

State of Nevada

Priority Climate Action Plan

Final

February 2024



NEVADA DIVISION OF
**ENVIRONMENTAL
PROTECTION**



Nevada Department of
**CONSERVATION &
NATURAL RESOURCES**



NEVADA GOVERNOR'S
OFFICE OF ENERGY



Prepared for

STATE OF NEVADA

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Executive Summary

The Nevada Division of Environmental Protection (NDEP) received a grant from the U.S. Environmental Protection Agency's (EPA) Climate Pollution Reduction Grants (CPRG) program to develop plans to reduce Nevada's greenhouse gas (GHG) emissions. This *Priority Climate Action Plan* (PCAP) is the first of two plans that NDEP will develop with this funding. The primary objective is to identify near-term, high-priority, implementation-ready measures to reduce GHG emissions. These measures are designed to be eligible for CPRG Phase 2 funding and other grants.

This PCAP includes a GHG inventory, emission projections, and priority measures across six focus areas. For each focus area, quantified emissions reductions, a low-income and disadvantaged communities (LIDACs) benefits analysis, and a description of authority to implement are provided. The PCAP will be followed by the *Comprehensive Climate Action Plan* (CCAP), which will address all sectors of emissions. Additional engagement with the public and interested and affected parties will occur. Following the CCAP, the Final Status Report will provide an update on implementation and next steps.

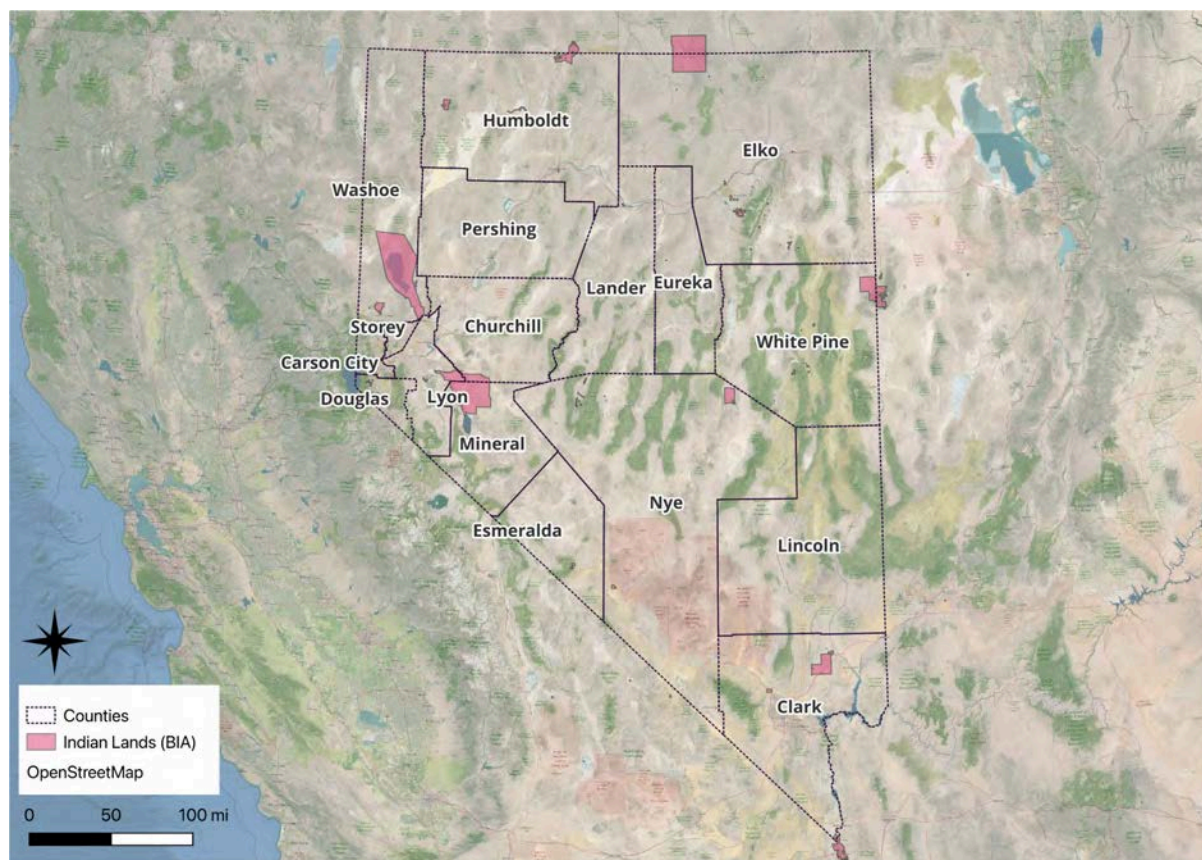


Figure E1. Map of the State of Nevada which forms the geographic scope for the PCAP.

Responsible Agencies and Staff

Emissions reduction measures were based on a detailed review of Nevada’s policy context, the “Statement of Policies that Could Achieve Reductions in Projected Greenhouse Gas Emissions” in NDEP’s GHG inventory, and engagement with interested and affected parties. Measures were prioritized based on engagement feedback, the priorities of local, regional, and state plans and policies, and the EPA’s evaluation criteria for CPRG Phase 2 funding. Staff from NDEP and the Governor’s Office of Energy (GOE) served as the advisory and decision-making authority.

Engagement

Engagement focused on gathering insights from diverse perspectives and identifying implementation-ready projects. The process focused on including groups that work with LIDACs to ensure the unique priorities, community norms, and capabilities of LIDACs were considered.

The engagement process identified current awareness and experiences around climate action, as well as projects or measures of interest. A range of engagement techniques were used: direct email communications, questionnaires, an information webinar, hybrid workshops, interviews with interested and affected parties, meetings with relevant agencies, and outreach to LIDAC representatives. Feedback was encouraged during meetings through breakout sessions and in-meeting participant polling. Direct input to the project team was also encouraged.

Representatives of LIDACs provided insights on how to best engage these communities in climate action planning, and how to best serve the needs of all Nevadans. Direct communications regarding each engagement opportunity were sent to a listserv of approximately 350 individuals including 40 local government agencies serving rural and low-income areas, 22 community benefit organizations, and 30 Tribes in Nevada including Wašif-šiw (Washoe), Numu (Northern Paiute), Nuwuvi (Southern Paiute), Newe (Western Shoshone), and Pipa Aha Macav (Fort Mojave). Approximately 20% of invited groups participated in some way. Information about each engagement opportunity was posted on the NDEP website for the public to view and sign up to participate. A total of 72 people attended the community action workshops in Northern and Southern Nevada.

GHG Emissions in Nevada

GHG emissions in Nevada peaked in 2005 at a gross total of 56.4 MMtCO₂e. Since then, emissions have gradually decreased. In 2021, Nevada’s gross total GHG emissions were 45.4 MMtCO₂e, a decrease of roughly 11 MMtCO₂e since 2005. Figure E2 shows the gross totals of Nevada’s GHG emissions from 1990 to 2021. On average, the Land Use, Land-use Change, and Forestry sector sequesters about 8 MMtCO₂e each year. This led to a net total of 47.1 and 37.2 MMtCO₂e for 2005 and 2021, respectively.

In 2021, the transportation sector was the largest source of emissions (39%), followed by electricity (31%), industry (10%), buildings (13%), and agriculture (6%). See Figure E2 below.

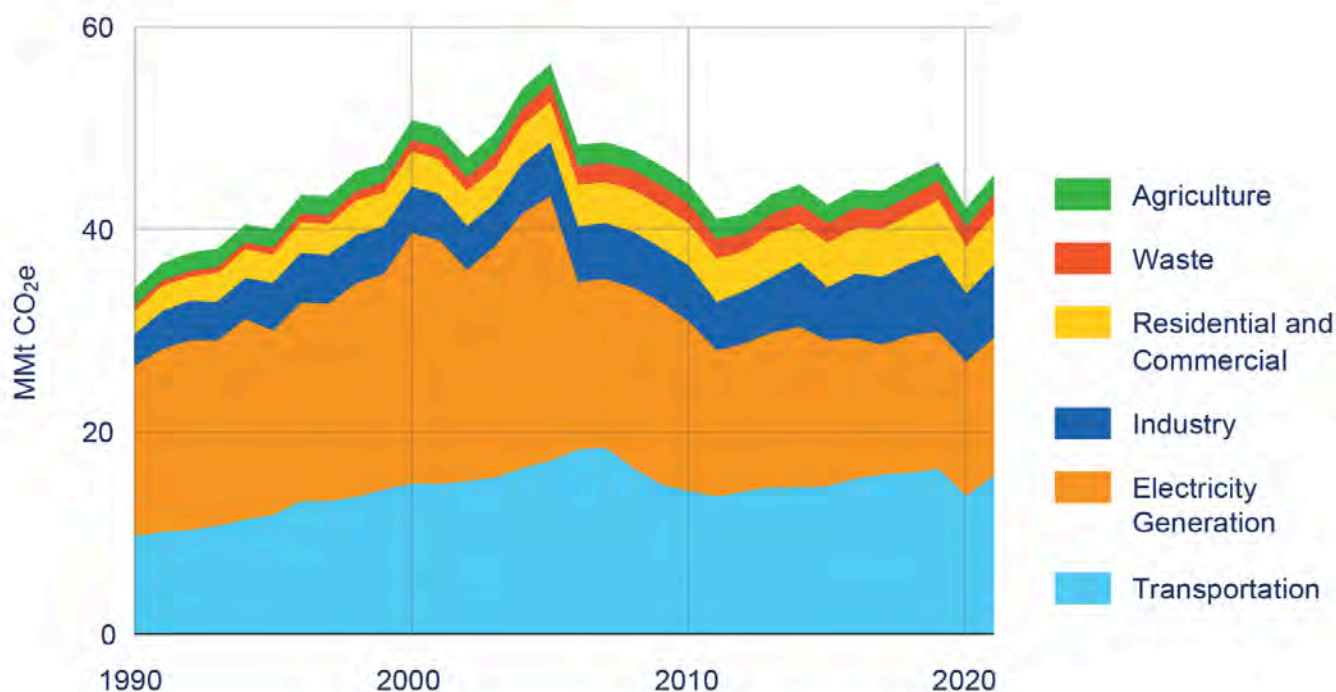


Figure E2. GHG emissions in Nevada from 1990 through 2021.

Source: NDEP.

Existing investments at the local and state levels, in addition to currently available funding, provide a solid foundation for taking advantage of new opportunities. These include the CPRG program's implementation grants in addition to grants available via the *Inflation Reduction Act* (IRA) and the Bipartisan Infrastructure Law (BIL). Combined, these federal laws offer hundreds of billions of dollars worth of direct and indirect funding for clean energy, transportation, and infrastructure.

Several state and regional planning initiatives are guiding Nevada's path toward a more sustainable and resilient future. For example, in the transportation sector, various state and regional plans such as the *One Nevada Transportation Plan*, the *Nevada Electric Vehicle Infrastructure Plan*, and the *Statewide Bicycle Plan* outline how the State and local governments intend to increase the use of electric vehicles (EVs), bikes, and public transit.

GHG Projections and Targets

The State has ambitious targets to reduce GHG emissions. In the 2019 Senate Bill (SB) 254, the State adopted goals to reduce GHG emissions from 2005 levels by 28% by 2025 and 45% by 2030, and to achieve zero or near-zero emissions by 2050.¹

In addition to GHG reduction targets, the State has had a Renewable Portfolio Standard since 1997. By 2030, at least 50% of electricity sold to retail customers by Nevada utilities must come from renewable sources. To set Nevada on a course to achieve these goals, the PCAP includes priority measures to increase energy efficiency and the availability of renewable energy.

Table E1. Nevada's GHG projections and targets.²

Year	Current Business as Usual Projections			2019 SB254 Targets		
	Emissions (MMtCO ₂ e)	Emissions Reduction Compared to 2005 Emissions (MMtCO ₂ e)	Percent Reduction Compared to 2005 Emissions	Emissions (MMtCO ₂ e)	Emissions Reduction (MMtCO ₂ e)	Percent Reduction
2005	47.1	n/a	n/a	n/a	n/a	n/a
2021	37.2	9.9	21.1%	n/a	n/a	n/a
2025	35.6	11.5	24.5%	33.9	13.2	28%
2030	34.0	13.1	27.8%	25.9	21.2	45%
2050	24.4	22.7	48.2%	0	47.1	100%

¹ Nevada State Legislature. Bill SB254 Overview, Pub. L. No. 254. Accessed February 2, 2024. <https://www.leg.state.nv.us/App/NELIS/REL/80th2019/Bill/6431/Overview>.

² Nevada Division of Environmental Protection. "Nevada Statewide Greenhouse Gas Emissions Inventory and Projections, 1990-2043," 2023. <https://ndep.nv.gov/air/air-pollutants/greenhouse-gas-emissions>

Clean Energy Potential

Nevada has among the highest potential for large-scale, clean energy projects among all 50 states. The technical potential for commercial, residential, and utility solar PVs is 6.27 billion MWh; for wind, it is 1.13 billion MWh; for geothermal, it is 54 million MWh; and for hydropower, it is nearly two million MWh.³ This dwarfs annual electricity consumption, which was approximately 39 million MWh in 2021.

Based on this, renewable electricity generated in Nevada could supply the state's annual electricity needs multiple times over.⁴

PCAP GHG Reduction Measures

The Nevada State PCAP includes six focus areas based on emission sectors. Each focus area includes a suite of priority GHG reduction measures:



Transportation:

In the transportation focus area, measures aim to increase active travel, public transit, and zero emissions vehicle (ZEV) adoption in Nevada. This includes incentives for clean fuels, support for capacity building and workforce training, and building infrastructure. These measures will improve air quality and public health by reducing pollution and increasing physical activity. In addition, Nevadans will save money by spending less on fuel and vehicle maintenance and having better access to public transit. Jobs will be created in fields such as construction, manufacturing, and vehicle operations.

³ National Renewable Energy Laboratory. "Residential Rooftop PV Nevada." State and Local Planning for Energy. Maps, 2023. <https://maps.nrel.gov/slope>.

⁴ A significant portion (87%) of Nevada is owned by the federal government, which may limit the feasibility of renewable energy development to its full technical potential.



Buildings:

Measures in the buildings focus area aim to reduce energy use and emissions in both residential and commercial buildings. This includes expanding programs that support pre-weatherization, weatherization, electric upgrades, and retrofits. In addition, these measures incentivize making new buildings more energy efficient than current standards. Through these measures, local governments and Tribes will be supported in improving buildings, training workers, and incentivizing residents and businesses in this area.



Energy Systems:

Measures in the energy systems focus area aim to reduce GHG emissions from producing energy and electricity. These measures support skillbuilding and knowledge sharing and encourage the use of renewable energy and energy storage. This includes incentives for local governments, Tribes, utilities, and industry to develop solar, wind, and geothermal resources, produce green hydrogen and biofuels, and add behind-the meter resources such as batteries. Additional measures incentivize improving the performance of the electricity grid through utility planning, upgrading existing infrastructure, and building new transmission lines. Measures to address emissions from existing fossil fuel power plants include incentives for switching to green hydrogen and/or batteries.



Industry:

Measures in the industry focus area aim to create business opportunities and jobs while lowering production costs, reducing environmental impacts, and enhancing community benefits. Key measures include turning industrial sites and brownfields into clean energy hubs, encouraging renewable energy and green hydrogen production near industry, reducing methane leaks, and promoting technological innovation. This includes supporting innovative projects that reduce GHGs beyond carbon dioxide (e.g., nitrous oxide, hydrofluorocarbons, perfluorinated compounds) in hard-to-decarbonize industries such as cement manufacturing. Measures will also support the mining industry in transitioning to ZEVs.



Waste Reduction:

The decomposition of organic waste in landfills leads to the natural by-product of methane gas.⁵ Measures in the waste reduction focus area incentivize waste diversion, composting, and developing a circular economy. These measures aim to significantly reduce the amount of organic waste and recyclable material that goes to landfills. This includes creating business opportunities for waste processing and the sale of recycled products. Waste diversion will reduce GHG emissions, prolong the life of landfills, and create new jobs and businesses.



Restore Landscapes and Sequester Carbon:

Measures in this focus area promote restoration of and carbon sequestration in degraded landscapes. Priority measures include tree planting, ecological restoration, and adaptive reuse of brownfields and former mining sites. Measures support ongoing research on how land use, land use change, and the agricultural sector contribute to and potentially reduce GHG emissions. Measures are also included to support work being done in this focus area by Tribes in Nevada. Restored natural lands and urban greenspaces will create additional green spaces and recreational opportunities, increased biodiversity, and improved air and water quality.

⁵ Methane has approximately 25 times more global warming potential than carbon dioxide, particularly in the first 20 years of its release.

The priority measures within each focus area present a possible path for achieving Nevada's near-term emissions reduction goals. This PCAP is not a commitment to implement all the measures but a menu of potential measures that can be used by eligible entities to create implementation projects and programs. Examples of potential implementation projects and programs are included for each focus area in Section 3.

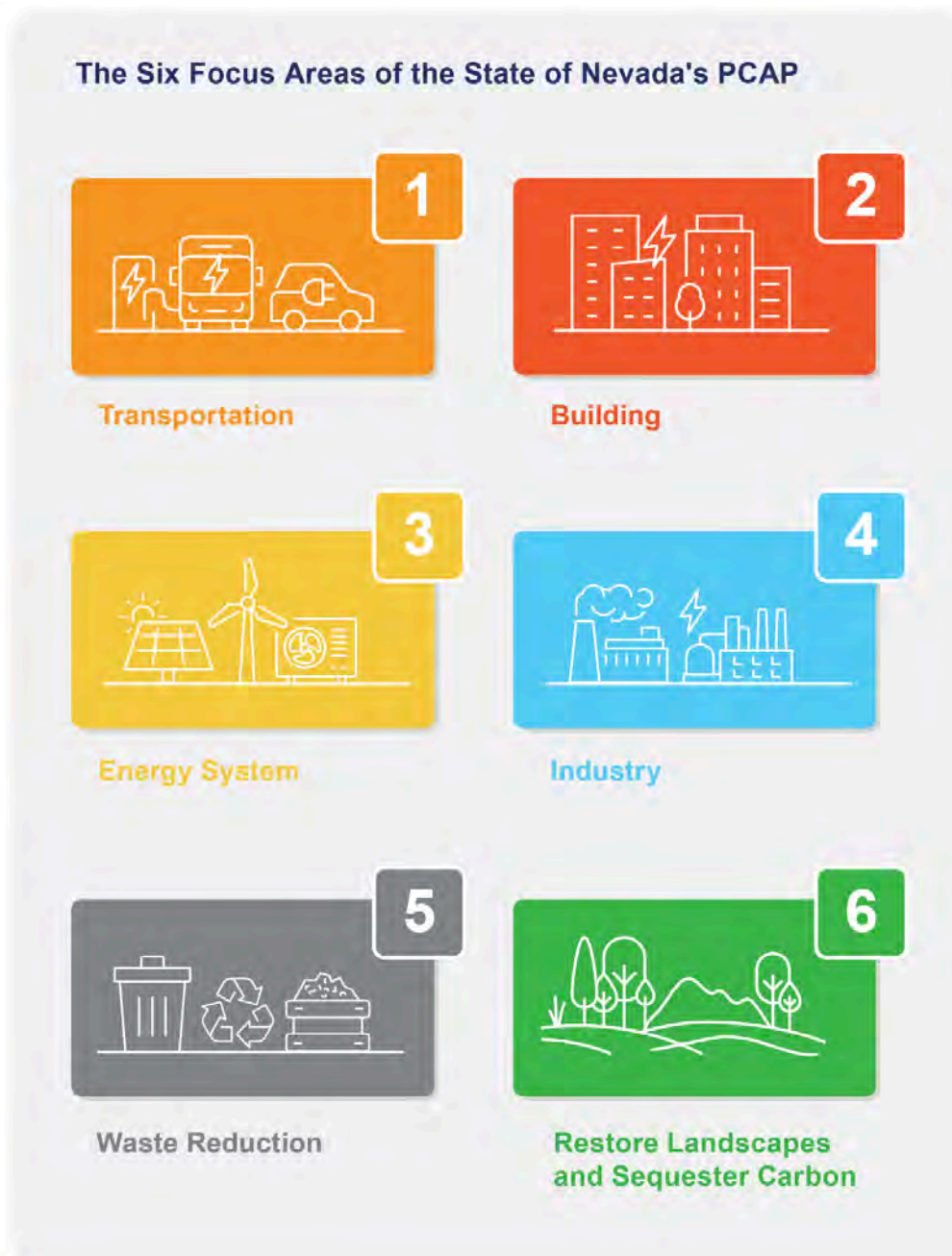


Figure E3. The six focus areas of the State of Nevada's PCAP.

