeline and Milestones

Example Timeline	Example Milestones	Example Entities
2025-2030	Establish a new statewide diversion targets (50% by 2035).	NDEP, GOE, Legislature
	Launch State-Local Waste Diversion Task Force and bulk purchasing program.	NDEP, Local Governments, Tribal Governments
	Implement statewide ban on single-use plastics and organics in landfills.	Legislature, NDEP, Local Governments
	Distribute first round of grants for local waste diversion programs.	NDEP, GOE, Local Governments
2030-2040	Reach 50% landfill diversion rate. Begin enforcing plastic producer responsibility.	NDEP, Local Governments, Business & Industry Partners
	Expand composting and circular economy projects in all regions.	GOED, Local Governments, Trade Orgs
2040	Reach 75% diversion.	NDEP, GOED, Circular Economy Coalitions
2040-2050	Pilot 95% diversion projects in selected cities.	NDEP, GOED, Circular Economy Coalitions
	Achieve 95% diversion statewide, all local governments adopt zero waste plans.	NDEP, Local Governments, State-Local Task Force

Costs and Savings Estimates

Financial values are represented in present value ($2025, discounted at 3%) for implementation from 2026 to 2050 as modelled in the LC scenario. The costs are represented as an incremental cost for the treatment of recycling and compost on a per tonne basis.

Incremental Capital Costs (million USD)	$900
Incremental Maintenance Costs (million USD)	$0
Incremental Energy Costs (million USD)	$0
Incremental Total Costs (million USD)	$900
Return on Investment	No direct financial return
Cumulative Emissions Reduction (kt CO2eq)	18,300
Marginal Abatement Cost ($ / t CO2 eq)	50

Funding Strategies

- EPA Solid Waste Infrastructure for Recycling (SWIFR) and Recycling Education and Outreach Grants – Fund infrastructure, planning, and education for recycling and composting expansion.
- Inflation Reduction Act (IRA)
    - ECJ Block Grants – Support zero waste initiatives in overburdened communities
      Funds remain available until September 30, 2026
- State Legislative Appropriations or Fee-Based Programs – Could support competitive grants, public-private pilots, and business technical assistance.
- Local Franchise Fees or Utility Assessments – Fund municipal recycling and composting services and local diversion planning efforts.

Metrics for Tracking Progress

- Percentage and tonnage of total solid waste diverted from landfills through recycling, composting, or reuse
- Percentage and tonnage of C&D debris diverted from landfills
- Number of municipalities with recycling and composting programs
- Rate of compliance with mandates on diversion, food waste separation, or construction material recovery
- Number of toolkits, workshops, or training sessions provided on construction waste recycling and repurposing
- Number of reuse stores and repair shops open

7.9 Harness Landfill Gas

Develop and Fund Landfill Gas Capture and Utilization Systems

Description

Establish a statewide framework to identify, evaluate, and implement landfill gas (LFG) capture systems in Nevada. Require methane mitigation considerations in permitting for new or expanding landfills and use the 2022 Nevada Sustainable Materials Management Plan reporting framework to understand where LFG infrastructure may best be deployed. Provide funding and technical assistance for site-specific feasibility studies and project development. Coordinate with utilities to streamline grid connection and power purchase agreements.

Authority to Implement

- NDEP has regulatory authority over solid waste management, landfill permitting, and air quality. NDEP may incorporate methane mitigation into landfill permitting and enforce emission control standards (NRS Chapters 444 and 445B).
- PUCN has authority to regulate utility interconnection, power purchase agreements, and renewable energy project approvals, including LFG-to-energy systems. (NRS Chapters 703–704).
- GOE can support renewable energy integration and may coordinate with utilities and local governments on grid readiness for LFG projects. (NRS Chapter 701).
- Local governments have authority to operate and expand municipal landfills, and to apply for funding and implement LFG systems.

To require methane mitigation planning in landfill permits, NDEP may need new rulemaking authority or amendments to existing permitting regulations under NAC 444 to explicitly include LFG capture evaluation as a permitting requirement.