PCAP GHG Emissions Reductions

Implementing the priority measures within each focus area would help reduce Nevada’s GHG emissions over time (Table E2) and achieve the State’s targets (Figure E4). Assumptions for the quantifications can be found in each focus area. Furthermore, Appendix A details the methodologies, data, and assumptions for emission reduction quantification.

Table E2. Summary of GHG emissions reductions by focus area.

Measure	Yearly Reductions by 2025 (MtCO₂e)	Yearly Reductions by 2030 (MtCO₂e)	Yearly Reductions by 2050 (MtCO₂e)
Transportation	24,635	896,591	993,268
Buildings	62,788	602,495	851,576
Energy Systems	1,389,966	5,999,602	5,998,085
Industry	364	256,629	256,629
Waste Reduction	0	607,951	1,591,893
Restore and Sequester	0	29	2,261
Total	1,477,753	8,363,296	9,693,712

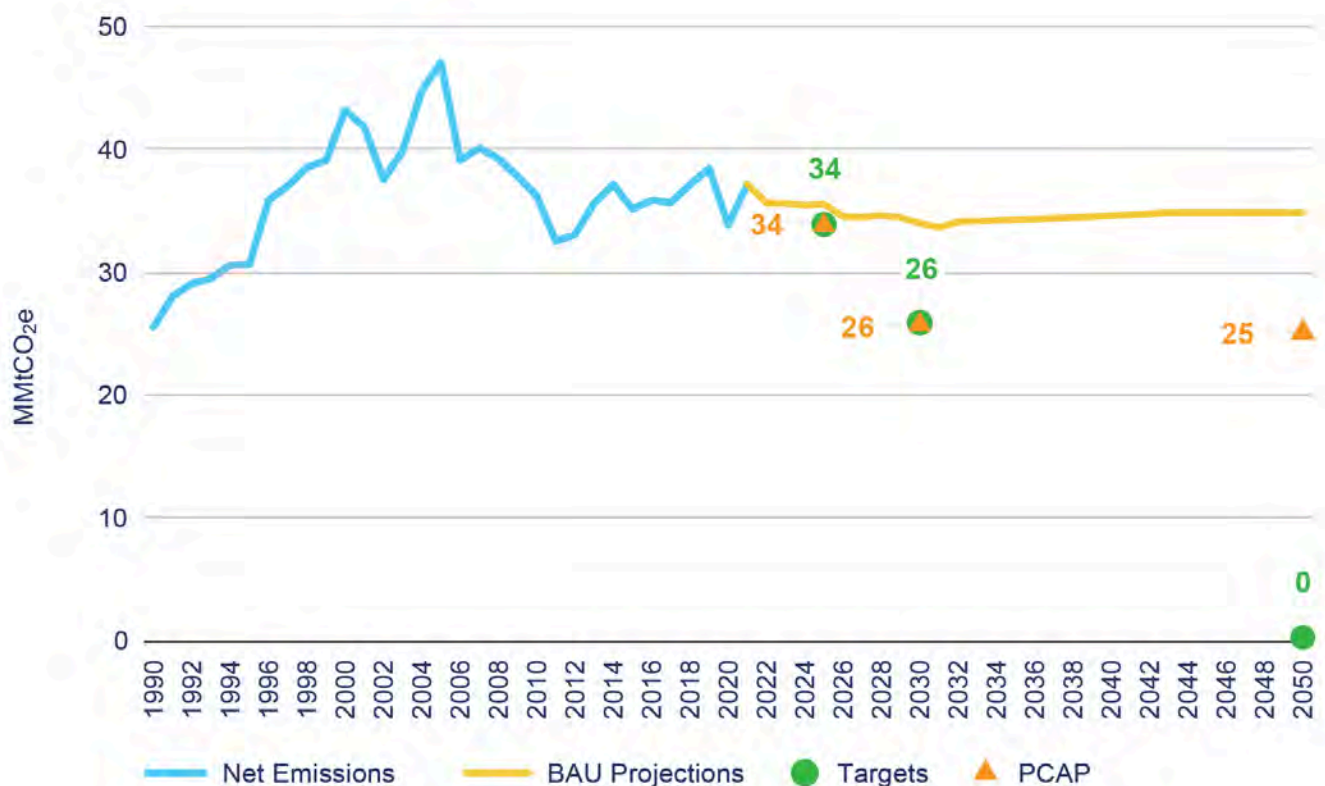


Figure E4. Illustration of historical emissions, projected emissions, Nevada’s GHG targets, and PCAP emissions.

Nevada’s actual GHG emissions from 1990 to 2021 (blue line), projected emissions through 2050 assuming business as usual (BAU) (yellow line), State GHG emissions reduction targets (green circles), and projected emissions resulting from the full implementation of PCAP measures (orange triangles).

Implementing the measures included in this PCAP will allow Nevada to make progress toward meeting its 2025 and 2030 emissions reduction targets, as established in 2019 by SB254.⁶ Meeting 2050 goals will require additional measures, to be described in the CCAP.

Summary of Benefits to LIDACs

The CPRG program is intended by the EPA to advance the goals of the Justice40 Initiative set forth in Federal Executive Order 14008. Justice40 aims to deliver at least 40% of the overall benefits of environmentally focused federal investments to LIDACs. While developing the PCAP, environmental justice issues facing LIDACs in Nevada were identified. These include the need for upgrades to existing infrastructure, including public buildings such as schools; air quality issues; financial, geographic, and

⁶ Nevada State Legislature. Bill SB254 Overview, Pub. L. No. 254. Accessed February 2, 2024. <https://www.leg.state.nv.us/App/NELIS/REL/80th2019/Bill/6431/Overview>.

other barriers to alternative modes of transportation; and critical service gaps. Tribes that provided input expressed concerns about the ongoing impacts of climate change (e.g., extreme heat, drought), and the desire to conserve and restore natural and working lands, upgrade and weatherize housing, achieve energy sovereignty, reduce energy costs, and build capacity resilience. To reflect these findings, measures were designed to be transformative, maximize GHG reductions, and positively and directly impact LIDACs, including Tribes in Nevada, as much as possible. When relevant, specific communities that would benefit from the implementation of particular measures are identified.

Federal Funding Opportunities

In addition to the CPRG Phase 2 funding opportunity, many other sources of federal funding can be leveraged to develop and implement the PCAP measures. These funding opportunities (e.g., EPA Environmental and Climate Justice Block Grants, Tax Credit programs) are identified within each focus area in this report as well as in the Federal Funding Crosswalk (Appendix B).

Next Steps

The PCAP provides the foundation for a more comprehensive analysis in the CCAP. The CCAP will identify all GHG sources, sinks, and sectors in Nevada and include mid- and long-term reduction strategies. The engagement process for the CCAP will begin later in 2024. Engagement will include meaningful and targeted outreach events with all interested and affected parties. Meetings will include high-functioning meeting technology and online tools and adequate time for in-depth discussion. The process will enable opportunities for conversation and collaboration among a diverse set of participants.

Successful engagement of the CCAP Engagement Plan will depend on:

- Working with diverse community leaders, organizations, and networks from across the state;
- Connecting the CCAP with people's everyday experiences;
- Tailoring engagement and messaging to diverse populations; and
- Effectively managing divergent perspectives among interested and affected parties.

Disclaimer

This report has been undertaken to address the requirements of the United States Environmental Protection Agency's (EPA) CPRG program. Reasonable skill, care, and diligence have been exercised to assess the information provided for this analysis, but no guarantees or warranties are made regarding the accuracy or completeness of this information. This document, the information it contains, the information and basis on which it relies, and the factors associated with the implementation of the Priority Climate Action Plan are subject to changes that are beyond the control of the authors. The information provided by others (e.g., U.S. Census Bureau, the EPA) is believed to be accurate but has not been verified.

This analysis applies to the State of Nevada and cannot be applied to other jurisdictions without additional analysis. Any use by NDEP, project partners, sub-consultants, or any third party, or any reliance on or decisions based on this document, are the responsibility of the user or third party.

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Acknowledgements

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Interested and Affected Parties

Many individuals and organizations from across Nevada actively contributed to the planning process.

The team is grateful for their valuable insights, expertise, and commitment to action, which have played a crucial role in shaping the PCAP and priority measures.

Acronyms and Definitions

Acronym or Term	Definition
AB	Assembly Bill
AEO	Annual Energy Outlook
BIA	Bureau of Indian Affairs
BIL	Bipartisan Infrastructure Law; see also IIJA
BMBRR	Bureau of Mining Regulation and Reclamation
Carbon sequestration	Any biological processes that absorb and store atmospheric carbon
CCAP	<i>Comprehensive Climate Action Plan</i>
CEJST	Climate and Economic Justice Screening Tool
CH ₄	Methane
CHIPS	Creating Helpful Incentives to Produce Semiconductors
CO ₂	Carbon Dioxide
COP	Coefficient of Performance
CPRG	Climate Pollution Reduction Grants
DBE	Disadvantaged Business Enterprise
DCNR	Department of Conservation and Natural Resources
DOE	Department of Energy
EJG2G	Environmental Justice Government-to-Government Program
EJScreen	Environmental Justice Screening Tool
EO	Executive Order

Acronym or Term	Definition
EPA	Environmental Protection Agency (Federal)
EV	Electric Vehicle
EVSE	Electric Vehicle Supportive Infrastructure
FUDS	Formerly Used Defense Sites
GDP	Gross Domestic Product, a measure of a country or state's economy
GHG	Greenhouse Gas
GOE	Governor's Office of Energy
GOED	Governor's Office of Economic Development
GRRP	Green and Resilient Retrofit Program
GWP	Global Warming Potential
HCT	High Capacity Transit
HEEHRA	High-Efficiency Electric Home Rebate Program
HEROS	Home Energy Retrofit Opportunities for Seniors
HFCs	Hydrofluorocarbons
HUD	Housing and Urban Development
IAP2	International Association for Public Participation
IIJA	<i>Infrastructure Investment and Jobs Act</i> ; see also BIL
IRA	<i>Inflation Reduction Act</i>
LID	Low Impact Development
LIDACs	Low-income and Disadvantaged Communities

Acronym or Term	Definition
LIHTC	Low-Income Housing Tax Credit
HOMES	Homeowner Managing Energy Savings Program
LULUCF	Land Use, Land Use Change, and Forestry
MBE	Minority Business Enterprise
MSA	Metropolitan Statistical Area
MSW	Municipal Solid Waste
N ₂ O	Nitrous Oxide
NAC	Nevada Administrative Code
NAE	Neighborhood Access and Equity Grant Program
NCEF	Nevada Clean Energy Fund
NDEP	Nevada Division of Environmental Protection
NEI	National Emissions Inventory
NGO	Non-Governmental Organization
NOFO	Notice of Funding Opportunity
NREL	National Renewable Energy Laboratory
NRS	Nevada Revised Statutes
PACE	Property Assessed Clean Energy
PCAP	<i>Priority Climate Action Plan</i>
PFCs	Perfluorinated Compounds
Phase 1	CPRG Planning Grant

Acronym or Term	Definition
Phase 2	CPRG Implementation Grant
PM _{2.5}	Particulate Matter 2.5, any fine inhalable particle with diameters that are equal or minor than 2.5 micrometers.
PROTECT	Promoting Resilient Operations for Transformative, Efficient, and Cost-saving Transportation
RMP	Risk Management Program
RNG	Renewable Natural Gas
SAM	System Advisory Model
SB	Senate Bill
SEDS	U.S. Energy Information Administration's State Energy Data System
TNC	The Nature Conservatory
VMT	Vehicle Miles Traveled
VPP	Virtual Power Plant
WARM	Waste Reduction Model
WRRF	Water Resource Recovery Facilities
ZEV	Zero Emissions Vehicle

Key Energy and Emissions Units

GHG emissions

MtCO₂e = Metric ton of CO₂ equivalent of GHGs

1 kMtCO₂e = 1,000 MtCO₂e

1 MMtCO₂e = 1,000,000 MtCO₂e

Energy

1 MMBTU = 1.055 GJ

1 MJ = 0.0001 GJ

1 TJ = 1,000 GJ

1 PJ = 1,000,000 GJ

1 GJ = 278 kWh

1 MWh = 1,000 kWh

1 GWh = 1,000,000 kWh

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1 Introduction

1.1 Climate Pollution Reduction Grants (CPRG) Program Overview

The federal government passed the *Inflation Reduction Act* (IRA) in 2022. The IRA created many tools to support reducing greenhouse gas (GHG) pollution. This includes the Climate Pollution Reduction Grants (CPRG) program administered by the U.S. Environmental Protection Agency (EPA). The CPRG program has three broad objectives:

- Tackle damaging climate pollution while supporting the creation of good jobs and lowering energy costs for families;
- Accelerate work to address environmental injustice and 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 overall strategy is to address climate change by identifying opportunities that will provide good-paying jobs while addressing historic environmental injustices and inequities. The CPRG program includes two phases that are designed to enable the EPA to work in partnership with state, territory, local, and tribal officials to advance climate action in ways tailored to each jurisdiction's unique context. Phase 1 provides planning grants to develop plans to reduce GHGs; Phase 2 provides implementation grants to implement measures from those plans. The program will advance the goals of the Justice40 Initiative (Executive Order 14008), which aims to deliver 40% of overall benefits of federal investments to low-income and disadvantaged communities (LIDACs).

The EPA's priorities for Phase 1 are described in Table 1.

Table 1. CPRG program planning grant priorities.

Theme	Description
Analytics	Improve understanding of current and future GHG emissions to prioritize actions that reduce emissions of GHGs and other harmful air pollutants where citizens live, work, play, and go to school. Emphasis is in nonattainment areas for the National Ambient Air Quality Standards (NAAQS) for criteria air pollutants.
Programs	Adopt and implement ambitious policies and programs to reduce GHG emissions and accelerate decarbonization across multiple important

Theme	Description
	sectors (e.g., industry, electricity generation, transportation, commercial and residential buildings, agriculture/natural and working lands, and waste and materials management).
Partnerships	Collaborate closely with other entities in their state, region, municipality, and/or air district to develop coordinated plans based on best practices.
Financing	Explore opportunities to leverage sources of funding and financing from the <i>Inflation Reduction Act</i> (IRA) of 2022, Bipartisan Infrastructure Law (BIL) of 2021, the <i>American Rescue Plan Act</i> (ARPA) of 2021, and the <i>Creating Helpful Incentives to Produce Semiconductors and Science Act</i> (CHIPS) of 2022.
Innovation	Stimulate innovative technologies and practices to reduce GHG emissions and associated co-pollutants in hard-to-abate sectors.
Transformation	Prioritize actions that will be durable, replicable, and provide certainty in pollution reductions.
Economic development	Reduce climate pollution while building the clean energy economy in a way that benefits Americans, provides new workforce training opportunities, and effectively addresses environmental injustices in disadvantaged communities.
Monitoring and evaluation	Adopt robust metrics and reporting programs to track emissions reductions and important benefits throughout the jurisdiction and in disadvantaged communities.

The Nevada Division of Environmental Protection (NDEP) received \$3 million in funding for Phase 1 of the CPRG program. This funding is being used to create the *Priority Climate Action Plan* (PCAP), the *Comprehensive Climate Action Plan* (CCAP), and the Status Report.

1.2 The *Priority Climate Action Plan* (PCAP)

The first deliverable of Phase 1 is the PCAP. The primary objective of this plan is to identify near-term, high-priority, implementation-ready measures to reduce GHG emissions. The PCAP includes a GHG inventory, quantified GHG reduction measures for six focus areas, a low-income and disadvantaged communities (LIDACs) benefits analysis, and a review of authority to implement the measures. While not required by the EPA, Nevada's PCAP also includes GHG emission projections and reduction targets.

A *Comprehensive Climate Action Plan* (CCAP) will be completed following the PCAP, which will provide more detailed modeling, technical, and planning analyses; address all sources and sinks of emissions; and include additional engagement. Following the CCAP, Nevada will submit a Final Status Report. The Status Report will provide updates on the implementation status of the CCAP and outline next steps.

1.3 Scope of the PCAP

The geographic scope for the PCAP is the State of Nevada (Figure 1). This includes the state’s urban areas, rural communities, and tribal reservations. The State’s PCAP is intended to be complementary to the Municipality PCAP for the Las Vegas–Henderson–Paradise metropolitan statistical area and Tribal PCAPs within Nevada. This PCAP is focused on buildings, transportation, energy generation, industry, waste, and carbon sequestration and building on the work the State has already done in these areas and the transformative potential of each sector.

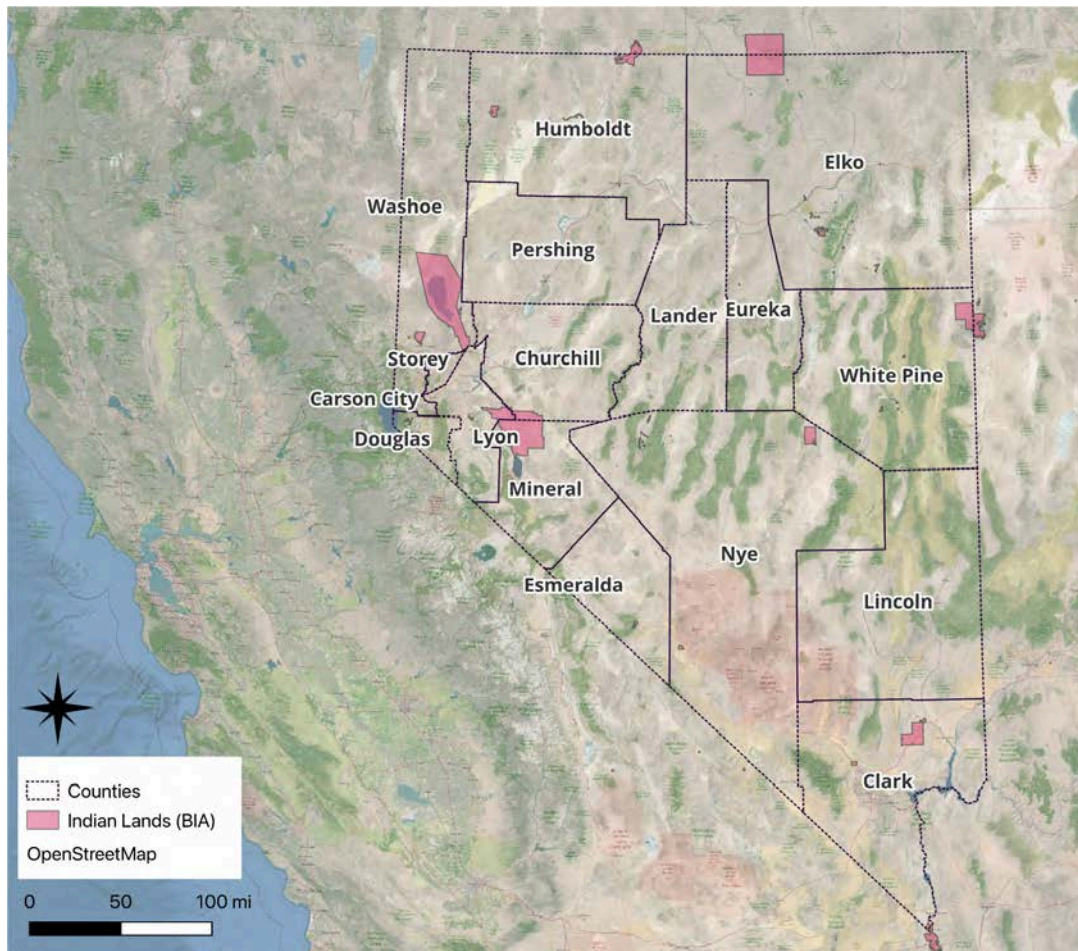


Figure 1. Map showing the geographic scope for the PCAP.

1.4 Framework for Climate Action Planning

This PCAP uses the Reduce-Switch-Produce-Offset & Sequester framework (Figure 2). This framework guides energy and emissions planning priorities in a similar way as Reduce-Reuse-Recycle in the waste sector and Avoid-Shift-Improve in the transportation sector.⁷

Using this approach, the first priority is to develop measures to reduce energy consumption. These measures reduce GHG emissions from existing energy sources. They also reduce total energy costs and per kilowatt energy costs by decreasing the need to build additional generation and transmission capacity.

The next priority is to switch energy production to renewables. The third priority is to produce renewable energy within the state as much as possible. This maximizes local economic benefits and the resilience of the electricity system.

The fourth and fifth priorities are to offset and sequester remaining emissions. This has a relatively limited impact on absolute GHG emissions; however, it provides several co-benefits such as improved air quality and well-being.

In addition to these priorities, the PCAP is guided by the following key question when choosing among climate actions: which investments will reduce current high-carbon or energy-intensive activities in the short term, and allow flexibility to tackle longer-term challenges? Investments have the potential to “lock-in” energy-intensive and high-emitting patterns in real estate development, land use, transportation options, behavior, and ongoing capital and operating investments. For example, land-use planning, infrastructure policies, and investments influence how densely a community develops, its mix of land uses, the size and location of its energy supply infrastructure, and transportation choices.

PCAP measures were prioritized using this understanding and the Reduce-Switch-Produce-Offset & Sequester framework, in combination with insights from the engagement process.

⁷ GIZ. “Sustainable Urban Transport: Avoid-Shift-Improve,” 2011. <https://suto.org/publications/sustainable-urban-transport-avoid-shift-improve-a-s-i/>

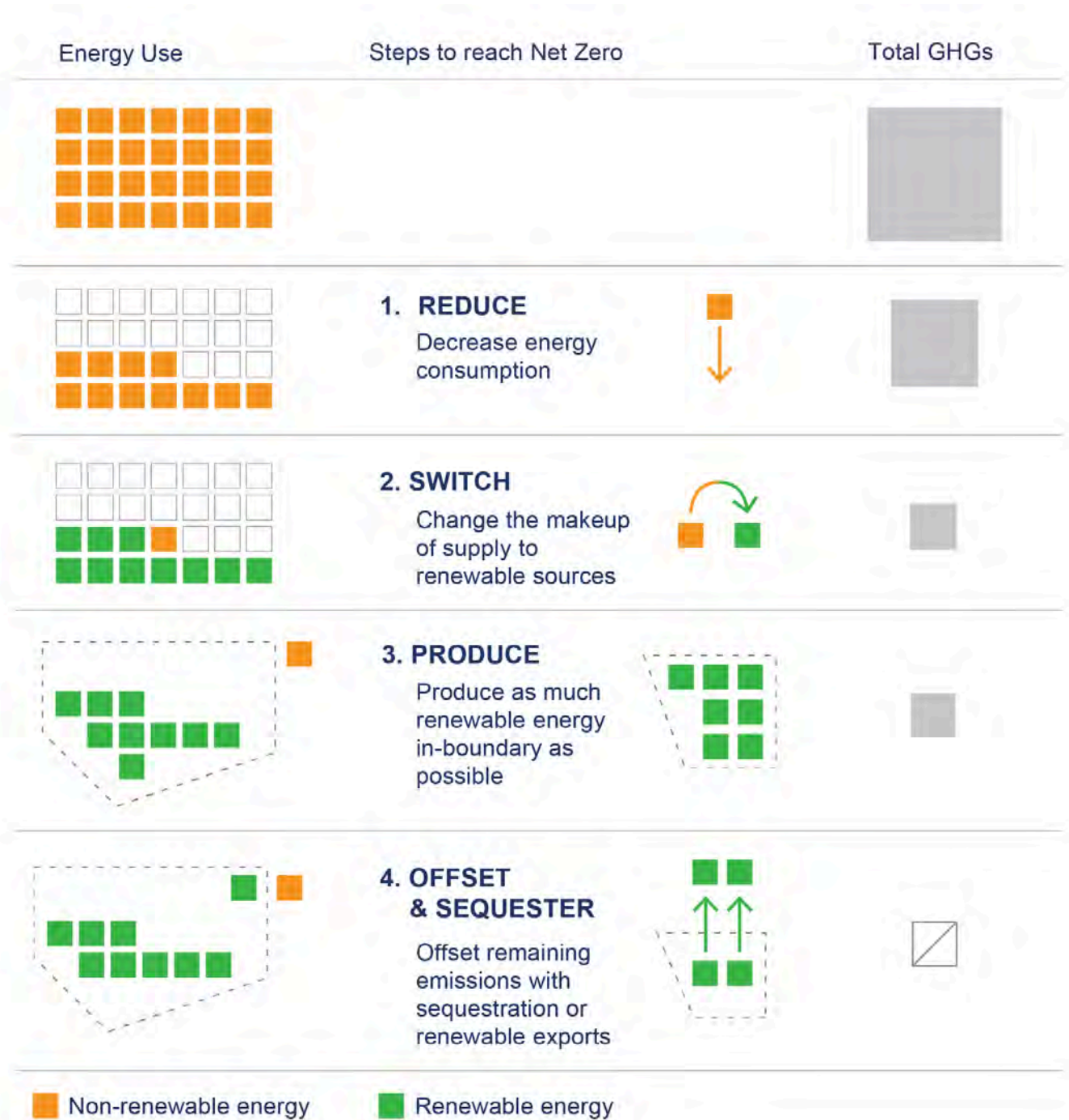


Figure 2. Reduce, Switch, Produce, Offset & Sequester framework: A systematic approach to reducing GHG emissions.
Source: SSG.

1.5 Climate Action Is Economic Development

Climate action planning is a process that directly influences and creates new economic development opportunities. Reducing emissions in any sector requires new investments and innovations (e.g. new technologies, new business models, new practices), which in turn generate entrepreneurial opportunities. In addition, investments in energy efficiency result in energy cost savings that can stimulate spending in other economic activities. Climate action investments also require training people to acquire new skills and increasing the workforce to install heat pumps, retrofit homes, and build infrastructure. The scale of these investments and the employment opportunities created by them means that a climate action plan is simultaneously an economic development strategy.

1.6 PCAP Process

Developing the PCAP included four streams of activities: coordination, technical analysis, engagement, and outcomes (Figure 3).

Climate action measures were identified based on a synthesis of findings from a context review of Nevada's plans and policies, NDEP's GHG inventory, and engagement with a wide range of interested and affected parties including Tribes in Nevada and LIDACs. Measures were prioritized using the Reduce-Switch-Produce-Offset & Sequester framework (Figure 2) and criteria that integrated local and regional priorities with the EPA's evaluation criteria for CPRG Phase 2 funding. NDEP and Governor's Office of Energy (GOE) staff served as the key decision-making and advisory bodies during the development of the PCAP.

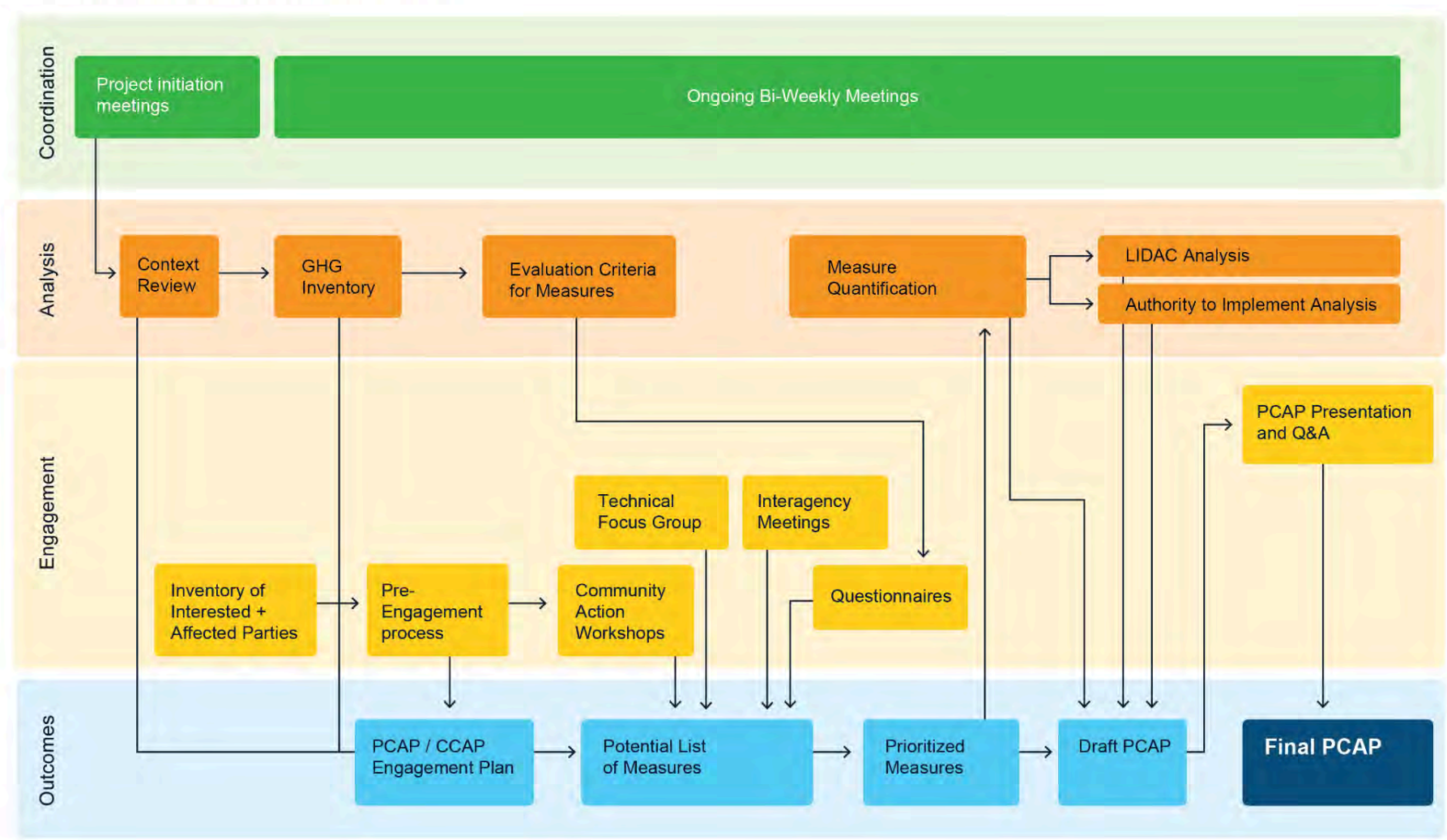


Figure 3. Overview of the PCAP process.

1.7 Engagement Process

1.7.1 Summary of Engagement Approach

The engagement process focused on gathering insights from diverse perspectives and identifying implementation-ready projects. It also focused on including groups that work with LIDACs to ensure the unique priorities, community norms, and capabilities of LIDACs were considered. Engagement included:

- A hybrid informational webinar to introduce the CPRG process to interested and affected parties. The webinar informed them of where they could find additional information and how to stay informed on future outreach and engagement events;
- One-on-one interviews with 20 people representing diverse perspectives, including six LIDACs;
- A pre-engagement summary of findings and recommendations for further engagement;
- Communications with approximately 350 individuals and/or representatives of organizations following an inventory and analysis of contacts from LIDAC groups, Tribes, rural areas, and interested and affected parties across a range of sectors
- A questionnaire to gather input about the context for climate action and project ideas with 20 responses, along with 16 emailed project idea submissions.
- Two hybrid public community action workshops (one in Las Vegas, one in Reno) attended by 72 people including LIDAC groups, climate action groups, health promotion groups, Tribes, local governments, public agencies, environmental conservation groups, academics, and representatives of the energy sector;
- A technical focus group and questionnaire with local experts and climate action leaders;
- A questionnaire completed by seven local experts and climate action leaders who provided additional insights and criteria for prioritizing the measures; and
- A hybrid public presentation (online and in Carson City) with an open comment period that included a question and answer period on the PCAP draft.

1.7.2 Informational Webinar

A hybrid informational webinar was conducted to begin outreach to any interested and affected parties. Invitations were sent using a wide net of contacts from NDEP's public notice process. This covered all public libraries and state museums, totalling 50 locations, to guarantee full geographic coverage. Also, 810 direct email announcements were sent to various applicable listservs maintained by NDEP, including the new CPRG listserv. This technique was used to begin forming a baseline of interested and affected parties for further engagement. The information provided in the webinar contained an introduction to the CPRG program's goals, NDEP's anticipated timeline and outreach approach with requests for suggestions, and directions on how to stay informed. A total of 57 individuals attended, consisting of a diverse audience of government officials, business and industry members, community benefit organizations, and environmental and climate action non-governmental organizations (NGOs). The presentation slides, transcriptions, and announcements were available in both Spanish and English along with a recording of the meeting, all available online. Key takeaways

were how to best engage communities and a general sense of expectations. Further engagement was designed and implemented by Sustainability Solutions Group (SSG) and Ericka Aviles Consulting in coordination with NDEP and GOE.

1.7.3 Pre-engagement

Pre-engagement is a best practice in engagement planning and design. It is embedded in the International Association for Public Participation (IAP2) planning protocol, which is recognized as the global standard for public engagement design. One-on-one pre-engagement interviews were conducted to understand how to effectively engage interested and affected parties and communities in Nevada. Pre-engagement interviews helped identify baseline knowledge about climate action, preferences for engagement, community groups that might otherwise be missed, and other potential issues and opportunities for the engagement process.

Interviews were conducted with 20 interested and affected parties selected randomly from a larger pool of 60. The interviews were conducted via Zoom by staff from the consulting team and adhered to confidentiality agreements. Interviewees received the interview questions, as well as a short project background, in advance. The interviewer typed notes during the call, which were shared with the interviewee by email for confirmation and any corrections/additions. Interviewees included individuals from the local government, community benefit organizations, construction and energy sectors, and environmental organizations.

Due to the short timeline for developing the PCAP, the pre-engagement process was modified to also identify community priorities and project opportunities for the PCAP. Further PCAP engagement directly with LIDACs was also explored with some interviewees. It was indicated that meaningful engagement with LIDACs requires opportunities for trust and partnership building, which were drastically limited by the short PCAP time frames. Building these relationships are a priority for developing the CCAP.

The results of the pre-engagement interviews illuminated a preference for relational and context-specific forms of engagement enabled by trusted individuals and organizations. The need for strong outreach and communications was emphasized; many people care about climate action and are open to learning more when the information is relatable to their experience. These results will inform community engagement plans for PCAP measures and the engagement process for the CCAP.

1.7.4 Communications and Inventory of Interested and Affected Parties

A detailed inventory of interested and affected parties was created early in the engagement process. The inventory is organized by various sectors and communities and will continue to be used in subsequent engagement activities. Thoroughly listing known interested and affected parties ensures that communication about the PCAP is reaching the right people and organizations that need to be involved in the process, including key audiences who may not be aware of the CPRG program's climate planning and engagement process. The inventory includes the identification of key leaders, subject matter experts, and LIDACs, as well as a wider pool of interested individuals. The inventory is a

working document and currently lists approximately 350 individuals, including 60 organizations serving or representing LIDACs, comprising:

- Local Government Agencies - 120
- State Agencies - 43
- Tribes & Tribal Organizations - 55
- Community Benefit Groups (LIDAC, Health, and Education) - 40
- Business and Industry - 25
- Environmental and Climate Action NGOs - 40
- Utilities - 30

Emails were sent to all interested and affected parties inviting them to participate in engagement opportunities at each stage of the PCAP development. Information about the project and engagement opportunities was also announced publicly on the NDEP website. A public listserv signup remains open.

1.7.5 Climate Action Context and Project Ideas Questionnaire

This questionnaire gathered information about the current awareness of local climate action in Nevada, as well as any project ideas to include in the PCAP. It was open to the public but oriented toward people working in the public and community-benefit sectors, ranging from conservation groups to County governments. Twenty responses were received and submissions illustrated a range of perspectives.

Additionally, 16 written detailed submissions were received by email. These ranged in purpose and detail, including topics such as carbon sequestration, thermal energy, equipment electrification, food waste reduction, public health, Tribal adaptation, and emissions reduction policy.

Questionnaire responses show that current awareness of emissions reduction strategies is higher in urban areas such as those within Clark and Washoe Counties, while awareness of the impacts of climate change and adaptation tends to be higher in rural areas. The most commonly identified impacts of climate change included more demand for energy, particularly for cooling buildings, and the need to improve infrastructure to better withstand extreme weather events. Addressing energy use and emissions in the building sector was the most frequently suggested type of project. Addressing emissions from transportation, especially by adopting zero emissions vehicles (ZEVs), was the second-most frequently suggested type of project, followed by energy generation. Different levels of government were suggested as implementing authorities.

1.7.6 Community Action Workshops

Two community action workshops were held, one in Las Vegas and one in Reno, both within LIDACs. Each workshop was hybrid, with participants gathered both online and in-person. The workshop format was a combination of presentations and facilitated breakout sessions for small group discussions. The slides were available in English and Spanish and were publicly shared on the NDEP website. A wide range of perspectives were represented, with 28 people attending in Las Vegas and 44 attending in

Reno. The workshop in Reno was rescheduled from its original date due to a major storm event that impacted travel in the region.

Discussions were structured according to the sectors of greatest interest in the Climate Action Context and Project Ideas Questionnaire and the open submissions: buildings, transportation, and energy generation. Participants also received the opportunity to discuss any projects or measures of interest to them.

Several themes on climate action were observed across meetings and breakout discussions. These frequently mentioned ideas and opportunities provide key direction for the measures identified later in the PCAP, including:

- **Transportation**
 - Overall support for ZEVs, with concerns about equity
 - Need for infrastructure (charging) throughout the state
 - Need for effective incentives and promotion for ZEV, micro-mobility, and alternative modes
 - Expand and support transit to bring in LIDACs, rural communities, and Tribal lands.
 - Develop customized solutions appropriate for both urban and rural communities, as each have different transportation needs.
 - Establish green fleets (local and state) including school buses.
 - Ensure hydrogen fuels are also considered.
 - Develop education programs and workforce to maintain and operate ZEVs.
 - Offer rebate programs to help replace emitters with low to zero emissions.
 - Develop transportation hubs and multimodal connectivity ('complete streets').
 - Develop additional solutions to electrification that will reduce overall personal vehicle use, including transit and micro-mobility.

- **Buildings**
 - Deep energy retrofits have considerable support.
 - Pre-weatherization
 - Heat pumps for cooling
 - Pursue relatively low-cost and low-effort actions such as draft proofing, thermostats, timers, and LED bulbs.
 - Provide significant incentives to support renters and homeowners for weatherization.
 - Focus on small businesses, government buildings, and schools.
 - Stack existing funds.
 - Greater adoption of commercial property assessed clean energy (C-PACE).
 - Develop workforce to increase capacity for construction and installation.

- **Energy Generation**
 - Consider all alternative sources in the energy mix, such as nuclear, solar at various scales, and geothermal.

- Consider how energy generation could affect equity, negatively or positively, including energy affordability and the heat island effect of solar panels.
- Leverage the influence of large buildings (casinos and entertainment) that could convert to electric/renewable energy.
- **Other Sectors**
 - Introduce a composting system, starting with yard waste.
 - Enhance cooperation with utilities to improve electricity transmission and energy storage.
 - Uncertainty about carbon sequestration; some are advocates and some feel it is a distraction from renewable energy and efficiency.
 - There is a varied level of receptiveness to climate action in counties, and significant education and promotion is needed.

Additionally, equitable and diverse engagement on climate action was a key topic of conversation. Input regarding LIDACs is provided in Section 1.7.8 and throughout Section 3. Key suggestions from the workshops included the following:

- Public education is critical, especially in rural and LIDACs.
- Workforce development, new skills training (connecting to existing university and trade school programs).
- Make all information available in English and Spanish.
- Create a 'one-stop' shop for programs; how to stack funding.

1.7.7 Technical Focus Group and Questionnaire

A targeted group of 46 local experts and climate action leaders were invited to attend a focus group and to complete a questionnaire to provide more specific input to refine and prioritize a longer list of measures, projects, and provide other measures developed through the PCAP process. Eight people attended the workshop and 7 completed the questionnaire. Participants and respondents were all supportive of residential and commercial home retrofits, and almost all were supportive of a neighborhood specific intervention, a renewable empowerment plan, a *Clean Transportation 4 All* plan, a clean fleets program, a clean tourism plan, a community pathways program, and a Tribal climate coalition. Discussion focused on the impact, usability, and co-benefits.

1.7.8 PCAP Presentation, Question and Answer, and Open Comment

The final draft of the PCAP was open to public comment for seven days in February. A hybrid meeting was held to present an overview of the analysis and measures included in the PCAP. Opportunities to ask questions, provide reactions, and make comments were provided to all participants. The presentation was promoted via direct email and on the NDEP website, and 60 people attended. The open comment period resulted in 2 submissions from individuals and 16 submissions from interested and affected parties, 2 of which were on behalf of coalitions of non-profit organizations.

1.7.9 Engagement with LIDACs

LIDACs were engaged at various stages of the PCAP process, providing insights on how to effectively engage these communities in climate action planning, and how to best ensure that emissions reduction initiatives serve the needs of all Nevadans. Direct communications were sent to 40 local government agencies serving rural and low-income areas and 22 community benefit organizations to notify them of each engagement opportunity. Approximately 20% of these groups participated.

Pre-engagement interviews provided a personalized and private opportunity for LIDAC leaders to describe their context, inform on what is most important in achieving meaningful engagement, and provide ideas for how climate action can be mutually beneficial for addressing other community needs. Questionnaires and community workshops provided further opportunities to gather insights about how to embed equity in PCAP projects. Equity was raised throughout the engagement process, and participants from many sectors gave consideration to how climate actions could also help address inequities.