Key Entities and Roles

- NDEP – Leads permitting integration of LFG mitigation, conducts statewide landfill emissions inventory, and oversees compliance with air and waste regulations.
- GOE – Coordinates cross-agency strategy and provides technical assistance and outreach to support project planning and utility coordination.
- PUCN – Approves interconnection and ensures utility compliance with PPA and distributed generation requirements related to LFG energy.
- Local Governments – Operate landfill facilities, conduct feasibility studies, and implement LFG capture and utilization systems.

- Utilities (e.g., NV Energy) – Collaborate on interconnection and grid integration for LFG energy projects; may enter PPAs for electricity generated from captured methane.
- Private Developers and Engineering Firms – Provide technical design, feasibility modeling, and system construction for landfill gas capture and energy recovery.

Implementation Mechanisms

Incorporate LFG into Permitting: Require methane capture considerations in permits for new or expanding landfill facilities.

Landfill Methane Assessment and Reporting Framework: Use reporting protocols from the 2022 Nevada Sustainable Materials Management Plan to gather data on waste volume, methane emissions estimates, infrastructure conditions, and energy interconnection potential. Develop GIS overlays of waste volumes, facility characteristics, and utility infrastructure to identify high-priority sites for developing LFG infrastructure.

State-Funded LFG Feasibility Studies: Provide funding and technical support for detailed site-specific studies to assess the viability, costs, emissions reductions, and energy production potential of methane recovery.

Low-Interest Loan Fund for LFG Projects: Establish a revolving loan fund or provide access to bond financing (e.g., via green infrastructure bonds) for capital-intensive LFG capture and utilization projects, especially in public landfills. Leverage federal programs such as EPA's Clean Air Act Section 111(d) support and USDA's Rural Energy for America Program (REAP) for RNG deployment.

Utility Engagement for Energy Agreements: Coordinate with utilities to streamline power purchase agreements or interconnection for gas-to-grid or electricity-from-LFG systems.

Implementation Timeline and Milestones

Example Timeline	Example Milestones	Example Entities
2025 - 2030	Establish statewide LFG strategy and interagency working group.	NDEP, GOE, PUCN
	Develop permitting rules requiring LFG evaluation for new/expanding landfills.	NDEP
	Launch Landfill Methane Assessment and Reporting Framework using 2022 Plan.	NDEP, GOE

Example Timeline	Example Milestones	Example Entities
	Complete GIS mapping and identify high-priority landfill sites for LFG.	GOE, NDEP
	Launch grant program for LFG feasibility studies at 5-10 public landfills.	NDEP, GOE
2030	Create low-interest loan fund and finance first round of LFG capture systems.	NCEF, GOE
2032	Complete construction of initial LFG projects at top-priority sites.	Local Governments, Developers
2035	Achieve 50% of methane capture at identified viable sites.	NDEP, Local Governments
2040	Expand LFG systems to all economically feasible landfill sites.	NDEP, Local Governments
2045	Update strategy and technology roadmap for advanced methane recovery	GOE, NDEP, Universities

Costs and Savings

Due to insufficient and unreliable financial data, providing accurate cost estimates for this measure would involve making too many assumptions, resulting in significant uncertainty. Therefore, no cost estimates have been provided.

Funding Strategies

- EPA Landfill Methane Outreach Program (LMOP) – Offers technical resources, planning tools, and partnership development support for LFG projects.
- Inflation Reduction Act (IRA)
    - Section 48 Investment Tax Credit (ITC) – Potentially applicable to LFG-to-energy systems paired with grid interconnection
      Construction must begin before July 4, 2026
    - ECJ Block Grants – Could fund methane mitigation at landfills in low-income and at-risk communities
      Funds remain available until September 30, 2026
- NDEP Nonpoint Source or State Revolving Funds (SRFs) – May support infrastructure components that provide co-benefits for water quality or public health.

- Nevada Clean Energy Fund (NCEF) – Can offer capital for system deployment, particularly where cost recovery through energy sales is viable.
- Local Government Capital Budgets and Bonds – May fund matching contributions or priority site upgrades with high methane mitigation potential.