Several key findings emerged during the engagement process, including:

- LIDACs in Nevada are diverse and climate action will vary depending on the unique needs of a community.
- Existing buildings, roadways, transit, and electrical infrastructure in some LIDACs need overall improvements. Emissions reduction measures are one priority, in addition to service reliability, condition, comfort, and safety.
- Air quality is a major concern for some communities. Alternative modes of transportation and electrification of vehicles that reduce air pollution are of major interest.
- Tailoring climate action opportunities to target benefits will resonate with diverse LIDACs.
- Building renovations and deep energy retrofits for schools, community centers, libraries, and other public buildings should be prioritized.
- Many people are focused on meeting the basic needs and immediate concerns for themselves and their communities; thus, engaging in emissions reduction action needs to have tangible day-to-day value.

1.7.10 Engagement with Tribes

Tribes were engaged at various stages of the PCAP, with communications sent to 60 individuals across 29 Tribes and Tribal Organizations and 5 individuals participated in engagement opportunities. The Tribes who provided input had the following key insights:

- Heat and drought are top of mind. Adaptation and conserving traditional lands experiencing climate impacts are as much of a priority as reducing GHG emissions.
- Housing weatherization is a key community priority to implement in order to enable air cooling during extreme heat and filtration during wildfire smoke.

- Energy sovereignty and reduced energy costs are key benefits for onsite energy generation on Tribal lands.

1.7.11 Application of Findings

Notes from the conducted meetings and interviews, along with each submission and questionnaire response were all carefully reviewed for key insights, context understanding, project ideas, barriers, and opportunities. A qualitative assessment was conducted to determine the applicability of the input received to individual measures and actions; all but a few comments and suggestions were relevant. Engagement findings and feedback have been synthesized within each of the relevant PCAP measures. Specific emphasis was placed on incorporating suggestions for how to make measures more transformative, maximize GHG reductions, and most positively and directly impact LIDACs including specific communities to note for the implementation of particular measures.

1.8 GHG Inventory Methodology

In 2023, NDEP released the *Nevada Statewide Greenhouse Gas Emissions Inventory and Projections, 1990-2043*.⁸ This report was created in accordance with Nevada Revised Statutes (NRS) 445B.380, a law that was passed in June 2007 and revised in 2019. The report includes an updated inventory of actual GHG emissions produced in Nevada through 2021 and projections of GHG emissions through 2043 for the state's largest emitting sectors. These sectors include transportation and electricity generation, as well as other major sectors including industry; residential and commercial buildings; solid waste and wastewater; agriculture; and land use, land use change, and forestry (LULUCF). GHGs analyzed include carbon dioxide (CO₂), methane (CH₄), nitrous oxide (N₂O), hydrofluorocarbons (HFCs), and perfluorinated compounds (PFCs).

To develop the GHG inventory, NDEP used publicly available data sources such as the U.S. Energy Information Administration's State Energy Data System (SEDS), the Annual Energy Outlook (AEO), and the EPA's State Inventory Tool. NDEP also used a diversity of federal, state, and local data sources relevant to each sector to increase accuracy. NDEP then quantified GHG emissions from specific activities, processes, or combustion sources within each sector to determine the types and amounts of GHGs emitted. SSG used NDEP's inventory data as the basis for describing Nevada's current emissions in Section 3 and for analyzing the potential emissions reduction impacts of the priority measures in each focus area.

⁸ Nevada Division of Environmental Protection. "Nevada Statewide Greenhouse Gas Emissions Inventory and Projections, 1990-2043," 2023. <https://ndep.nv.gov/air/air-pollutants/greenhouse-gas-emissions>

2 Background

2.1 Nevada Background

2.1.1 Geography

Nevada, approximately 110,000 square miles, is the seventh largest state in the United States based on area. Nearly 87% of the land is owned by federal authorities, the majority (67%) of which is overseen by the Bureau of Land Management.⁹ Other public lands are managed by the US Forest Service, the National Park Service, the Bureau of Reclamation, the Fish and Wildlife Service, and the Department of Defense.¹⁰

Nevada encompasses diverse ecosystems including grasslands, forests, mountains, and deserts.¹¹ While it is the driest state in the country, it is also mountainous, making parts of the state colder and wetter at times.¹² In recent years, the state has experienced increasing temperatures, extreme droughts, reduced snowfall, and an increasing number of large wildfires. Ultimately, these changes are having, and will continue to have, impacts on water security, public health, agriculture, ranching, and habitat for over 3,800 native plants and animal species.¹³

2.1.2 Population and Economy

As of 2022, Nevada's population is approximately 3,177,772 residents,¹⁴ making it the 32nd most populous state in the country.¹⁵ Approximately 72% of residents identify as White, 10.8% as Black, 9.4% as Asian, 1.7% as American Indian and Alaska Native, and 0.9% as Native Hawaiian and Other Pacific Islander; approximately 5.1% of residents identify as two or more races. Nearly 30% identify as Hispanic or Latino, and nearly 30% of the population speaks a language other than English at home.¹⁶ For some groups, Nevada's population is more diverse than the United States as a whole.

⁹ Bureau of Land Management Nevada. "2021 Census Data." Census Data, 2021. <https://www.blm.gov/nevada>.

¹⁰ Harris, Richard W. "Nevada's Public Lands: Who Owns and Controls Nevada?" 2021. https://nvbar.org/wp-content/uploads/NevadaLawyer_Oct2021_WhoOwns-Nevada.pdf.

¹¹ The Nature Conservancy Nevada. "The Nature of Nevada," 2023. <https://www.nature.org/en-us/about-us/where-we-work/united-states/nevada/stories-in-nevada/nature-of-nevada/>.

¹² Ormerod, Kerri, and Stephanie McAfee. "Nevada's Weather and Climate." University of Nevada, Reno, 2017. <https://extension.unr.edu/publication.aspx?PubID=2701>.

¹³ The Nature Conservancy Nevada. "The Nature of Nevada," 2023. <https://www.nature.org/en-us/about-us/where-we-work/united-states/nevada/stories-in-nevada/nature-of-nevada/>.

¹⁴ U.S. Census Bureau. "QuickFacts: Nevada; United States." Census Data, 2022. <https://www.census.gov/quickfacts/fact/table/NV.US/PST045223>.

¹⁵ U.S. Census Bureau. "State Population Totals and Components of Change: 2020-2023." Census Data, 2023. <https://www.census.gov/data/tables/time-series/demo/popest/2020s-state-total.html>.

¹⁶ U.S. Census Bureau. "QuickFacts: Nevada; United States." Census Data, 2022. <https://www.census.gov/quickfacts/fact/table/NV.US/POP815222>.

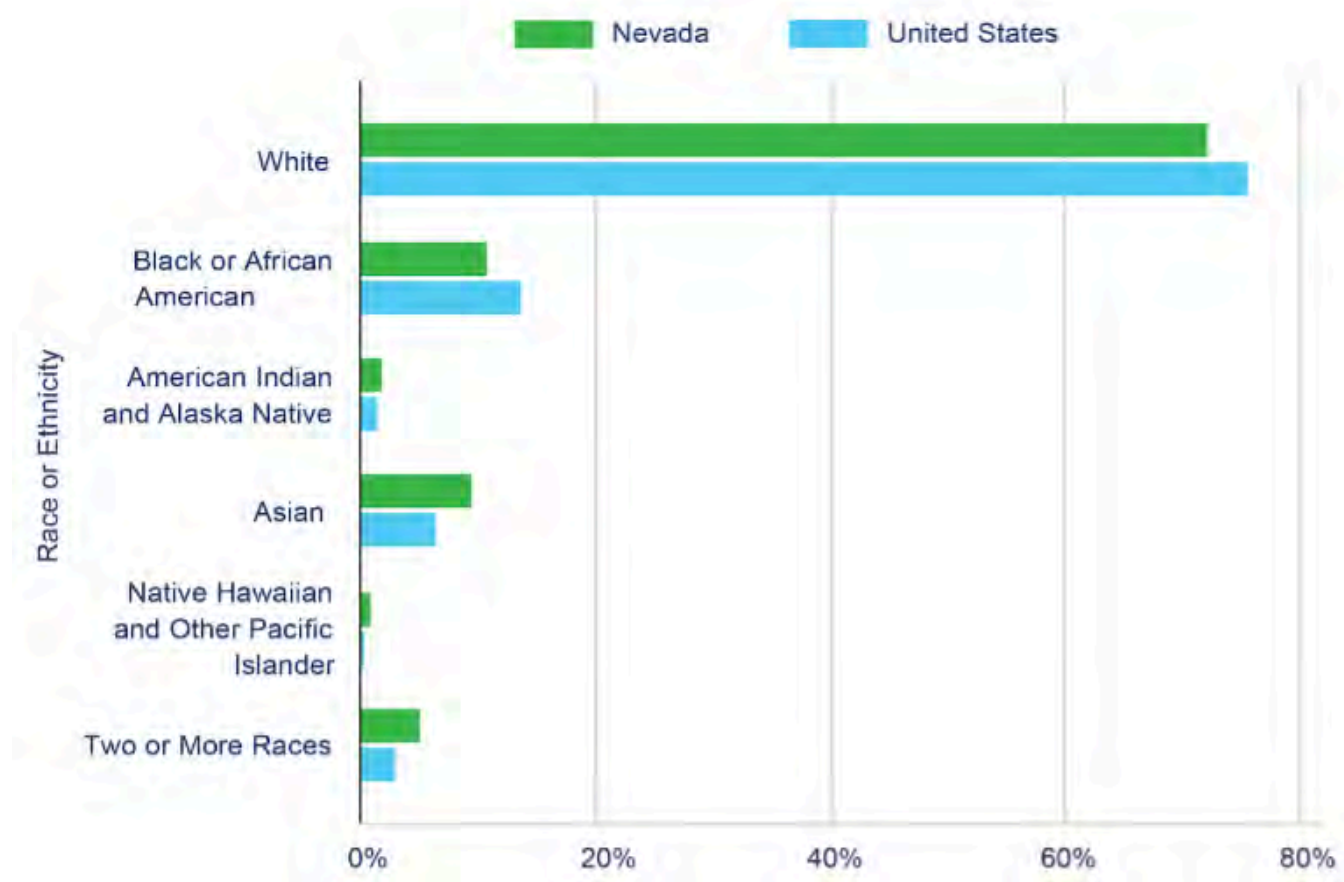


Figure 4: Race and ethnicity of people in Nevada and in the United States as a whole.
 Source: U.S. Census.¹⁷

In Nevada, over 21% of the population is under 18 years old, with a median age of 38. In 2022, the median household income was approximately \$71,646 and the per capita income was \$37,945.¹⁸ However, this ranges across the state. For example, in Las Vegas the median household income was \$66,356 (2022), in Reno it was \$73,073 (2022), and on the Pyramid Lake Paiute Reservation it was \$46,688 (2021).^{19,20}

Nevada is organized into 16 counties and one independent city, Carson City, that is the capital of the state and functions as a county. There are nine metropolitan statistical areas (MSAs), the largest of which, the Las Vegas-Henderson-Paradise MSA, has a population of 2.3 million people. The next largest, the Reno-Sparks MSA, has a population of 511,527 residents.²¹ Most of the state outside urban areas is sparsely populated (Figure 5).

¹⁷ U.S. Census Bureau. "QuickFacts: Nevada; United States." Census Data, 2022. <https://www.census.gov/quickfacts/fact/table/NV.US/POP815222>

¹⁸ U.S. Census Bureau. "QuickFacts: Nevada; United States." Census Data, 2022. <https://www.census.gov/quickfacts/fact/table/NV.US/POP815222>

¹⁹ U.S. Census Bureau. "QuickFacts: Reno City, Nevada; Las Vegas City, Nevada; United States," 2022.

<https://www.census.gov/quickfacts/fact/table/renocitynevada.lasvegascitynevada.NV.US/PST045223>.

²⁰ Federal Reserve Bank of Minneapolis. "Native Community Data Profiles." 2021.

<https://www.minneapolisfed.org/indiancountry/resources/native-community-data-profiles>.

²¹ U.S. Census Bureau. "QuickFacts: Nevada; United States." Census Data, 2022.

<https://www.census.gov/quickfacts/fact/table/NV.US/PST045223>.

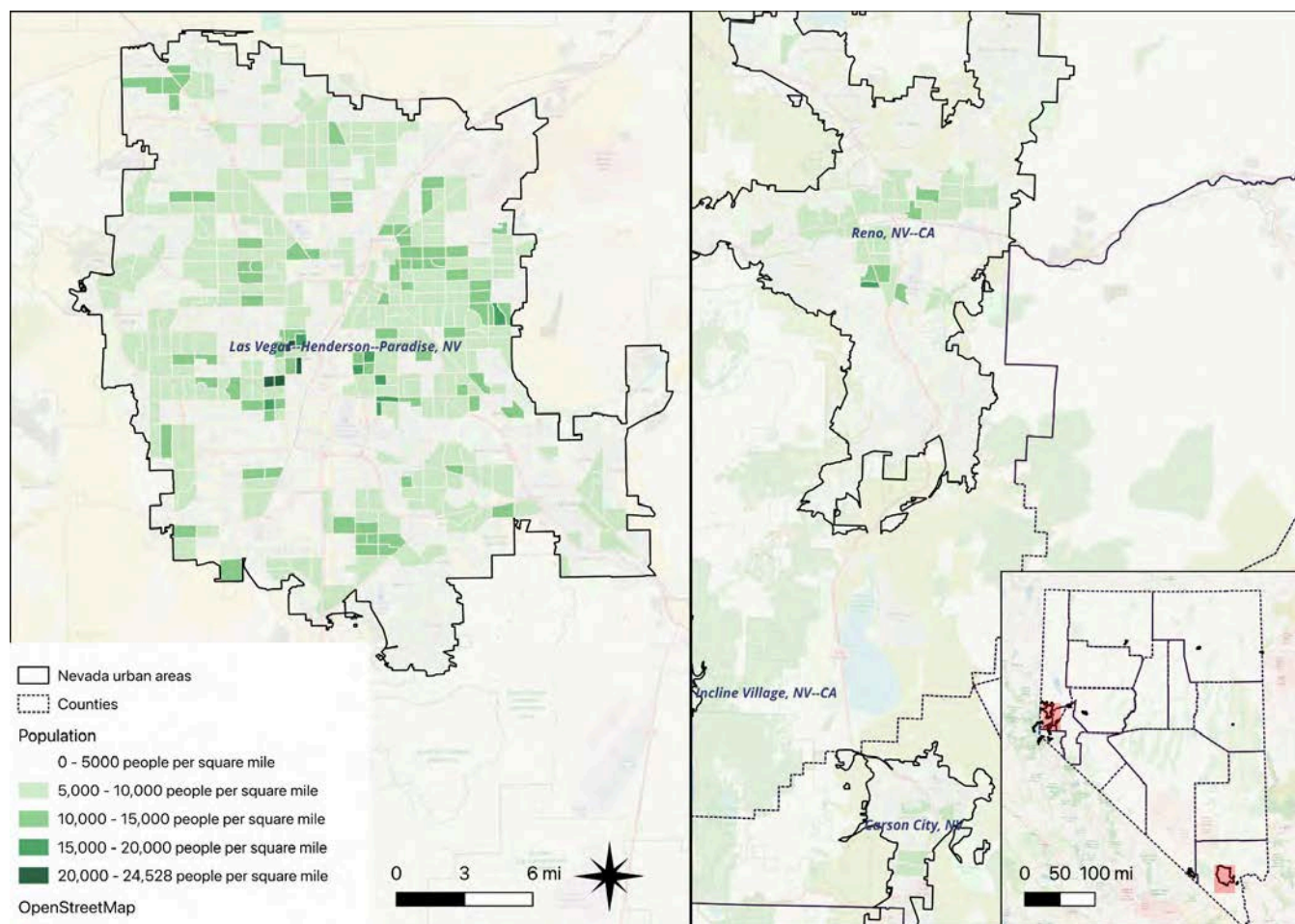


Figure 5. Map of Nevada with counties and cities and population density.

Source: Council on Environmental Quality, 2022.

The latest data indicates that Nevada is the sixth-fastest-growing economy among US states, with recent upticks in spending related to hospitality, entertainment, advanced technologies, industry, and warehousing.²² As of 2022, Nevada's total gross domestic product (GDP) was \$223 billion.²³ The growth of Nevada's economy since the COVID-19 pandemic has fluctuated due to ongoing instability in the tourism, hospitality, and travel industries, which account for roughly one in four jobs in the state.²⁴ In the third quarter of 2023, the real GDP²⁵ growth rate for Nevada was 6.3% per year, compared with 1.8% in the previous quarter.²⁶

²² Alicia Wallace Luhby Tami, "Strong Economic Growth but High Unemployment: A Look at Nevada's Economy" CNN, February 8, 2024, <https://www.cnn.com/2024/02/08/economy/nevada-economy-primary/index.html>.

²³ U.S. Bureau of Economic Analysis. "Gross Domestic Product: All Industry Total in Nevada." FRED, Federal Reserve Bank of St. Louis. 2022. <https://fred.stlouisfed.org/series/NVNGSP>.

²⁴ Peter S. Goodman and Bridget Bennett, "Why Are Americans Wary While the Economy Is Healthy? Look at Nevada." The New York Times, February 5, 2024, sec. Business, <https://www.nytimes.com/2024/02/05/business/economy/nevada-economy-primary-election.html>.

²⁵ Real gross domestic product is a measure of the value of economic output adjusted for price changes (inflation or deflation).

²⁶ USA Facts. "Economy of Nevada Statistics and Data Trends: GDP Ranking, Unemployment Rate, and Economic Growth." USAFacts, August 30, 2023. <https://usafacts.org/topics/economy/state/nevada/#fb0a153d-b8b9-4e47-8ae8-260e3abdf43b>

Nevada's economy is diversifying. Several industries are growing, including construction, tourism, gaming and entertainment, and manufacturing.²⁷ However, unemployment in Nevada is the highest among all 50 states (5.4% as of December 2023).²⁸ Census tracts with the highest levels of unemployment and poverty are found in Clark County, Washoe County, Mineral County, and Nye County (Figure 6). Taking action to address climate change—for example, by retrofitting buildings and developing renewable energy—has the potential to further diversify Nevada's economy and increase employment opportunities across the state.

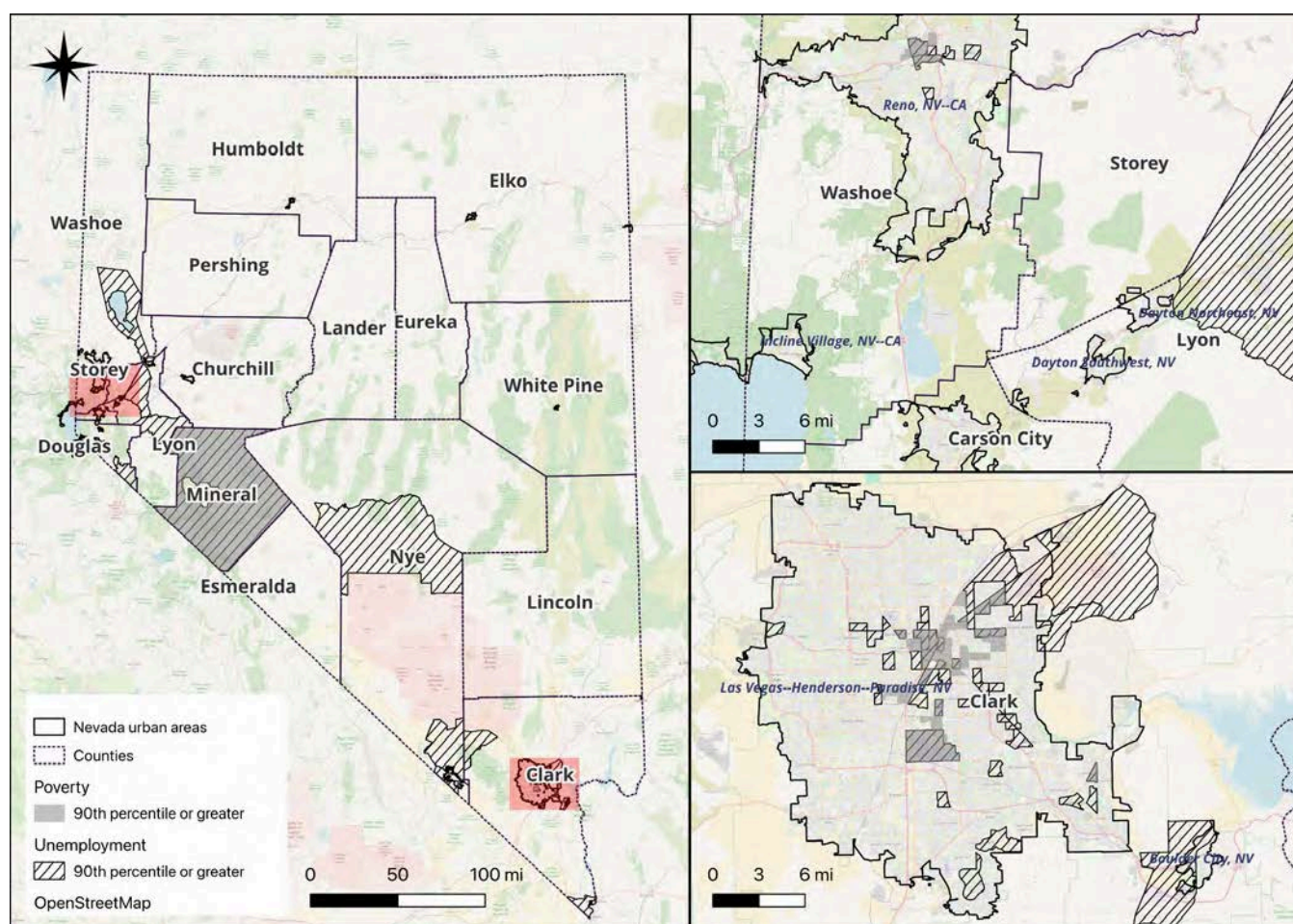


Figure 6. Census tracts in Nevada with poverty and unemployment levels at the 90th percentile and above.

Source: Council on Environmental Quality, 2022.

²⁷ Nevada Governor's Office of Economic Development. "Economic Development Annual Performance Report 2021," 2021. <https://goed.nv.gov/wp-content/uploads/2024/02/GOED-Performance-Report-2021.pdf>.

²⁸ U.S. Bureau of Labor Statistics. "Unemployment Rates for States," 2023. <https://www.bls.gov/web/laus/laumstrk.htm>.

2.2 Low-Income, Disadvantaged Communities in Nevada

The CPRG program is intended by the EPA to advance the goals of the Justice40 Initiative set forth in Federal Executive Order 14008. Justice40 aims to deliver at least 40% of the overall benefits of environmentally focused federal investments to LIDACs. While developing the PCAP, environmental justice issues facing LIDACs in Nevada were identified.

The Environmental Justice Screening and Mapping Tool (EJScreen) and the Climate and Economic Justice Screening Tool (CEJST) were used to identify LIDACs within Nevada. The CEJST provides information about overburdened and underserved communities at the census tract level, while EJScreen allows for more detailed analysis at the block group level.

These tools provide indicators of the social, environmental, economic, and public health burdens that LIDACs face. This is important because it demonstrates that communities across the state may face different types of issues. For the PCAP and CCAP processes, these indicators provide a greater understanding of which communities across Nevada will benefit from particular measures through direct and indirect benefits. The categories, indicators, and descriptions from the EJScreen and CEJST tools are combined below (Table 2).

Table 2. Categories, data indicators, and corresponding descriptions. Green cells indicate an index or threshold is included in EJScreen and/or CEJST.

Source: Adapted from the Council on Environmental Quality, 2022 and EPA, 2023.

Index or Threshold	EJScreen	CEJST	Definition
Public Health			
Air toxics cancer risk			Lifetime cancer risk from inhalation of air toxics
Air toxics respiratory hazard index			Ratio of exposure concentration to health-based reference concentration
Asthma			Share of people who answer “yes” to both of these questions: “Have you ever been told by a health professional that you have asthma?” and “Do you still have asthma?”
Cardiovascular disease			Share of people ages 18 years and older who have been told by a health professional that they had angina or coronary heart disease

Index or Threshold	EJScreen	CEJST	Definition
Diabetes			Share of people ages 18 years and older who have been told by a health professional that they have diabetes other than diabetes during pregnancy
Public Health (continuation)			
Food desert			Low-income and low-access tract measured at 1 mile for urban areas and 10 miles for rural areas according to the USDA
Lead paint			Share of homes built before 1960, which indicates potential lead paint exposure
Low life expectancy			Average number of years people have left in their lives
Economic Burdens			
Energy cost			Average household annual energy cost in dollars divided by the average household income
Historic underinvestment			Census tracts that experienced historic underinvestment based on redlining maps between 1935 and 1940
Housing burden			Share of households that are both earning less than 80% of Housing and Urban Development's Area Median Family Income and are spending more than 30% of their income on housing costs
Lack of green space			Share of land with developed surfaces covered with artificial materials like concrete or pavement, excluding crop land used for agricultural purposes
Lack of indoor plumbing			Housing without indoor kitchen facilities or complete plumbing facilities
Less than high school education			Percent of the population over age 25 with less than a high school education
Low income			Low median income calculated as a share of the area's median income
Poverty			Share of people living at or below 100% of the federal poverty level

Index or Threshold	EJScreen	CEJST	Definition
Transportation barriers			Average relative cost and time spent on transportation relative to all other tracts
Unemployment			Number of unemployed people as a share of the labor force
Vulnerable Populations			
Linguistic isolation			Share of households where no one over age 14 speaks English very well
Over age 64			Percent of people over the age of 64
People of color			The percent of individuals who list their racial status as anything other than non-Hispanic white-alone (non-multiracial) individuals
Under age 5			Percent of people under the age of 5
Air Pollution			
Diesel particulate matter			Mixture of particles in diesel exhaust in the air, measured as micrograms per cubic meter
Ozone			Average of the annual top 10- daily maximum 8-hour ozone concentrations in air for 2017-2019
Particulate matter 2.5			Fine inhalable particles with 2.5 or smaller micrometer diameters
Toxic releases from facilities			Modeled toxicity-weighted concentrations in air of EPA Toxic Release Inventory listed chemicals
Traffic impact			Number of vehicles (average annual daily traffic) at major roads within 500 meters
Land and Water Pollution			
Abandoned mine land			Presence of an abandoned mine left by legacy coal mining operations
Cleanup sites			Number of proposed or listed Superfund or National Priorities List (NPL) sites within 5 kilometers
Formerly Used Defense Sites (FUDS)			Properties that were owned, leased, or possessed by the United States, under

Index or Threshold	EJScreen	CEJST	Definition
			the jurisdiction of the Secretary of Defense prior to October 1986
Groundwater threats			Weighted formula of the density of leaking underground storage tanks and the number of all active underground storage tanks within 1,500 feet of the census tract boundaries.
Land and Water Pollution (continuation)			
Hazardous waste			Number of hazardous waste facilities (Treatment, Storage, and Disposal Facilities and Large Quantity Generators) within 5 kilometers
Impaired waters/ wastewater discharge			Risk-Screening Environmental Indicators (RSEI) modeled toxic concentrations at stream segments within 500 meters
Proximity to Risk Management Plan (RMP) facilities			Count of RMP facilities within 5 kilometers
Climate Risks			
Expected agriculture loss rate			Expected agricultural value at risk from losses due to natural hazards
Expected building loss rate			Expected building value at risk from losses due to natural hazards
Expected population loss rate			Expected fatalities and injuries due to natural hazards
Projected flood risk			Number of properties are at risk of floods occurring in the next 30 years
Projected wildfire risk			Calculated from inputs associated with fire fuels, weather, human influence, and fire movement

According to the CEJST, census tracts are considered disadvantaged if they are at or above the 65th percentile for the number of low-income households, and at or above 90th percentile for one of the data indicators described in Table 2.²⁹ A census tract that is surrounded by LIDACs and is at or above the 50th percentile for low income is also considered disadvantaged. Federally recognized Tribes are also

²⁹ Except in the categories of workforce development, for which a community is classified as disadvantaged when one of the described burdens is exceeded (90th percentile for each indicator) and when more than 10% of people ages 25 years or older have less educational attainment than a high school diploma.

considered disadvantaged communities. In other words, LIDACs face socioeconomic disparities in addition to other environmental, climate, health, and other burdens.

The EPA's EJScreen (Version 2.2) was used as a screening tool to complement insights from the CEJST. EJScreen contains environmental and demographic indicators, with similarities to those described above in the CEJST (Table 2). EJScreen uses two demographic indexes³⁰ to generate the following 13 environmental justice (EJ) and supplemental indexes. The EJ and supplemental indexes are: Particulate Matter 2.5, Ozone, Diesel Particulate Matter, Air Toxics Cancer Risk, Air Toxics Respiratory Hazard Index, Toxic Releases to Air, Traffic Proximity, Lead Paint, RMP Facility Proximity, Hazardous Waste Proximity, Superfund Proximity, Underground Storage Tanks, Wastewater Discharge.

Based on these indexes, the tool enables a comparison of the social, environmental, and public health burdens faced by individual communities in Nevada to state and national averages. The EJScreen tool categorizes communities as disadvantaged in a way that is slightly different from the CEJST. In EJScreen, census tracts and block groups are disadvantaged if they are at or above the 90th percentile for any of EJScreen's supplemental indexes when compared to the nation or the state, if they are within Tribal lands, or if they are classified as disadvantaged by the CEJST.

Of Nevada's 687 census tracts, 261 (37.9%) are categorized as LIDACs according to the CEJST (Figure 7 and Figure 8). The following section describes communities in Nevada according to the categories shown above, using both the CEJST and EJScreen, indicating which communities may benefit most from the measures in this PCAP. Maps were created by importing the CEJST and EJScreen data into Geographic Information System (GIS) software. In Section 3, each priority measure includes a map with identified locations and potential benefits resulting from implementation.

³⁰ The EJ index is based on the percentage of low-income households and people of color within the geography, and the supplemental EJ index is based on the percentage of low-income households, unemployment, limited English speakers, adults with less than a high school education, and populations with low life expectancy.

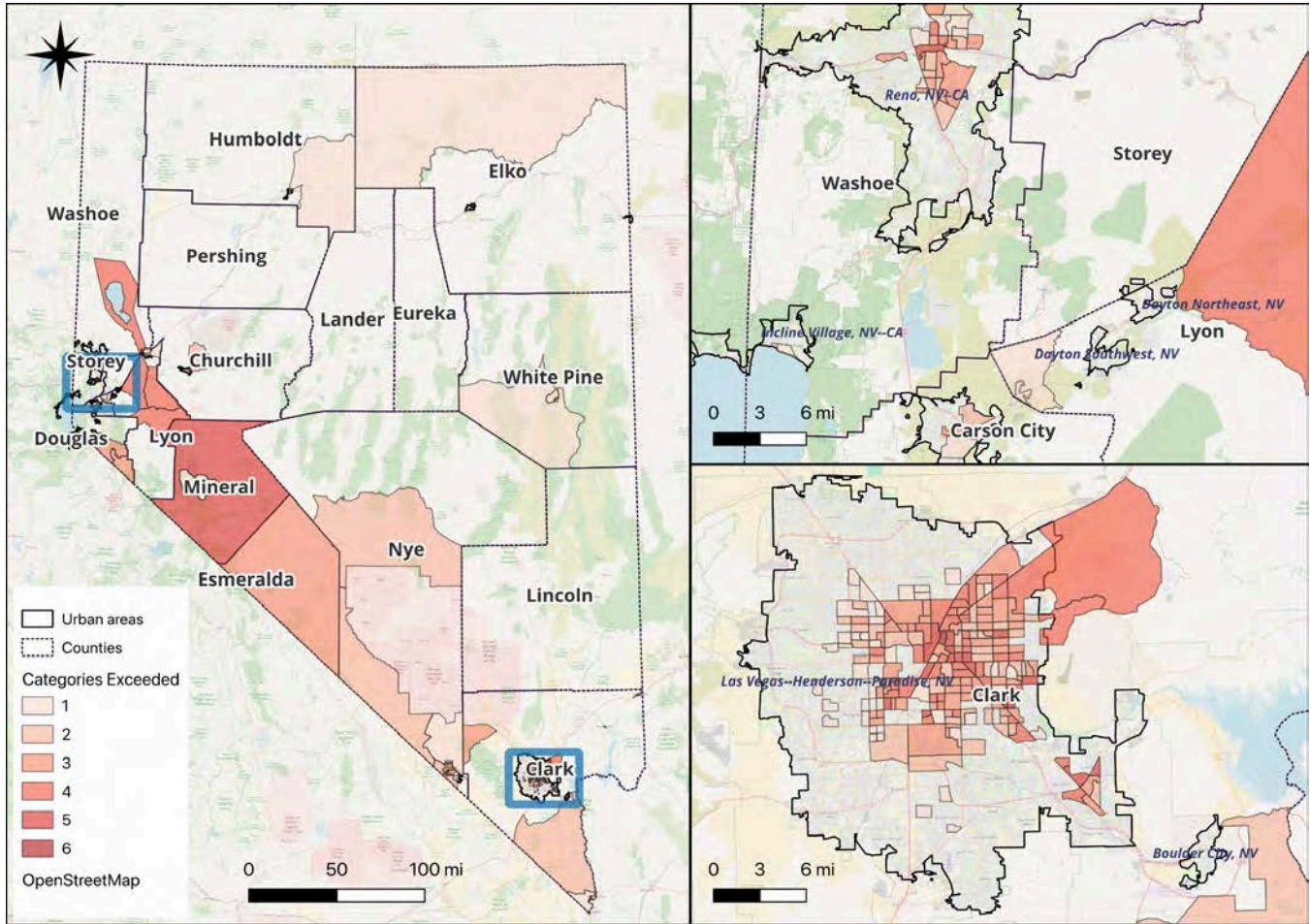


Figure 7. Map of low income, disadvantaged communities and the number of categories exceeded per census tract in Nevada according to the CEJST.

Source: Adapted from the Council on Environmental Quality, 2022.

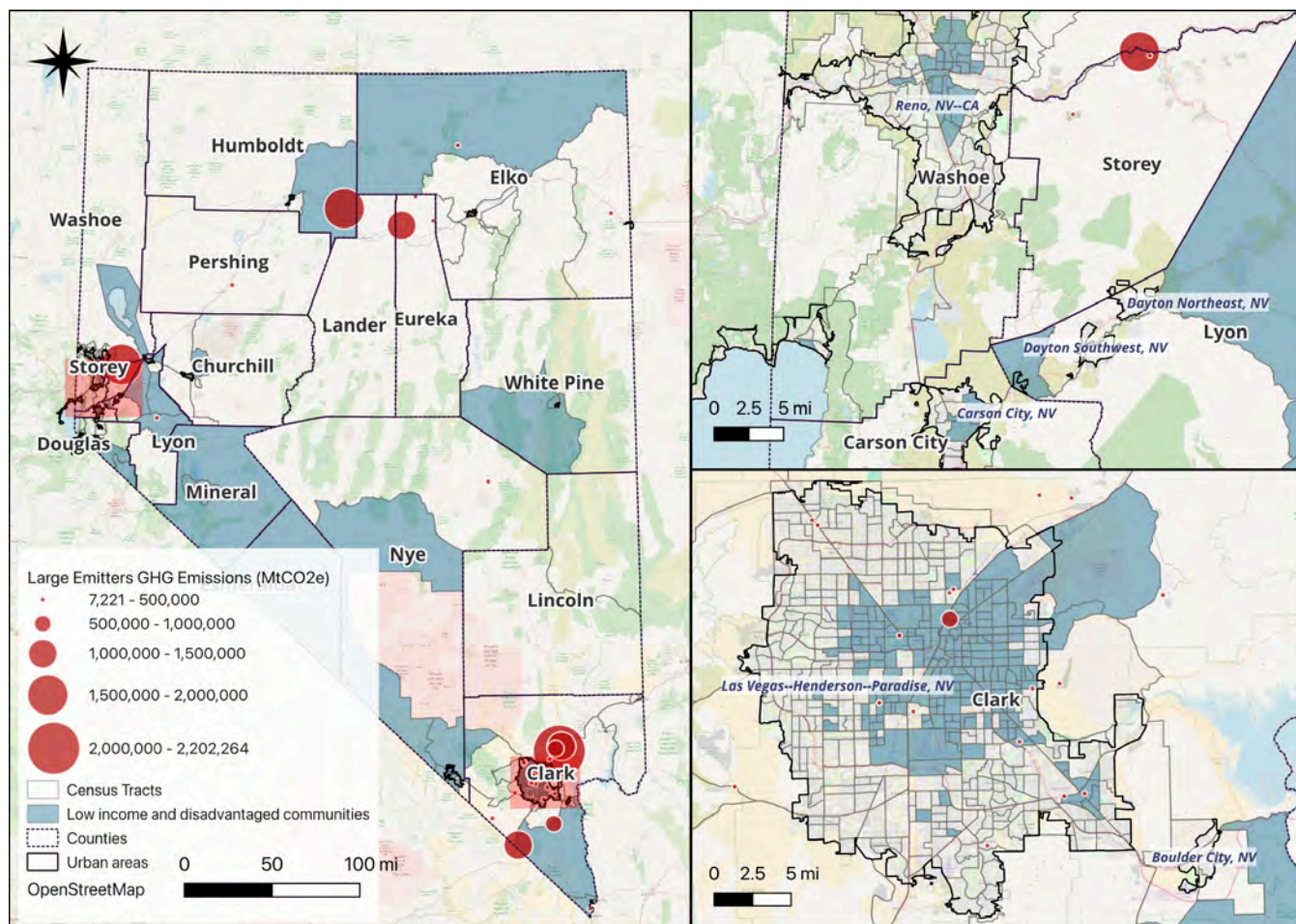


Figure 8. GHG emissions from major emission sources (MMtCO₂e) and low income and disadvantaged census tracts in Nevada.

Source: EPA FLIGHT and the Council on Environmental Quality.

2.2.1 Overview of LIDACs in Counties and Cities

LIDACs are located throughout Nevada. All but five of Nevada's 16 counties and one independent city contain census tracts classified as LIDACs (Table 3). The two most populous counties, Washoe County and Clark County, contain the highest number. However, smaller counties such as Nye County, Lyon County, Churchill County, Humboldt County, Mineral County, and White Pine County all contain comparatively higher percentages of LIDACs.

Table 3: Distribution of census tracts classified as LIDACs in Nevada, adapted from the CEJST.

Source: Adapted from the Council on Environmental Quality, 2022.

County	LIDAC Tracts (one or more categories exceeded)	Total Census Tracts	Percentage of tracts Which Are LIDACs
Clark	199	487	40.9%
Washoe	28	112	25.0%
Nye	7	10	70.0%
Lyon	6	10	60.0%
Carson City	4	14	28.6%
Churchill County	3	7	42.9%
Douglas	2	17	11.8%
Elko	2	14	14.3%
Humboldt	2	4	50.0%
Mineral	2	2	100.0%
White Pine	2	3	66.7%
Esmeralda	1	1	100.0%
Eureka	0	1	–
Lander	0	1	–
Lincoln	0	2	–
Pershing	0	1	–
Storey	0	1	–

EJScreen was used to provide the following information about LIDACs in Nevada's counties. See Table 2 (Categories, data indicators, and corresponding descriptions) for definitions of the issues described.

Clark County

More than 40% of census tracts in Clark County are LIDACs. Clark County is the most populous county in the state with a population of 2,231,147. Major population centers include Las Vegas, North Las

Vegas, Henderson, Sunrise Manor, Winchester, and Spring Valley. Compared to the rest of the state, Clark County has a higher population of Spanish-speaking people (23%) and people of color (59%). Additionally, the county has a disproportionately higher number of brownfields, air pollution sites,³¹ and hazardous waste facilities. The county has several critical service gaps including lack of access to broadband internet and fresh food, as well as high housing cost burdens and lack of transportation access. Clark County also contains American Indian Reservation Lands and is home to the Moapa Band of Paiutes and the Las Vegas Paiute Tribe.