Metrics for Tracking Progress

- Number of landfills with operational LFG capture systems
- Volume of landfill gas captured and utilized (MMBtu/year)
- Percentage of statewide landfill waste volume covered by LFG systems
- Number of Power Purchase Agreements or Utility Interconnection Agreements
- Annual methane emissions reduced

7.10 Make Farming More Sustainable

Grow Regenerative Agriculture Practices in Nevada

Description

Support the widespread adoption of climate-smart agricultural practices that build soil health, conserve water, and improve climate resilience. This includes technical and financial support for farmers and ranchers, educational outreach, and targeted incentives to adopt practices such as cover cropping, no-till, efficient irrigation, crop diversification, and integrated pest management.

Authority to Implement

- Nevada Department of Agriculture (NDA) is authorized to oversee agricultural development, conservation programs, water use, and technical assistance services for producers and to promote and support soil health, water efficiency, and sustainable land use practices (NRS Chapters 561–588).
- NDEP can support agricultural nonpoint source pollution reduction, water conservation, and climate co-benefits through water quality and conservation programming (NRS Chapter 445A).

New legislation or administrative action may be needed to:

- Formalize interagency collaboration between NDA, NDEP, UNR Extension, and regional conservation districts to deliver technical assistance and outreach at scale.
- Create performance monitoring or reporting frameworks for state-funded programs to evaluate soil health, GHG reductions, or resilience improvements.

Key Entities and Roles

- Nevada Department of Agriculture (NDA) – Leads program design and administration; coordinates incentive delivery, outreach, and training with agricultural partners.
- NDEP – Aligns water conservation, soil management, and runoff mitigation efforts with climate outcomes and co-benefits.
- UNR Extension and Experiment Station – Deliver science-based technical assistance, field trials, producer workshops, and monitoring support.
- USDA NRCS and FSA – Continue to provide cost-share and technical assistance for conservation practices; may align with state goals under partnership agreements.
- Producer Networks and Farm Bureaus – Support peer learning, voluntary program participation, and policy advocacy.

Implementation Mechanisms

Soil Health and Water Efficiency Guidelines: Establish incentive-linked standards for soil health improvement and irrigation efficiency. Include metrics such as percent of land under cover crops, water applied per acre, and organic matter content.

Equipment and Regenerative Agriculture Financing Assistance: Provide low-interest loans to farmers to transition soil carbon management practices on cropland (e.g., composting, cover crops) and acquire no-till drills, mulch applicators, precision irrigation systems, and other advanced technology farm equipment.

Learning and Technical Support: Partners with the University of Nevada, Reno and farming networks on an extension program on regenerative agriculture to provide technical assistance, training, and planning support to help farmers implement and maintain practices. Provide soil health consultants, irrigation specialists, and pest management experts to work with farmers on multi-year transition plans and carbon/nutrient benchmarking. Program should uplift farmer-to-farmer knowledge exchange, including demonstration projects and mentorship programs that pair experienced no-till farmers with those beginning to transition.

Example Timeline and Milestones

Example Timeline	Example Milestones	Example Entities
2025-2030	Establish interagency working group (NDA, NDEP, UNR Extension, NRCS).	NDA, NDEP, UNR Extension
	Develop and publish Soil Health and Water Efficiency Guidelines.	NDA, UNR Extension

Example Timeline	Example Milestones	Example Entities
	Launch state incentive and financing programs for regenerative practices and equipment.	NDA, NCEF
	Begin technical assistance and demonstration projects in key agricultural zones.	UNR Extension, NRCS, Producer Networks
2030	Implement soil health and irrigation benchmarks across state-funded programs	NDA
2030-2040	Evaluate adoption rates and update incentive structures based on performance	NDA, NDEP, UNR Extension
	Expand technical assistance statewide with increased staffing and funding	UNR Extension, NDA
2040-2050	Achieve target of majority (>75%) of Nevada farmland adopting at least one regenerative practice	NDA, NRCS, UNR Extension

Costs and Savings Estimates

Financial values are represented in present value ($2025, discounted at 3%) for implementation from 2026 to 2050 as modelled in the LC scenario.