The following communities within Clark County are, or contain, LIDACs:

- Much of **central, east, and southeast Las Vegas** is classified by the CEJST as a LIDAC. Las Vegas has a population of 634,869, with 58% of residents identifying as people of color, and 34% identifying as Hispanic. Twenty-five percent of residents speak Spanish. The city has a per capita income of \$33,696. Las Vegas has 8 hazardous waste, treatment, storage, and disposal facilities; 37 water dischargers; 128 brownfields; and 3 sites on the EPA's toxic release inventory. The city ranks below the 90th percentile state and nationwide for wildfire and flood risks.
- **North Las Vegas**, a separate city, has a population of 258,653 and is majority people of color (76%), with 82% of residents speaking Spanish. The city's per capita income is \$24,369. North Las Vegas has 12 hazardous waste, treatment, storage, and disposal facilities; 396 water dischargers; 13 air pollution sites; 137 brownfields; and 29 sites on a toxic release inventory. Critical issues in North Las Vegas include housing cost burdens, transportation access barriers, and lack of access to fresh food. The city ranks below the 90th percentile state and nationwide for wildfire and flood risks.
- **Henderson** has a population of 311,530 and is majority white (60%) with a per capita income of \$42,370. Henderson has 14 hazardous waste, treatment, storage, and disposal facilities; 569 water dischargers; 10 air pollution sites; 27 brownfields; and 14 sites on the EPA's toxic release inventory. Henderson ranks in the 85th percentile for wildfire risk compared to other census tracts in the country and 66th percentile statewide, and at even lower percentiles for flood risk.
- **Sunrise Manor** has a population of 196,820, is majority people of color (78%) and has a per capita income of \$21,027, with half (50%) of residents speaking English and a secondary group (44%) speaking Spanish as their primary language. When compared to state and national averages, Sunrise Manor ranks high for proximity to RMP facilities and facilities that emit toxic releases to air as well as wastewater discharge issues. When compared to state and national averages, Sunrise Manor also has a higher than average unemployment rate, number of people of color and low-income residents, number of limited English-speaking households, and number of adults with less than a high school education. Sunrise Manor has 4 hazardous waste, treatment, storage, and disposal facilities; 166 water dischargers; 9 air pollution sites; 2

³¹ Air pollution sites: Stationary sources of air pollution (such as electric power plants, steel mills, factories, and universities) as identified by the EPA using the Integrated Compliance Information System for Air (ICIS-Air). <https://www.epa.gov/enviro/icis-air-overview>.

brownfields; and 5 sites that are on the EPA's toxic release inventory. Critical issues in Sunrise Manor include housing cost burdens, transportation access barriers, and lack of access to fresh food. The city ranks below the 90th percentile state and nationwide for both wildfire and flood risks.

- **Mesquite** has a population of 20,042, with 35% of residents identifying as people of color and 28% as Hispanic. Twenty-five percent of residents are low income. Mesquite ranks higher than state and national averages for wastewater discharge issues. The city also ranks higher than average for the number of elderly people (over age 64), residents with heart disease and cancer, and persons with disabilities. The city ranks in the 92nd percentile for wildfire risk compared to the rest of the country and 76th percentile statewide. For flood risk, the city ranks below the 90th percentile state and nationwide. Mesquite faces both transportation and fresh food access barriers.
- **Laughlin** is a census-designated place with a population of 8,197. Twenty-seven percent of residents identify as people of color, 19% of residents are Hispanic, and 38% are considered low-income. Compared to state and national averages, Laughlin ranks particularly high for its unemployment rate and elderly population. In Laughlin, there are 24 wastewater dischargers, one air pollution site, and one site on the EPA's toxic release inventory. It has critical service gaps including transportation and food access barriers. The city ranks below the 90th percentile state and nationwide for wildfire and flood risks.

Washoe County

Twenty-five percent of census tracts in Washoe County are LIDACs. Washoe County is the second most populous county in the state, with a population of 479,758. Major population centers include the cities of Reno and Sparks. Apart from Clark County, Washoe County has the highest number of tracts that are multiply burdened (both low income and facing other burdens, as identified by the EPA) in the state. Issues faced by LIDACs in Washoe County include a high expected agricultural and building loss rate due to natural hazards and climate change, and high wildfire risk. As well, the presence of FUDS presents a source of pollution. Residents face transportation barriers and unemployment. Many places in Washoe County contain Justice40 CEJST disadvantaged communities, EPA IRA disadvantaged communities, and American Indian Reservation Lands. The County is home to the Reno-Sparks Indian Colony, which consists of members from three Nevada Great Basin Tribes (the Numu, the Newe, and the Washeshu), and the Paiute Reservation.³²

The following communities within Washoe County are, or contain, LIDACs:

- **Reno, NV** has a population of 260,510. Forty percent of residents identify as people of color, and 25% identify as Hispanic. The primary language is English for 75% of the population, with Spanish as the second primary spoken language for residents (16%). Thirty-one percent of residents are considered low-income. Reno contains American Indian Reservation Lands and EPA IRA disadvantaged communities. Fourteen sites are considered hazardous waste,

³² Pyramid Lake Paiute Tribe. "About Us." Accessed February 10, 2024. <https://plpt.nsn.us/about-us/>.

treatment, storage, and disposal facilities. There are 531 water dischargers, 7 air pollution sites, and 50 brownfields. The city ranks below the 90th percentile state and nationwide for wildfire and flood risks, and ranks higher than the state or national average for toxic releases to the air, traffic proximity, lead paint in pre-1960s housing, and proximity to Superfund sites and RMP facilities. Reno faces critical issues including housing cost burdens and transportation and food access barriers.

- **Sparks, NV** has a population of 106,698. Forty-six percent of residents identify as low income and 34% as Hispanic. English is not the primary language spoken at home for 28% of households. Sparks contains American Indian Reservation Lands and EPA IRA disadvantaged communities. Eleven sites in the city contain hazardous waste treatment, storage, and disposal facilities. There are 221 water dischargers, 9 air pollution sites, 37 brownfields, and 28 sites on the EPA's toxic release inventory. Sparks ranks significantly above state and national averages for toxic releases to the air, lead paint in pre-1960s housing, proximity to Superfund and RMP facilities, and proximity to hazardous waste sites. It ranks below the 90th percentile state and nationwide for wildfire and flood risks. Sparks faces critical service gaps including housing cost burdens and transportation and fresh food access barriers.
- **Incline Village** has a population of 9,417 residents, 28% of whom identify as people of color, and 19% of whom identify as Hispanic. Compared to state and national averages, Incline Village has a higher elderly population (over age 64). The city has transportation access barriers and ranks below the 90th percentile for both wildfire and flood risks.
- **Pyramid Lake Paiute Reservation** has approximately 2,288 members, with most living on the reservation and about 12% living in other parts of the Western United States. The entirety of Pyramid Lake, a major body of water, is located within the reservation. The tract covering the Pyramid Lake Paiute Reservation contains six water dischargers and four brownfield sites. It also contains American Indian Reservation Lands and EPA IRA disadvantaged communities. It ranks in the 72nd percentile within the state and the 90th percentile in the country for wildfire risk, and has critical service gaps including limited access to broadband internet and health insurance.
- **Wadsworth** is a census-designated place with a population of 778. Fifty-seven percent of residents identify as American Indian. Wadsworth contains American Indian Reservation Lands and EPA IRA disadvantaged communities. Forty-three percent of residents are considered low income and the unemployment rate is 17%. Wadsworth ranks below state and national averages for toxic releases to air, lead paint in pre-1960s housing, proximity to Superfund sites, and wastewater discharge. It has a higher than average rate of persons with asthma and heart disease, and persons with disabilities. Wadsworth includes four water dischargers and three brownfield sites. It ranks in the 90th percentile nationwide and the 72nd percentile statewide for wildfire risk, and lower than the 90th percentile for flood risk. Wadsworth faces critical service gaps including housing burden and transportation access, and is a food desert.

- **Sun Valley** is a small city north of Sparks with a population of 22,610. Forty-two percent of residents are low income and 57% identify as people of color. The per capita income is \$22,488 and the average life expectancy is low at 57 years. Fifty-one percent of residents identify as Hispanic and 33% of households speak Spanish at home. Sun Valley ranks significantly above state and national averages for toxic releases to air and proximity to Superfund sites. Sun Valley contains an EPA disadvantaged community and eight water dischargers. Critical service gaps include lack of health insurance and broadband internet. Sun Valley ranks in the 95th percentile nationwide and the 83rd percentile statewide for wildfire risk, and lower than the 90th percentile for flood risk.
- **Nixon** is a census-designated place with a population of 365. Seventy-one percent of residents identify as people of color, and 57% identify as American Indian. Forty-three percent of residents are considered low income and the unemployment rate is 17%. Nixon ranks significantly above state and national averages for toxic releases to air, lead paint in pre-1960s housing, proximity to Superfund sites, and wastewater discharge. It has a higher than average rate of people with asthma and heart disease, and persons with disabilities. Nixon contains American Indian Reservation Lands and EPA IRA disadvantaged communities. It includes one brownfield site and ranks at the 90th percentile nationwide and the 72nd percentile statewide for wildfire risk and lower than the 90th percentile for flood risk. Nixon faces critical service gaps including transportation and food access barriers.

Apart from the cities listed above in Washoe and Clark County, the following cities and census-designated places throughout the rest of the state are also LIDACs. Eureka, Lander, Lincoln, Pershing, and Storey County do not contain any LIDACs.

- **Carson City** has a population of 57,957. It is the capital of Nevada and functions as a city-county. Thirty-five percent of residents identify as people of color, and 25% identify as Hispanic. Thirty percent of residents are considered low income. Carson City ranks higher than state averages for proximity to superfund sites and for lead paint in pre-1960s housing. The city has 3 hazardous waste, treatment, storage and disposal facilities; 156 water dischargers; 6 air pollution sites; 33 brownfields; and 14 sites on the EPA's toxic release inventory. Carson City contains American Indian Reservation Lands and LIDACs. It ranks in the 94th percentile nationwide and the 80th percentile statewide for wildfire risk, and lower than the 90th percentile for flood risk. Carson City has critical transportation service gaps.
- Much of **Winnemucca** in Humboldt County (Census Tract 32013010701) is a LIDAC. Forty percent of residents are low income, 44% identify as people of color, and 20% speak a language other than English at home. The Winnemucca Indian Colony, located within this census tract, is a federally recognized Tribe of Western Shoshone and Northern Paiute Indians. This census tract ranks higher than state and national averages for underground storage tanks and wastewater discharge. It contains 1 site on the EPA's toxic release inventory and 11 water dischargers. Critical service gaps include lack of broadband internet access and lack of health insurance.

- **Owyhee** in Elko County has a population of 920. Ninety-eight percent identify as people of color, of which 77% identify as American Indian and 11% as Hispanic. Forty-four percent of residents are considered low income. Compared to state averages, Owyhee ranks high for lead paint in pre-1960 housing and proximity to Superfund sites. Owyhee contains American Indian Reservation Lands (Duck Valley Indian Reservation) and EPA IRA disadvantaged communities. It ranks in the 88th percentile statewide and the 97th percentile nationwide for wildfire risk, and in the 95th percentile statewide and 87th percentile nationwide for flood risk. The County also faces critical barriers to transportation and fresh food access.
- **Elko** is the main urban center in Elko County with a population of 20,708. Forty percent of residents identify as people of color, and 30% as Hispanic. Twenty-six percent are considered low income and 13% are persons with disabilities. Elko ranks at the 78th percentile statewide and the 93rd percentile nationwide for wildfire risk, and lower than the 90th percentile for flood risk, and faces a critical service gap with regard to transportation access. Elko contains American Indian Reservation Lands and LIDACs.
- **Ely** is the main city in White Pine County with a population of 3,613. Twenty-six percent of residents identify as people of color, of which 21% are Hispanic. Twenty-seven percent of residents are considered low income and 14% are persons with disabilities. Ely contains American Indian Reservation Lands and LIDACs. It ranks in the 82nd percentile statewide and the 94th percentile nationwide for wildfire risk, and the 93rd percentile statewide and the 83rd percentile nationwide for flood risk.
- **Fallon** is the main urban center in Churchill County with a population of 9,247. Thirty-four percent of residents identify as low income and 15% are persons with disabilities. Twenty-nine percent of residents identify as people of color and 13% as Hispanic. Fallon ranks much higher than state or national averages for toxic releases to air, wastewater discharge, and low life expectancy. The city contains American Indian Reservation Lands and EPA IRA disadvantaged communities, and faces critical gaps in service with regards to transportation and fresh food access. It ranks in the 59th percentile statewide and the 78th percentile nationwide for wildfire risk, and lower than the 90th percentile for flood risk.
- **Fernley** is the main urban center in Lyon County with a population of 22,820. Thirty percent of residents identify as people of color and 19% as Hispanic. Twenty-two percent are considered low income and 14% are persons with disabilities. Fernley ranks significantly higher in state and national averages for toxic releases to air, proximity to RMP facilities and Superfund sites, and wastewater discharge. Fernley also ranks very high for risk of wildfire. The city contains American Indian Reservation Lands and EPA IRA disadvantaged communities, and has critical gaps in transportation services and fresh food access. It ranks in the 75th percentile statewide and the 91st percentile nationwide for wildfire risk, and lower than the 90th percentile for flood risk.
- **Silver Springs** in Lyon County has a population of 4,629. Eleven percent of residents identify as people of color and 6% as Hispanic. Fifty-two percent of residents are considered low

income, 29% are persons with disabilities, and 26% are over the age of 65. Compared to state and national averages, Silver Springs ranks particularly high for toxic releases to air and proximity to Superfund sites, and ranks lower than the 90th percentile for both wildfire and flood risks. It contains EPA IRA disadvantaged communities, and has critical gaps in transportation access.

- **Stage Coach** in Lyon County has a population of 2,426, with 12% identifying as people of color and 9% as Hispanic. Thirty-three percent of residents are considered low income, 18% are people with disabilities, and 22% are aged 65 and older. Compared to state and national averages, Stage Coach ranks particularly high for toxic releases to air and proximity to Superfund sites, and ranks lower than the 90th percentile for both wildfire and flood risk. It contains EPA IRA disadvantaged communities, and has critical gaps in service with regards to transportation access.
- **Dayton** is the main urban center in Lyon County with a population of 15,014. Twenty-nine percent identify as people of color, and 22% as Hispanic. Fourteen percent are considered low income, 15% percent are persons with disabilities, and 21% percent are over the age of 65. Dayton ranks in the 78th percentile statewide and in the 91st percentile nationwide for wildfire risk, and lower than the 90th percentile for flood risk. Dayton contains one Superfund site, one site that is a hazardous waste, treatment, storage and disposal facility, 35 water dischargers, 20 brownfields, and 9 sites on a toxic release inventory. It contains EPA IRA disadvantaged communities, and has critical gaps in service with regards to transportation access.
- **Topaz Ranch Estates** in Douglas County has 1,649 residents, 23% of whom identify as people of color and 23% as persons with disabilities. Thirty-six percent identify as low income and 33% are aged 65 and up. Topaz Ranch Estates ranks much higher than state and national averages for proximity to Superfund sites, and contains American Indian Reservation Lands and EPA IRA disadvantaged communities. Critical service gaps include transportation access and food desert. It ranks in the 74th percentile statewide and the 91st percentile nationwide for wildfire risk, and lower than the 90th percentiles for flood risk.
- **Dresslerville** in Douglas County has 11,675 residents, 20% percent of whom identify as people of color, 14% of whom identify as Hispanic, and 26% who are over the age of 65. The population is 19% low income, and 15% are persons with disabilities. Compared to state and national averages, Dresslerville ranks high for proximity to RMP facilities. It contains EPA IRA disadvantaged communities, and faces a critical service gap of transportation access.
- **Schurz** in Mineral County has a population of 882. Seventy-six percent of residents identify as people of color and 16% as Hispanic. The unemployment rate is 18%, and 19% of residents have a disability. Compared to the state average, Schurz has old housing stock with lead paint and is close to a Superfund site. Schurz contains American Indian Reservation Lands and EPA IRA disadvantaged communities. Compared to state and national levels, rates of heart disease, asthma, and cancer are much higher. This census-designated place also ranks lower than the

90th percentile for both wildfire and flood risks, and it faces critical service gaps with regard to transportation access and food deserts.

- **Goldfield** in Esmeralda County has 305 residents, 31% percent of whom identify as people of color and 28% as Hispanic. Twenty-three percent of residents have disabilities, 26% are over the age of 65, and 20% have less than a high school education. While environmental justice data is limited for Goldfield, it ranks high compared to state averages for lead paint in housing and proximity to Superfund sites. Goldfield contains EPA IRA disadvantaged communities, and faces critical service gaps with regards to transportation access and food deserts. It also ranks lower than the 90th percentile for both wildfire and flood risks.
- **Esmeralda County** as a whole has 987 residents, 31% of whom identify as people of color and 28% who identify as Hispanic. Forty-two percent of residents are considered low income, 23% are people with disabilities, and 20% have less than a high school education. Twenty-six percent of residents are over the age of 65. Similar to Goldfield, the county more generally ranks high for lead paint and proximity to Superfund sites when compared to state averages, and faces critical service gaps with regards to transportation access and food deserts. The county contains American Indian Reservation Lands and EPA IRA disadvantaged communities. It ranks lower than the 90th percentile for both wildfire and flood risks.
- **Pahrump** in Nye County has 40,974 residents, 27% of whom identify as people of color and 14% of whom identify as Hispanic. Thirty-six percent of residents are considered low income and 14% have less than a high school education. Twenty-six percent are persons with disabilities and 32% are 65 and older. Pahrump ranks relatively high when compared to state and national averages with regards to lead paint in housing and proximity to Superfund sites. Pahrump contains EPA IRA disadvantaged communities, and faces critical service gaps with regards to transportation and fresh food access. It ranks lower than the 90th percentile for both wildfire and flood risks.

2.2.2 Tribal Nations in Nevada

Indigenous peoples have lived in the area now known as Nevada since time immemorial. Nevada is home to people of the Great Basin Tribes including the Wašičiw (Washoe), Numu (Northern Paiute), Nuwuvi (Southern Paiute), and Newe (Western Shoshone), and Pipa Aha Macav (Fort Mojave). There are 21 federally recognized Tribes with sovereign status (i.e., the inherent right to govern themselves) comprising 33 reservations, bands, colonies, and community councils (Figure 9).³³ Approximately 62,000 American Indians live in urban areas within Nevada.³⁴ The Tribal Nations have a land base in Nevada of over 1.6 million acres (97% of which is rural), and speak more than 200 Tribal languages.³⁵ As of January 2024, the Inter-Tribal Council of Nevada and the Paiute-Shoshone Tribe of the Fallon Reservation and Colony have both been awarded CPRG program planning grants to fund the development of climate action plans.³⁶

Land within the boundaries of federally recognized Tribes are designated as disadvantaged by the EPA for the purposes of Justice40 and the CPRG program (Figure 10). According to the White House Council on Environmental Quality (CEQ):

This decision was made after meaningful and robust consultation with Tribal Nations. This is consistent with CEQ's Action Plan for Consultation and Coordination with Tribal Nations, President Biden's Memorandum on Tribal Consultation and Strengthening Nation-to-Nation Consultation, and Executive Order 13175 on Consultation and Coordination With Indian Tribal Governments.³⁷

³³ Nevada's Indian Territory. "The Native American Tribes of Nevada," 2022. <https://nevadasindianterritory.com/>.

³⁴ Office of Indigenous Relations. "Our Communities." University of Nevada, Reno. Accessed January 31, 2024. <https://www.unr.edu/indigenous-relations/communities>.

³⁵ Nevada Indian Commission. "Nevada's Great Basin Tribes," 2019. https://www.leg.state.nv.us/App/NELIS/REL/80th2019/ExhibitDocument/OpenExhibitDocument?exhibitId=36430&fileDownloadName=Nevadas%20Great%20Basin%20Tribes_Nevada%20Indian%20Commission.pdf.

³⁶ Environmental Protection Agency. "Climate Pollution Reduction Grants: Planning Grants Program, Status of Grant Awards for States," January 2024. https://www.epa.gov/system/files/documents/2023-10/cprg_planning_grant_award_status.pdf.

³⁷ Council on Environmental Quality. "Climate and Economic Justice Screening Tool." Data and Tools, 2022. <https://screeningtool.geoplatform.gov>.