Incremental Capital Costs (million USD)	$380
Incremental Maintenance Costs (million USD)	$0
Incremental Energy Costs (million USD)	$0
Incremental Total Costs (million USD)	$380
Return on Investment	No direct financial return
Cumulative Emissions Reduction (kt CO2eq)	1,043
Marginal Abatement Cost ($ / t CO2 eq)	360

Funding Strategies

- USDA Programs
  - Environmental Quality Incentives Program (EQIP) – Cost-share for practices like cover cropping, no-till, and irrigation efficiency
  - Conservation Stewardship Program (CSP) – Payments for comprehensive soil and water conservation planning

    - Partnerships for Climate-Smart Commodities – Grants for pilot projects and market development
    - Regional Conservation Partnership Program (RCPP) – Encourages multistakeholder projects and leverage of local/state match funding
- Inflation Reduction Act (IRA)
    - Major new funding for EQIP, CSP, and other USDA conservation programs focused on climate outcomes
      The USDA shall not enter into any agreement that extends beyond, or under which any payment could be made after September 30, 2031
- State General Fund or Agricultural Bonding (future) – Could support state matching funds or pilot initiatives
- NDEP Nonpoint Source Program and Clean Water Act Section 319 – Funding for practices that reduce nutrient runoff and improve water quality
- Private Foundations and Carbon Market Incentives – Support for pilots, measurement tools, and climate-aligned certification programs

Metrics for Tracking Progress

- Acres under regenerative practices (e.g., cover cropping, no-till, crop diversification)
- Number of farmers and ranchers trained in regenerative agriculture programs
- Number of technical assistance consultations delivered
- Change in soil organic matter content and soil carbon levels over time
- Water use per acre for irrigated lands under regenerative practices
- Changes in crop yield or profitability for producers using regenerative practices

Improve Grazing Management and Rangeland Resilience

Description

Promote regenerative grazing management practices that enhance soil carbon storage, conserve water, and restore ecosystem function across Nevada's vast rangelands. Prioritize partnerships with ranchers, Tribes, and conservation districts to expand sustainable grazing strategies that improve both soil health, hydrology, and long-term landscape resiliency.

Authority to Implement

- Nevada Department of Agriculture (NDA) has authority to support rangeland management, grazing practices, and livestock production, and may coordinate conservation programs that benefit soil health and water retention (NRS Chapters 561–588).

- NDEP has authority to oversee nonpoint source pollution control and fund grazing practices that reduce erosion and improve water quality (NRS Chapter 445A).
- Nevada Division of State Lands and Division of Forestry manages public and forested lands and may support grazing strategies tied to wildfire prevention and ecological restoration (NRS Chapter 321 and 528).
- Tribal governments, as sovereign nations, control grazing on Tribal lands and collaborate with state and federal agencies through intergovernmental agreements.
- USDA Natural Resources Conservation Service (NRCS) and Bureau of Land Management (BLM) oversee grazing and conservation activities on vast federal rangelands throughout Nevada.

Key Entities and Roles

- NDA – Leads program development, technical assistance coordination, and partnerships with producers and conservation organizations.
- NDEP – Integrates water conservation and nonpoint source benefits into grazing strategies eligible for funding.
- State Lands & Forestry Divisions – Collaborate on vegetation management and restoration aligned with grazing rotation strategies.
- USDA NRCS & BLM – Continue to provide grazing permits, cost-share support, and monitoring frameworks for public lands; may serve as key funding and implementation partners.
- Tribal Governments – Lead grazing management on Tribal lands and co-design practices with cultural, ecological, and economic relevance.
- Conservation Districts & Producer Associations – Deliver training, technical guidance, and peer-to-peer support across rural Nevada.

Implementation Mechanisms

Rangeland Health Assessment and Prioritization Framework: Develop a statewide tool to assess rangeland condition, soil carbon potential, water stress, and degradation risk. Use this framework to guide state investments in restoration and adaptive grazing practices.

Federal and State Grazing Permits Alignment: Work with BLM and US Forest Service to incorporate regenerative grazing benchmarks into state-administered leases and cooperative grazing agreements. Coordinate with Nevada Department of Agriculture on aligning state-level requirements.

Cost-Share Assistance for Grazing Management Practices: Provide cost-share assistance for ranchers adopting climate-resilient practices such as rotational or adaptive grazing, livestock water infrastructure, riparian fencing, and reseeding native grasses.

Assist landowners and operators in accessing USDA NRCS programs like EQIP and CSP by providing matching funds, application support, and technical planning.

Rancher and Private Landowner Restoration Partnerships: Develop co-investment models to work with landowners to implement rangeland restoration practices (e.g., improved grazing, native reseeding, riparian buffer planting).

Learning and Technical Support: Partner with local colleges and farming networks to provide technical assistance, training, and planning support to help farmers implement and maintain practices. Regional specialists or "grazing coaches" provide hands-on planning, monitoring, and implementation support to ranchers and Tribal land stewards. Program should establish regional knowledge-sharing networks for land managers to exchange practices and lessons learned in rotational grazing, drought adaptation, and native vegetation restoration.

Implementation Timeline and Milestones

Example Timeline	Example Milestones	Example Entities
2025 - 2030	Launch statewide Rangeland Health Assessment framework.	NDA, NDEP, NRCS, UNR Extension
	Begin priority site selection and pilot restoration projects on public and Tribal lands.	NDA, State Lands, Tribal Governments
	Establish Grazing Management Technical Assistance Program with grazing coaches.	NDA, Conservation Districts, UNR Extension
	Align state grazing leases with benchmarks and launch training series for ranchers.	NDA, State Lands, BLM
	Provide a first round of cost-share grants to landowners for adaptive grazing and restoration.	NDA, NDEP, NCEF
2030- 2035	Expand restoration partnerships with private landowners and Tribes across all priority regions.	NDA, Tribal Governments, Conservation Districts
	Evaluate and revise assessment framework based on early outcomes and peer network feedback.	NDA, NDEP, UNR Extension
	Improve grazing practices in 25% state-managed rangelands.	NDA, NRCS, BLM

2040	Improve grazing practices in 50% state-managed rangelands. Scale up native reseeding and rotational grazing on degraded lands.	NDA, BLM, UNR Extension
2050	Improve 90% of eligible rangelands in compliance with regenerative grazing benchmarks	NDA, NRCS, Tribal Governments, Private Landowners

Costs and Savings

Due to insufficient and unreliable financial data, providing accurate cost estimates for this measure would involve making too many assumptions, resulting in significant uncertainty. Therefore, no cost estimates have been provided.

Financial values are represented in present value ($2025, discounted at 3%) for implementation from 2026 to 2050 as modelled in the LC scenario.

Funding Strategies

- USDA Programs (Inflation Reduction Act-enhanced)
    - Environmental Quality Incentives Program (EQIP) – Cost-share for rotational grazing, fencing, water systems, and erosion control
    - Conservation Stewardship Program (CSP) – Performance-based payments for long-term grazing and soil health practices
    - Regional Conservation Partnership Program (RCPP) – Collaborative funding for large-scale landscape resilience efforts
      The USDA shall not enter into any agreement that extends beyond, or under which any payment could be made after September 30, 2031.
- Bureau of Land Management (BLM) – Supports rangeland health projects through grazing permit coordination, land health assessments, and stewardship grants.
- EPA Clean Water Act Section 319 (via NDEP) – Supports nonpoint source reductions through improved grazing and watershed protection practices.
- Private Foundations and Carbon Market Pilots – Funding for regenerative grazing demonstration sites and carbon credit protocols tied to soil carbon sequestration.
- State General Fund or Agricultural Resilience Grant Program (if created) – Could fund Nevada-specific adaptation strategies and rangeland climate initiatives.