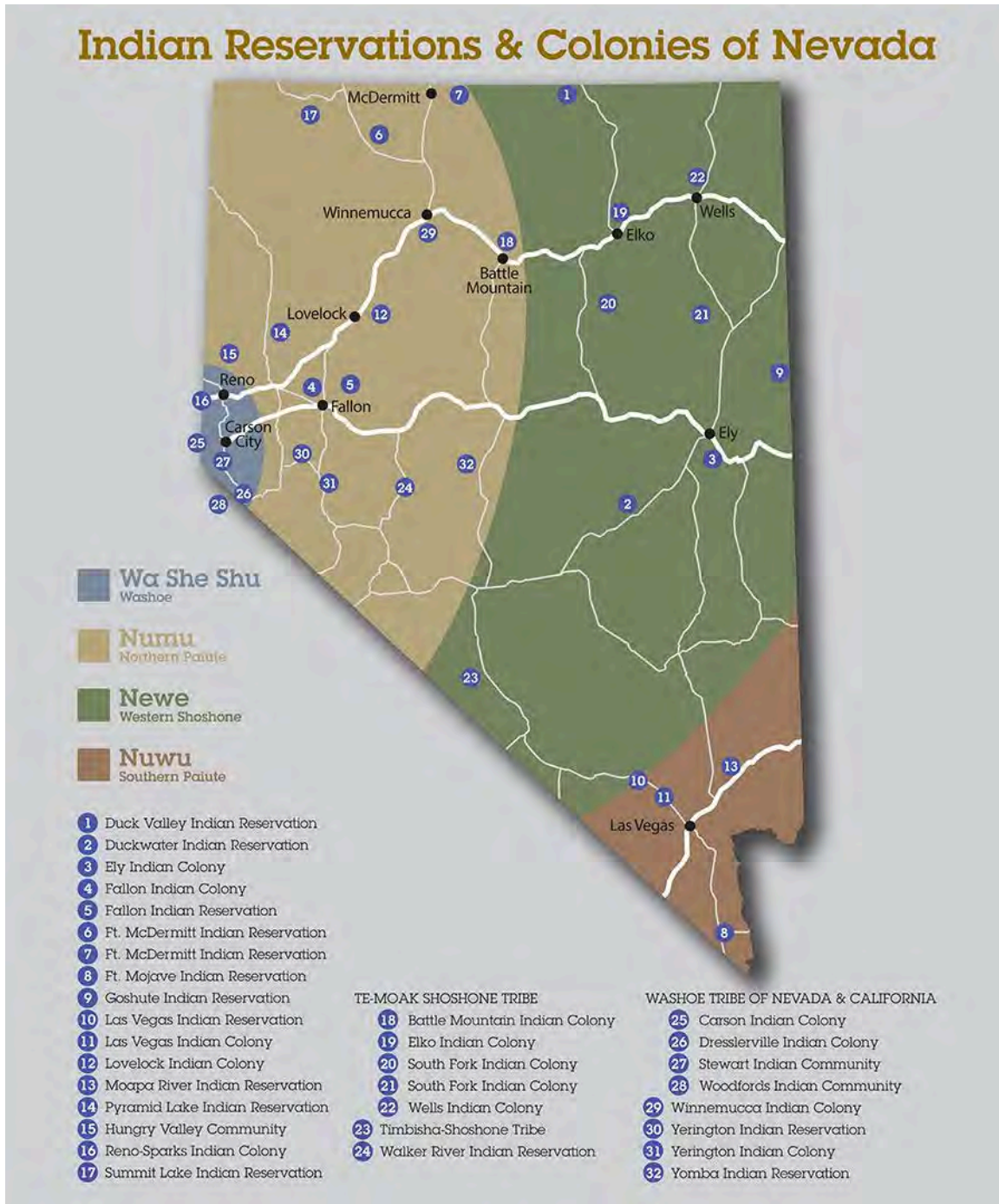


Figure 9. Indian reservations and colonies of Nevada.
Source: Nevada Indian Commission.

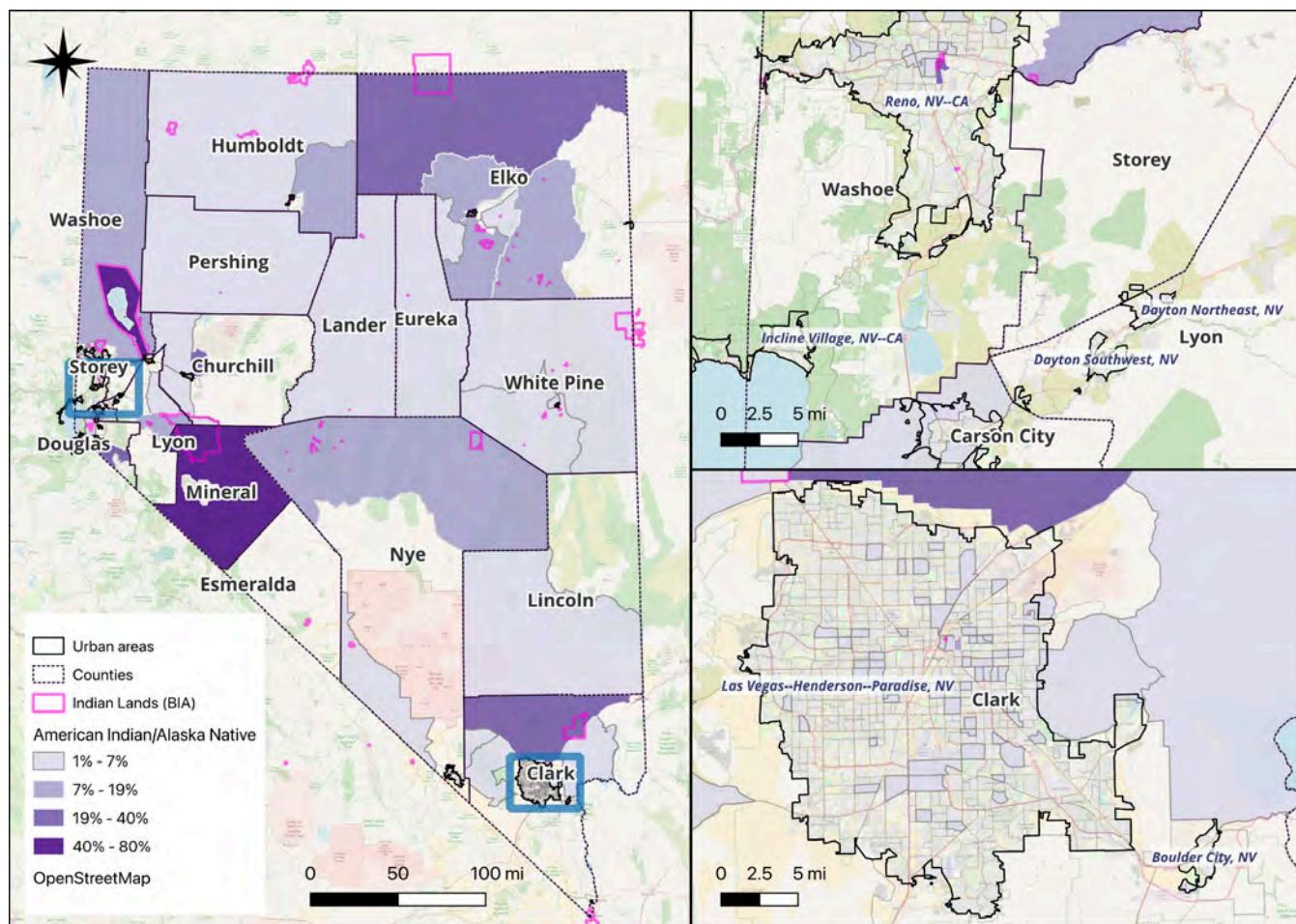


Figure 10. Indian Lands (according to the Bureau of Indian Affairs) and the American Indian/Alaska Native population by census tract.

Source: Council on Environmental Quality, 2022.

2.3 Climate Change Impacts and Risks

2.3.1 Overview

Human activities such as burning fossil fuels, industrial processes, deforestation, agriculture, and other activities are changing the climate.³⁸ These activities release large amounts of carbon dioxide, methane, nitrous oxide, and other gases that trap heat in the atmosphere, contributing to the Earth's greenhouse effect. These gases remain in the atmosphere for significant periods of time, contributing to long-term changes in the climate, and vary considerably in terms of Global Warming Potential (GWP), which is a concept developed to compare the ability of each GHG to trap heat in the atmosphere.

³⁸ U.S. Global Change Research Program. "Fifth National Climate Assessment." Accessed February 27, 2024. <https://nca2023.globalchange.gov/>.

As a result of increases in the atmospheric concentrations of these heat-trapping gases, the average temperature of the planet has increased about 2°F (1.1°C) since the late 1800s.³⁹ The Paris Agreement calls for limiting global warming to “well below 2°C” relative to preindustrial temperatures, preferably to 1.5°C. If the global average temperature increases above 2°C, the average temperature across the United States is very likely to increase between 4.4°F and 5.6°F (2.4°C and 3.1°C), with the northern and western regions experiencing proportionally greater warming.

Climate change is a particularly complex challenge because it occurs over a relatively long timescale, with impacts that vary from region to region. Equally complex are its solutions. Climate actions that reduce GHG emissions, change energy and transportation systems, and provide resiliency will transform all aspects of human endeavors over a short and urgent time frame.

The Impacts of Climate Change for the Southwest Region

Selected excerpts from the Fifth National Climate Assessment⁴⁰

- Climate change is negatively impacting human health and well-being, cultural heritage, property, built infrastructure, economic prosperity, natural capital, and ecosystem services across the Southwest, an area which includes Nevada, California, Utah, Colorado, Arizona, and New Mexico. Impacts include rising air temperatures and sea surface temperatures, both attributable in part to human activities; changes to the timing, form, and amount of precipitation; increases in extreme heat events; summertime heat stress and heat-related mortality; surface and groundwater reductions; increased wildfire risks; and in states with coastlines, sea level rise, associated flooding events, and changes to ocean chemistry. These impacts pose heightened risks to overburdened and frontline communities and to Indigenous Peoples.
- The impacts and risks of climate change unfold across interacting sectors and regions. For example, wildfires in one region can affect air quality and human health in other regions, depending on where winds transport smoke. Further, climate change impacts interact with other stressors, such as the COVID-19 pandemic, environmental degradation, or socioeconomic stressors like poverty and lack of adequate housing; this disproportionately impacts overburdened communities. These interactions and interdependencies can lead to cascading impacts and sudden failures. For example, climate-related shocks to the food supply chain have led to local and global impacts on food security and human migration patterns that affect US economic and national security interests.
- Climate change has reduced surface water and groundwater availability for people and nature in the Southwest, and there are inequities in how these impacts are experienced. Higher temperatures have intensified drought and will lead to a more arid future; without adaptation, these changes will exacerbate existing water supply–demand imbalances. At the same time, the region is experiencing more intense precipitation events, including atmospheric rivers, which contribute to increased

³⁹ U.S. Global Change Research Program. “Fifth National Climate Assessment.” Accessed February 27, 2024. <https://nca2023.globalchange.gov/>.

⁴⁰ U.S. Global Change Research Program. “Fifth National Climate Assessment.” Accessed February 27, 2024. <https://nca2023.globalchange.gov/>.

flooding. Flexible and adaptive approaches to water management have the potential to mitigate the impacts of these changes on people, the environment, and the economy.

- Continuing drought and water scarcity will make it more difficult to grow crops for food and other purposes, such as textiles, in the Southwest without major shifts to new strategies and technologies. Extreme heat events will increase animal stress and reduce crop quality and yield, thereby resulting in widespread economic impacts. Because people in the Southwest have adapted to drought impacts for millennia, incorporating Indigenous Knowledge with technological innovation can offer solutions to protect food security and sovereignty.
- In recent years, the Southwest has experienced unprecedented wildfire events, driven in part by climate change. Fires in the region have become larger and more severe. High-severity wildfires are expected to continue in coming years, placing the people, economies, ecosystems, and water resources of the region at considerable risk. Opportunities for adaptation include pre- and postfire actions that reduce wildfire risk and facilitate ecosystem restoration, and include traditional land stewardship practices and the application of Indigenous cultural fire.
- Some communities are at higher risk of negative impacts from climate change due to social and economic inequities caused by ongoing systemic discrimination, exclusion, and under- or disinvestment. Many such communities are also already overburdened by the cumulative effects of adverse environmental, health, economic, or social conditions. Climate change worsens these long-standing inequities, contributing to persistent disparities in the resources needed to prepare for, respond to, and recover from climate impacts.
- Each additional increment of warming is expected to lead to more damage and greater economic losses compared to previous increments of warming, while the risk of catastrophic or unforeseen consequences also increases.
- In the 1980s, the country experienced, on average, one (inflation-adjusted) billion-dollar disaster every four months. Now, on average, there is one every three weeks. Between 2018 and 2022, the US experienced 89 billion-dollar events. Extreme events cost the US close to \$150 billion each year—a conservative estimate that does not account for loss of life, healthcare-related costs, or damages to ecosystem services. Since 2018, 31 large climate- and weather-related disasters have affected the Southwest (6 states), resulting in more than 700 fatalities and estimated damages totaling \$67.3 billion (in 2022 dollars).⁴¹
- The risk of two or more extreme events occurring simultaneously or in quick succession in the same region—known as compound events—is increasing. Climate change is also increasing the risk of multiple extremes occurring simultaneously in different locations that are connected by complex human and natural systems. For instance, simultaneous megafires across multiple western states and record back-to-back Atlantic hurricanes in 2020 caused unprecedented demand on federal emergency response resources.

⁴¹ National Centers for Environmental Information (NCEI). "Billion-Dollar Weather and Climate Disasters." Accessed February 27, 2024. <https://www.ncei.noaa.gov/access/billions/>.

2.3.2 Impacts and Risks in Nevada

As the driest state in the United States, Nevada is extremely vulnerable to both extreme heat and drought. The main impacts of climate change in Nevada are increasingly severe and more frequent extreme high-temperature days, altering the water cycle and changing precipitation patterns. These high-temperature days lead to heat waves, drought, and wildfires, which in turn can lead to changes in snowmelt and an increase in extreme rain and flooding events.⁴²

With temperatures increasing, urban areas are warming faster than rural areas. For example, Reno, in Washoe County, and Las Vegas, in Clark County, are the two fastest-warming cities in the country. Between 1970 and 2022, the average temperature in Reno has risen 7.8°F, while Las Vegas has seen an increase of 5.9°F.⁴³ Climate Central reports that Nevada, Arizona, Utah, Texas, and Florida are the five states that have experienced the largest increase in cooling demand days since 1970, meaning as temperatures continue to rise, the need for effective cooling (i.e., air conditioning) will also increase in order to keep citizens comfortable.⁴⁴

A persistent megadrought, exacerbated by climate change, continues to stress the state's main water supply, the Colorado River, upon which nearly 70% of the population depends. Drought conditions in the river and across the state are projected to increase in intensity and frequency, further impacting the state's water supply. Drought is being driven by higher temperatures and increased evaporative demand, combined with changing precipitation patterns in the region.⁴⁵ Drought affects the state in different areas including recreation, agriculture and ranching, plant and wildlife health, and public health. These dry conditions mean the state additionally faces water supply issues, with depleting groundwater posing major threats to springs, riparian areas, and associated plant and animal communities, including protected species.⁴⁶ These water shortfalls in turn increase the risk of drought, creating a negative feedback loop.

Higher temperatures predicted for the state additionally result in more rain and less snowfall, resulting in an increased risk of flooding followed by longer drier seasons in the summer. These changes affect downstream ecosystems, water resources, and agricultural practices. Flooding additionally affects water quality and increases soil erosion. Because of these increased extreme wet and dry conditions cycling back and forth, Nevada has also seen an increase in fire risk. In Nevada, increases in wildfire events have led to an increase in invasive species. All the changes, particularly increased flooding and wildfires have also negatively impacted, and will continue to impact, the agricultural, recreational, and tourism industries.

⁴² The Climate Reality Project. "How the Climate Crisis Is Impacting Nevada." The Climate Reality Project, November 13, 2019. [https://www.climateRealityProject.org/blog/how-climate-crisis-impacting-nevada?...](https://www.climateRealityProject.org/blog/how-climate-crisis-impacting-nevada?)

⁴³ Climate Central. "Earth Day: Warming & Solutions," April 19, 2023. <https://www.climatecentral.org/climate-matters/earth-day-warming-and-solutions-2023>.

⁴⁴ Climate Central. "Hotter Climate, Higher Cooling Demand," July 19, 2023. <https://www.climatecentral.org/climate-matters/hotter-climate-higher-cooling-demand-2023>.

⁴⁵ Southern Nevada Water Authority. "Water Resource Plan," accessed February 26, 2024, <https://www.snwa.com/water-resources/water-resource-plan/index.html>.

⁴⁶ Repetto, Robert. "Economic and Environmental Impacts of Climate Change in Nevada." Demos, n.d. https://www.demos.org/sites/default/files/publications/NV_ClimateChangeInTheStates_Demos_0.pdf.

2.3.3 Climate Impacts and Risks on LIDACs

According to the CEJST and EJScreen, the biggest environmental issues for communities across Nevada are wildfire risk to properties and exposure to diesel particulate matter. To a lesser extent, many census tracts also face issues with wastewater discharge and/or have impervious cover or cropland. Still fewer, but a significant number of tracts, face housing (cost) or energy (cost) burdens, agricultural loss, or risk of flooding. Finally, some tracts face issues with traffic and transportation, and some are in close proximity to RMP facilities, leaky underground storage tanks, or FUDS. Table 4 details the number of census tracts and the primary counties and cities facing the issues listed above.

Table 4. Summary of major environmental burdens for Nevada adapted from the CEJST tool.

Source for descriptions: Council on Environmental Quality (2022).

Type of Burden	Census Tracts in Nevada That Face Burden	Census Tracts in Nevada That Face Burden and Are Low Income	Counties Primarily Affected
Projected Wildfire Risk A model projecting the wildfire exposure for any specific location in the contiguous U.S. today and with future climate change. The risk of wildfire is calculated from inputs associated with fire fuels, weather, human influence, and fire movement.	188	36	Clark, Douglas, Elko, Clark, Humboldt, Lyon, Washoe, White Pine, and Carson City
Diesel particulate matter Mixture of particles in diesel exhaust in the air, measured as micrograms per cubic meter	165	96	Clark
Wastewater discharge Risk-Screening Environmental Indicators (RSEI) modeled toxic concentrations at stream segments within 500 meters.	62	35	Churchill, Clark, Lander, and Washoe

Type of Burden	Census Tracts in Nevada That Face Burden	Census Tracts in Nevada That Face Burden and Are Low Income	Counties Primarily Affected
Lack of green space Share of land with developed surfaces covered with artificial materials like concrete or pavement, or cropland (excluding crop land used for agricultural purposes). Places that lack green space are also known as nature-deprived. From here onwards named as impervious cover or cropland	93	75	Clark and Washoe
Housing cost Share of households that are both earning less than 80% of Housing and Urban Development's Area Median Family Income and are spending more than 30% of their income on housing costs	53	47	Clark and Washoe
Energy cost Average household annual energy cost in dollars divided by the average household income	11	11	Clark, Esmeralda, Lyon, and Mineral
Agricultural loss Expected agricultural value at risk from losses due to the following natural hazards: avalanche, coastal flooding, cold wave, drought, hail, heat wave, hurricane, ice storm, landslide, riverine flooding, strong wind, tornado, wildfire, and winter weather	69	18	Churchill, Douglas, Elko, Esmeralda, Lyon, Pershing, Washoe, and White Pine

Type of Burden	Census Tracts in Nevada That Face Burden	Census Tracts in Nevada That Face Burden and Are Low Income	Counties Primarily Affected
Projected flood risk Number of properties at risk of floods occurring in the next 30 years (projected from a high-precision climate model) from tides, rain, riverine and storm surges, or a 26% risk total over the 30-year time horizon	18	3	Clark and Washoe County
Traffic proximity and volume Number of vehicles (average annual daily traffic) at major roads within 500 meters	34	17	Clark and Washoe County
Transportation barriers Average relative cost and time spent on transportation relative to all other tracts	22	11	Clark, Douglas, Elko, Lyon, Nye, and Washoe County
Formerly Used Defense Sites Properties that were owned, leased, or possessed by the United States, under the jurisdiction of the Secretary of Defense prior to October 1986	22	6	Churchill, Clark, Humboldt, Mineral, Lyon, and Nye County
Proximity to Risk Management Plan facilities Count of Risk Management Plan (RMP) facilities within 5 kilometers ⁴⁷	14	7	Clark and Washoe County

2.3.3.1 Wildfires

A hotter and drier Nevada has meant that the risk for wildfires has increased tremendously in the last several years. For example, between 1980 and 1999, 4.2 million acres were burned due to wildfires;

⁴⁷ These facilities are mandated by the *Clean Air Act* to file RMPs because they handle substances with significant environmental and public health risks.

between 2008 and 2018, 9.5 million acres were burned in the state.⁴⁸ These wildfires can be devastating, causing injuries and death. Moreover, wildfires contain harmful contaminants such as particulate matter (PM) 2.5 and affect air and water quality, having public health consequences particularly for vulnerable populations such as the elderly, children, and immunocompromised.⁴⁹ Wildfires also bear an economic cost for the state, both in terms of immediate costs for suppressing fire and in terms of rebuilding infrastructure and supporting agriculture. In Nevada, the geographies at the highest risk for wildfires are Clark, Douglas, Elko, Humboldt, Lyon, Washoe, White Pine County, and Carson City (Figure 11).