Metrics for Tracking Progress

- Acres of rangeland with improved grazing management
- Number of ranches and Tribal lands implementing improved grazing practices

- Change in soil organic matter content and soil carbon levels over time
- Miles of riparian area protected or restored
- Number of ranchers receiving technical assistance or training

7.11 Grow Nature-Based Solutions

Expand Urban and Community Tree Canopy Coverage Across Nevada

Description

Support a Nevada Urban and Community Forestry Program to increase tree canopy coverage and enhance urban green infrastructure. Encourage local governments to develop local canopy cover goals. Provide technical and financial assistance to cities, counties, and community-based organizations to expand native tree planting, prioritize low-income and heat-exposed neighborhoods. Promote tree planting through education, workforce development, and outreach campaigns that highlight the benefits of trees for cooling, carbon sequestration, and community well-being.

Authority to Implement

- Nevada Division of Forestry (NDF), administers the state's Urban and Community Forestry Program and has authority to provide technical and financial assistance to local governments and community organizations for tree planting, canopy management, and urban forest planning (under NRS Chapter 528).
- GOE may promote urban heat mitigation and carbon sequestration through community energy resilience and sustainability initiatives (NRS Chapter 701).
- Local governments (cities and counties) have zoning and planning authority to set canopy cover goals, adopt landscaping ordinances, and implement green infrastructure strategies.

New legislation or executive action may be needed to expand authority or funding for workforce development and education programs tied to urban greening and climate resilience.

Key Entities and Roles

- NDF – Leads the statewide program, provides grants and technical assistance, develops guidance for canopy planning, and coordinates with local partners.
- GOE – Promotes the climate and energy resilience value of urban trees and helps align urban forestry efforts with state energy and emissions goals.

- Local Governments – Establish canopy goals, adopt zoning and planting policies, and implement local tree-planting programs in partnership with community organizations.
- Community-Based Organizations and Schools – Lead grassroots planting, education, and workforce development initiatives, especially in underserved areas.

Implementation Mechanisms

Urban Canopy Targets and Integration into Local Plans: Obligate local governments to set canopy cover targets based on population, land use, and climate vulnerability. Support integration into general plans, climate action plans, and hazard mitigation strategies. Encourage tree planting and maintenance in public infrastructure projects and new development through zoning updates, design standards, and landscaping ordinances.

Urban Forestry Grants for Local Governments: Provide grants for tree planting, maintenance, and urban greening projects that prioritize low-income and at-risk communities. Eligible activities could include tree inventories, community planting events, and long-term maintenance.

Private Partnerships and Matching Fund Programs: Launch tree sponsorship or matching fund programs to leverage private sector support for community tree planting and maintenance.

Example Timeline and Milestones

Example Timeline	Example Milestones	Example Entities
2025 - 2030	Launch Nevada Urban and Community Forestry Program expansion. Establish baseline tree canopy coverage for communities statewide. Engage local governments in goal setting.	NDF, Local Governments
	Disburse first round of urban forestry grants to cities and counties. Support local canopy planning and tree inventories in at-risk communities.	NDF, NDEP, Local Governments
	Support integration of canopy goals into local general plans, hazard mitigation, and climate action plans. Launch pilot community planting and stewardship programs.	NDF, GOE, NGOs
2030 - 2035	All major jurisdictions adopt local urban canopy targets. Start workforce development program for urban greening jobs.	Local Governments, NDF, GOE

Example Timeline	Example Milestones	Example Entities
	Expand urban tree planting in heat-exposed and underserved areas and align tree planting with infrastructure and housing projects.	
2035	Conduct statewide progress evaluation on canopy coverage and climate co-benefits. Adjust grant criteria and program support based on findings. Formalize long-term funding mechanism and embed canopy strategies in statewide climate resilience planning.	NDF, GOE, NDEP
2035 - 2050	Scale up urban forestry workforce development, education, and public-private partnership programs to sustain planting and maintenance.	NDF, Schools, Private Sector Partners
	Achieve long-term canopy coverage targets (e.g. 30% average coverage).	NDF, GOE, Local Governments

Costs and Savings Estimates

Financial values are represented in present value ($2025, discounted at 3%) for implementation from 2026 to 2050 as modelled in the LC scenario.

Incremental Capital Costs (million USD)	$40
Incremental Maintenance Costs (million USD)	$0
Incremental Energy Costs (million USD)	$0
Incremental Total Costs (million USD)	$40
Return on Investment	No direct financial return
Cumulative Emissions Reduction (kt CO2eq)	195
Marginal Abatement Cost ($ / t CO2 eq)	220

Funding Strategies

- Inflation Reduction Act (IRA)
    - Urban and Community Forestry Grant Program (U.S. Forest Service) – Historic funding available to states, cities, and nonprofits for canopy expansion and community benefit-focused tree planting
      Funds remain available until September 30, 2031.

    - ECJ Block Grants – May fund urban greening in low income and at risk neighborhoods
      Funds remain available until September 30, 2026

- State General Fund or Legislative Appropriations (future) – Could be used to create a dedicated Nevada Urban Forestry Fund or match federal grants.
- Nevada Clean Energy Fund (NCEF) – May explore supporting green infrastructure tied to resilience or community cooling strategies.
- Local Government Capital Improvements and Bonding – Often used for public space improvements, including tree planting and urban greening.
- Private Partnerships and Utility-Sponsored Programs – May offer tree planting incentives, sponsorships, or community grants for greening initiatives.

Metrics for Tracking Progress

- % increase in Urban Tree Canopy
- Number of trees planted annually
- % of trees planted in low-income or heat-exposed neighborhoods
- Number of local governments with canopy targets

Protect and Restore Natural Lands Initiative

Description

Launch and scale a comprehensive statewide carbon sequestration initiative focused on protecting and restoring Nevada's sagebrush and forested ecosystems, supporting nature-based climate solutions, and expanding community-led greening and restoration projects. The program will prioritize projects led by or benefiting Tribes and low-income communities, while enhancing ecological resilience and long-term carbon storage.

Authority to Implement

- NDF has authority to manage reforestation, vegetation restoration, wildfire resilience, and carbon-beneficial land management across state and local lands, including sagebrush ecosystems and community forests (NRS Chapter 528).
- NDEP can incorporate carbon sequestration efforts into GHG inventories and climate strategies, and may fund projects with co-benefits for water quality and air pollution control (NRS Chapter 445B).
- GOE supports clean energy and climate resilience efforts, and may coordinate state-level sequestration goals with broader emissions reduction strategies (NRS Chapter 701).

- Tribal governments have sovereignty over Tribal lands and can lead carbon-focused restoration projects and partner with federal or state agencies to implement projects.
- Local governments may plan and implement community greening and ecological restoration projects under local authority and with support from state programs.

Key Entities and Roles

- NDF – Leads ecological restoration strategy and project implementation for sagebrush and forest ecosystems; supports wildfire risk reduction and native species management.
- NDEP – Tracks carbon sequestration benefits in GHG inventories, integrates co-benefits into air and water quality planning, and may support data infrastructure.
- GOE – Aligns carbon sequestration with energy and climate planning goals; supports funding coordination and state-level accountability frameworks.
- Tribal Governments – Design and lead projects on Tribal lands, and collaborate with state and federal partners to access technical assistance and funding.
- Local Governments & Conservation Districts – Implement local greening and land restoration projects; coordinate with community-based organizations for equitable project delivery.
- University of Nevada, Reno & Desert Research Institute – Provide technical support, modeling, and monitoring of carbon sequestration and ecological outcomes.

Implementation Mechanisms

Carbon Sequestration Coordination Task Force: Create an interagency task force including NDEP, the Division of Forestry, Nevada Natural Heritage Program, and Tribal and nonprofit partners to coordinate funding, research, and statewide restoration strategy development.

Site Mapping and Prioritization: Develop GIS tools and provide support to identify high-value areas for restoration and protection. Establish a network of long-term monitoring sites across key ecosystems to assess carbon gains, vegetation recovery, wildfire resilience, pollinator habitat, and watershed health, among other indicators.

Tribal and Community-Led Restoration Support: Provide multi-year funding and technical assistance to local governments, Tribes, and community organizations to develop and implement conservation and vegetation restoration programs, prioritizing projects that promote climate resilience and co-benefits (e.g., heat mitigation, water retention, and air quality improvement).

Corporate and Philanthropic Engagement in Land Restoration: Launch a partnership platform to engage businesses and philanthropic organizations in sponsoring restoration projects, providing matching funds, and supporting local stewardship efforts.

Natural Lands Restoration Grants: Establish a grant program for Tribes, conservation districts, nonprofits, and local governments to restore degraded landscapes. Eligible activities may include native plantings, prescribed burns, invasive species control, and erosion stabilization. Leverage programs such as the USDA's Environmental Quality Incentives Program, the Forest Service's Landscape Scale Restoration Program, and DOI's America the Beautiful Challenge.

Conservation Easement and Land Acquisition Funds: Expand funding for permanent conservation easements and strategic land acquisition to prevent development on high-value carbon sinks such as intact sagebrush ecosystems.

Example Timeline and Milestones

Example Timeline	Example Milestones	Example Entities
2026 - 2027	Establish Carbon Sequestration Coordination Task Force and initiate statewide restoration strategy planning.	NDF, NDEP, GOE
	Develop site mapping tools and GIS-based prioritization framework for restoration and protection.	NDF, University of Nevada, DRI
2028 - 2030	Launch first round of Natural Lands Restoration Grants to support community and Tribal projects.	NDF, GOE, Tribal Governments
	Develop a network of long-term monitoring sites. Begin data collection on carbon sequestration and community co-benefits.	University of Nevada, DRI, NDEP
	Implement initial restoration projects focused on high-priority sagebrush and forested ecosystems.	NDF, Conservation Districts, Local Governments
	Scale up community-led and Tribal-led restoration projects through multi-year funding agreements.	GOE, Tribal Governments, Local Governments
2030 - 2040	Expand conservation easement and land acquisition program to protect carbon-rich landscapes.	NDF, GOE, Nonprofits
2035	Measure outcomes from early project phases and refine statewide strategy.	NDEP, University of Nevada, DRI
2040 - 2050	Achieve statewide restoration and protection of priority ecosystems. Maintain annual monitoring and grant cycles.	NDF, NDEP, Local Governments

Costs and Savings Estimates

Financial values are represented in present value ($2025, discounted at 3%) for implementation from 2026 to 2050 as modelled in the LC scenario.

Incremental Capital Costs (million USD)	$40
Incremental Maintenance Costs (million USD)	$0
Incremental Energy Costs (million USD)	$0
Incremental Total Costs (million USD)	$40
Return on Investment	No direct financial return
Cumulative Emissions Reduction (kt CO2eq)	195
Marginal Abatement Cost ($ / t CO2 eq)	220

Funding Strategies

- Inflation Reduction Act (IRA)
  - Natural Resources Conservation Service (NRCS) Programs – EQIP, CSP, and RCPP for land restoration and conservation practices
  - Climate-Smart Commodities – May support habitat restoration and carbon-beneficial land management
  - ECJ Block Grants – Funding for Tribal- and community-led restoration and greening projects
- U.S. Forest Service & Bureau of Land Management (BLM) – Federal partners supporting sagebrush and forest restoration, fuel reduction, and ecosystem recovery on public lands.
- Nevada State General Fund or Appropriations (future) – May fund a Nevada Carbon Sequestration and Resilience Program or match federal grants.
- Private Sector & Carbon Markets (Voluntary) – Restoration projects may be eligible for carbon offset credits, especially when verified under reputable standards.
- Nevada Clean Energy Fund (NCEF) – Could explore nature-based investment models or bundled green infrastructure projects with climate co-benefits.

Metrics for Tracking Progress

- Acres of land restored or conserved annually (e.g., sagebrush, forest, riparian zones).
- Number of community- or Tribal-led restoration projects initiated and completed.
- Number of native trees or plants planted as part of restoration projects.

- Number of sites monitored for ecological outcomes, such as vegetation cover or pollinator habitat

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