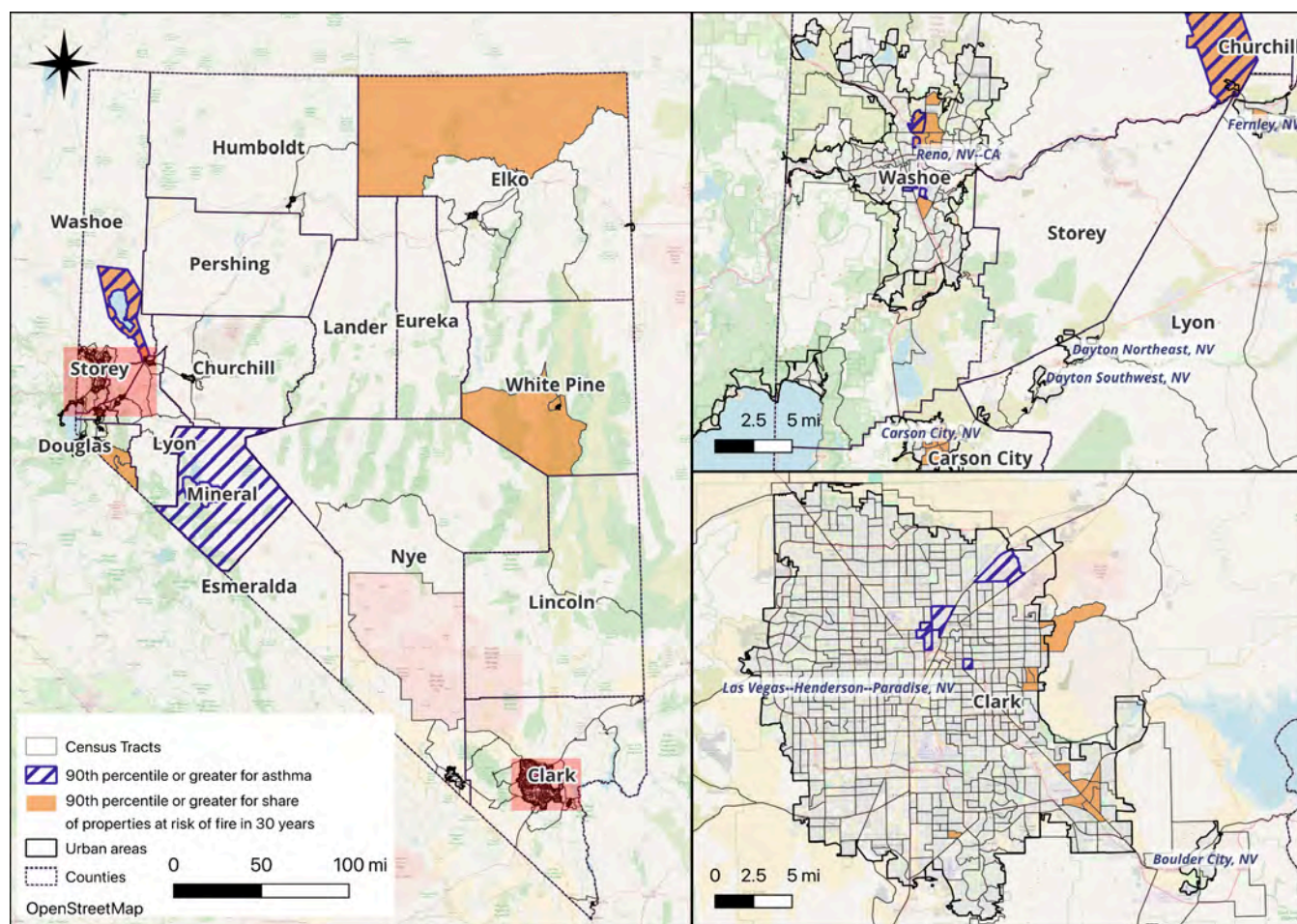


Figure 11. Low-income disadvantaged communities with wildfire risk.

Wildfire risk is presented as the share of properties at risk of fire in 30 years at a 90th percentile or greater and with populations at greater than or equal to the 90th percentile for asthma rates. Source: Council on Environmental Quality, 2022.

⁴⁸ Stinnesbeck, Jann. "Wildfires in Nevada: An Overview." Legislative Counsel Bureau - Research Division, January 2020. <https://www.leg.state.nv.us/Division/Research/Documents/Wildfires-in-Nevada-2020-FINAL.pdf>

⁴⁹ Sullivan, Dylan. "2021 Nevada Wildfires: When, Why, and How to Stay Safe." National Resource Defense Council, June 28, 2021. <https://www.nrdc.org/bio/dylan-sullivan/2021-nevada-wildfires-when-why-and-how-stay-safe>

2.3.3.2 Housing

In Nevada, residents predominantly live in single-family housing, over 70% of which is owner-occupied. In contrast, approximately 90% of multi-unit housing is rented.⁵⁰ Single-family detached homes, in particular, consume roughly three times more energy than single-family attached homes, multi-family units, and mobile homes combined.⁵¹ Additionally, single-family homes in Nevada are more likely to use natural gas for heating, exceeding the national average by about 17%.⁵² Conversely, multi-family units tend to rely more on electricity for heating. Overall, the adoption of heat pumps for electrical heating is low, especially in relation to the adoption of natural gas fuel furnaces. This becomes crucial when considering that over a quarter of residences in Nevada live in poorly insulated homes.⁵³ Given the high ownership rate, dependence on natural gas, and recent increases in the retail price of natural gas, actions to electrify home appliances and improve energy efficiency could have a positive impact on reducing housing and energy costs for households and families.

In addition, Nevada residents face a housing affordability issue that is particularly acute for renters. According to the National Low Income Housing Coalition, as of 2023, many of the approximately 21% of renters in Nevada who were considered extremely low income (defined as at or below 30% of the area median income) use more than half of their income to pay for housing. Moreover, many (45%) of the rental households include vulnerable populations such as seniors and people with disabilities.⁵⁴ According to the CEJST, residents of 73 LIDACs in Nevada are currently experiencing housing cost burdens, defined as the share of households making less than 80% of the area median family income and spending more than 30% of their income on housing. Areas in the state with highest rates of housing burden, energy burden, and substandard housing conditions are shown in Figure 12.

⁵⁰ U.S. Census Bureau. "Physical Housing." Census Data, 2021. [https://data.census.gov/table/ACSST5Y2021.S2504?q=Owner/Renter%20\(Tenure\)%20nevada](https://data.census.gov/table/ACSST5Y2021.S2504?q=Owner/Renter%20(Tenure)%20nevada).

⁵¹ National Renewable Energy Laboratory. "Residential Building Stock and Energy Efficiency in Nevada," 2023. <https://public.tableau.com/app/profile/nrel.buildingstock/vizzes>.

⁵² National Renewable Energy Laboratory. "Residential Building Stock and Energy Efficiency in Nevada," 2023. <https://public.tableau.com/app/profile/nrel.buildingstock/vizzes>.

⁵³ National Renewable Energy Laboratory. "Residential Building Stock and Energy Efficiency in Nevada," 2023. <https://public.tableau.com/app/profile/nrel.buildingstock/vizzes>.

⁵⁴ National Low Income Housing Coalition. "2023 Nevada Housing Profile," n.d. https://nlihc.org/sites/default/files/SHP_NV.pdf.

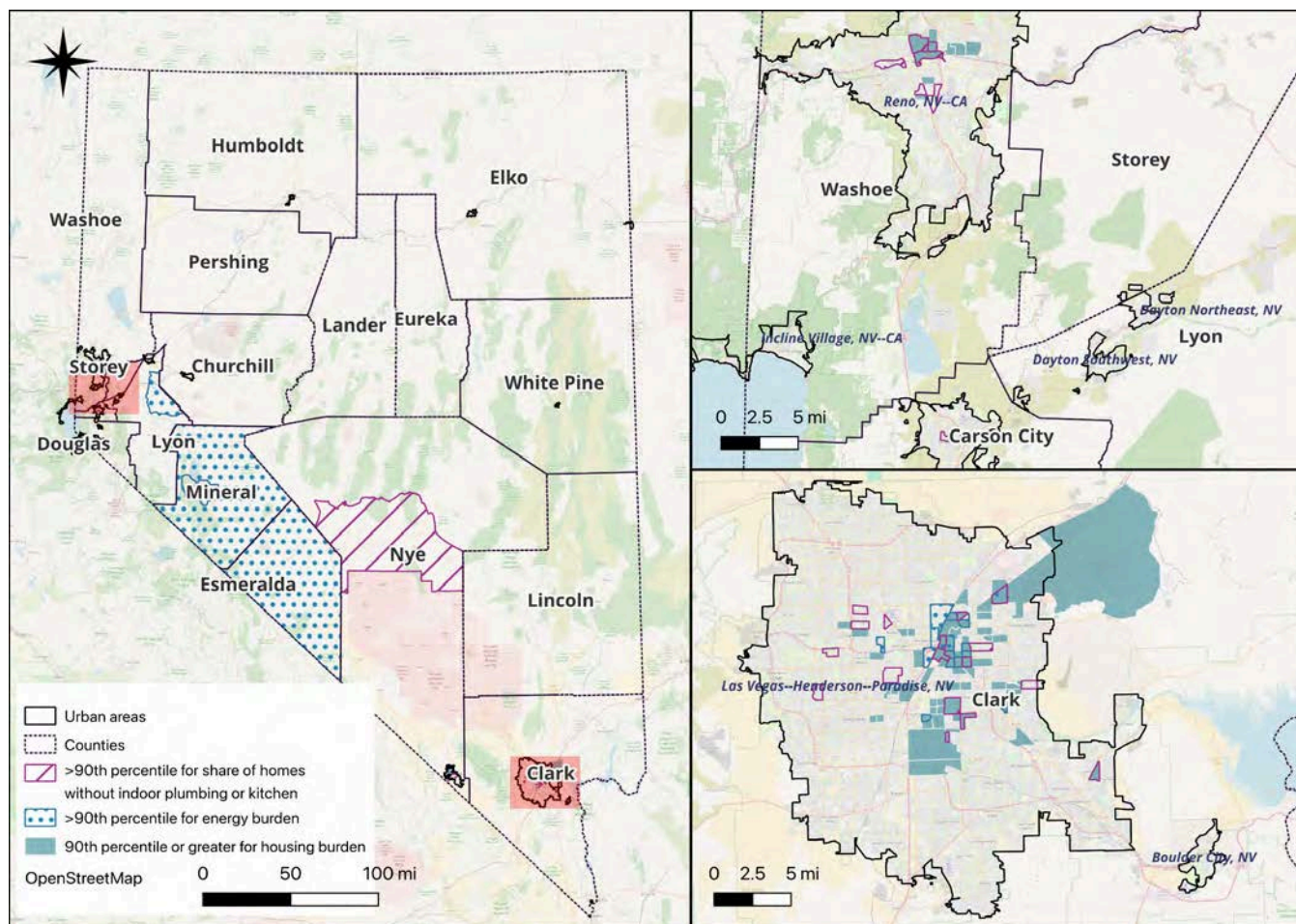


Figure 12. Housing Burden in Nevada.

Source: Council on Environmental Quality, 2022.

2.3.3.3 Transportation

The overwhelming majority (85%) of people travel by private vehicle in Nevada, either as a driver or a passenger.⁵⁵ Most households have access to at least two vehicles, with more than 20% having access to three or more vehicles.⁵⁶ However, nearly 5% of households have access to no vehicle at all, indicating vast disparities in transit and service access within the state's population. Public transportation access is limited and concentrated in urban areas of the state, and only 2.5% of people use it to commute.⁵⁷ Limited transit is a barrier to accessing jobs and other opportunities in Las Vegas (Figures 13, 14 and 15) and other Nevada cities. While transportation agencies such as the Regional Transportation Commission (RTC) of Southern Nevada and the RTC of Washoe County have made plans, for example, in *Access 2050* and the *On Board Mobility Plan*, to develop a High Capacity Transit (HCT) network and expand transit services, many of these initiatives remain under- or unfunded.

⁵⁵ U.S. Census Bureau. "Table S0801 - Commuting Characteristics By Sex." Census Data, 2022. <https://data.census.gov/table?q=commuting%20nevada>.

⁵⁶ U.S. Census Bureau. "Table CP04: Comparative Housing Characteristics." Census Data, 2022. Accessed February 2, 2024. https://data.census.gov/table/ACSCP1Y2022_CP04?q=means%20of%20transportation%20to%20work%20nevada.

⁵⁷ U.S. Census Bureau. "Table S0801 - Commuting Characteristics By Sex." Census Data, 2022. <https://data.census.gov/table?q=commuting%20nevada>.

Las Vegas

Las Vegas-Paradise, NV

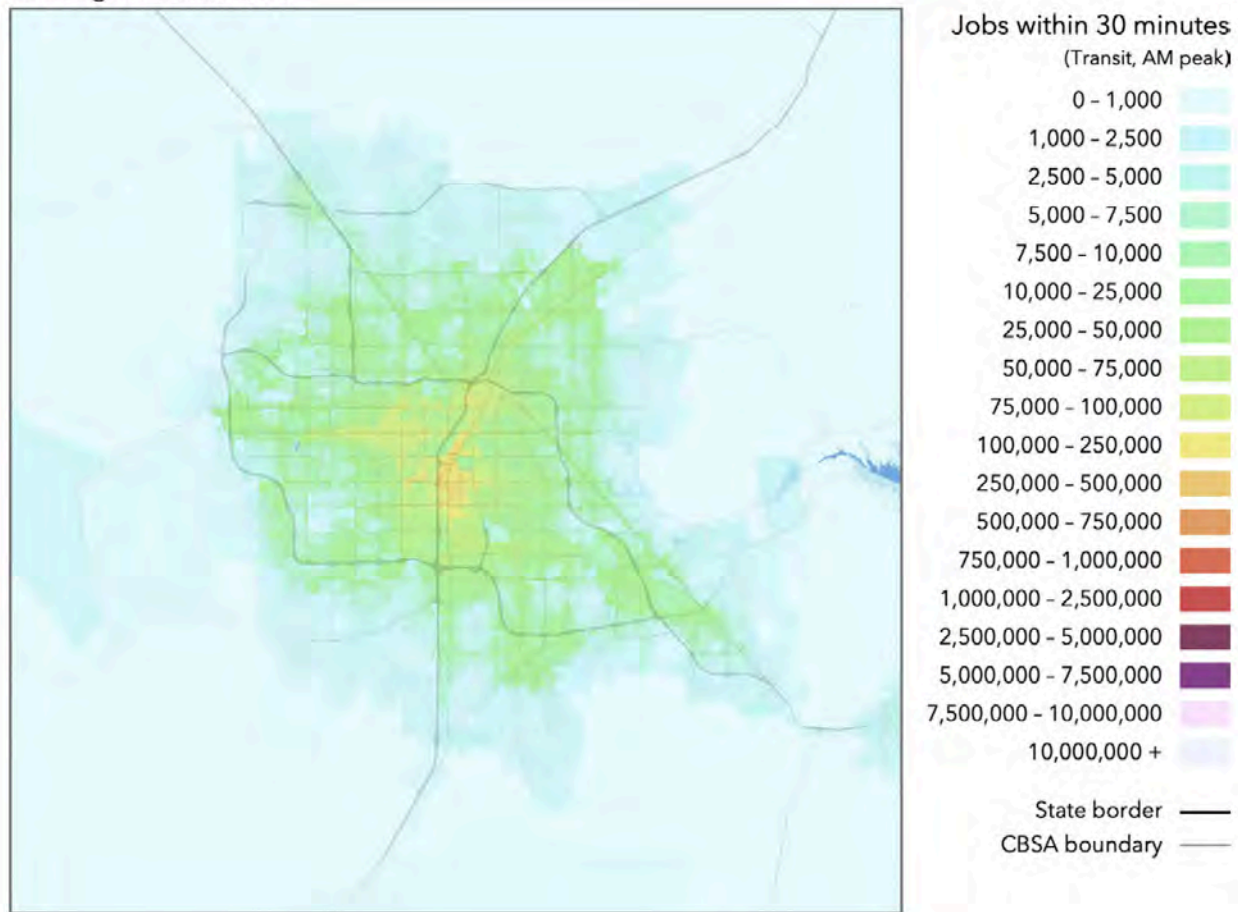


Figure 13. Jobs within 30 minutes of transit travel within the Las Vegas-Paradise metro area. Calculated in 2020 using pre-pandemic data.⁵⁸

⁵⁸ University of Minnesota. "Access Across America: Transit 2020," March 2023. <https://www.access.umn.edu/research/america/transit/2020/index.html>.

Las Vegas

Las Vegas-Paradise, NV

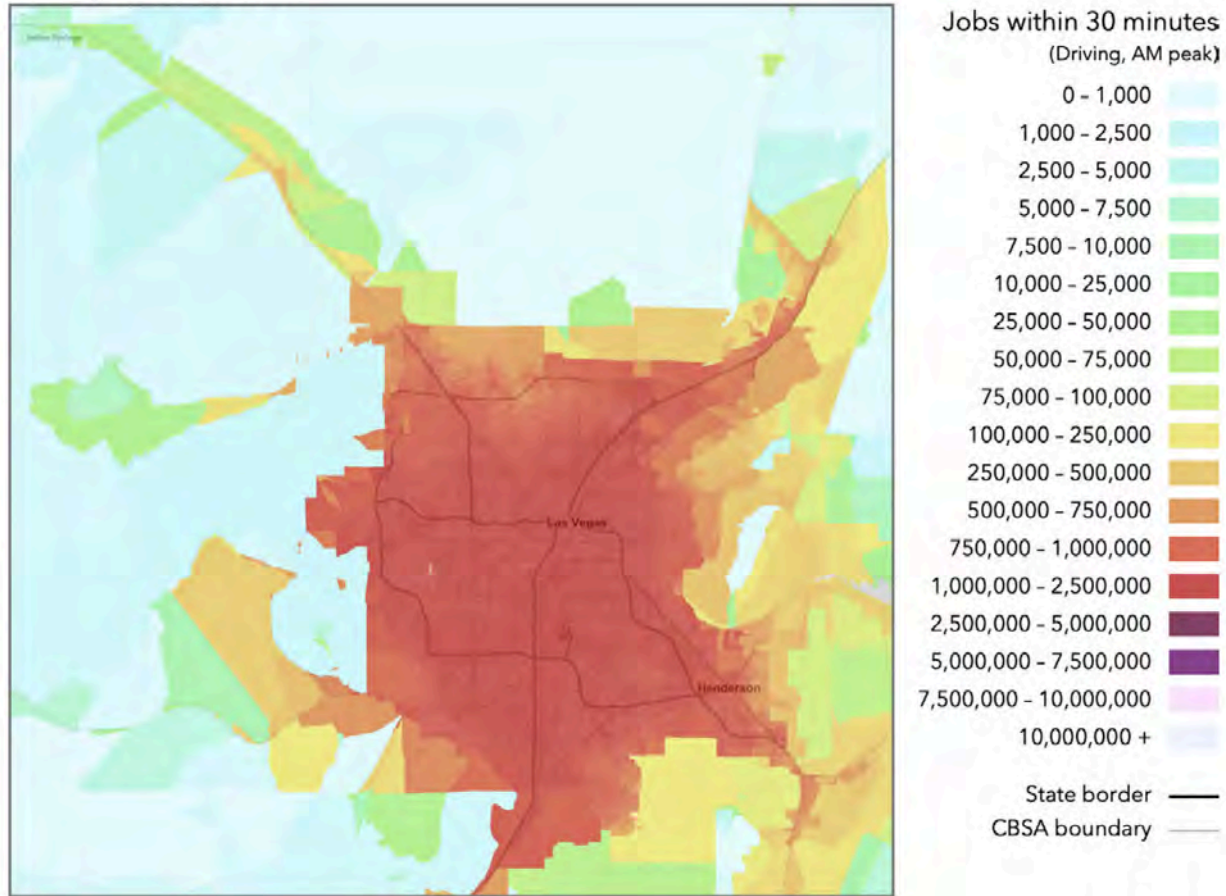


Figure 14. Jobs within 30 minutes of driving within the Las Vegas-Paradise metro area. Calculated in 2020 using pre-pandemic data.⁵⁹

⁵⁹ Andrew Owen, "Access Across America: Auto 2020 | Center for Transportation Studies" (Minneapolis, MN: Center for Transportation Studies, March 2023), <https://www.cts.umn.edu/publications/report/access-across-america-auto-2020>.

Criteria air pollution emissions are distributed inequitably in Nevada, concentrated in socioeconomically vulnerable census tracts and along transportation corridors where medium- and heavy-duty vehicles are frequently driven (Figure 15). These vehicles make up 4% of Nevada's vehicle stock yet are responsible for more than half of vehicle-related PM_{2.5} emissions in the state, meaning electrification and alternative fueling in this sector can have a particularly high impact on both meeting Nevada's climate targets and improving public health outcomes.⁶⁰

While electric vehicles (EVs) are a solution to some of these issues, the transition to EVs has only just begun in Nevada, with 32,900 EVs and 8,800 plug-in hybrid EVs.⁶¹ Regional and local plans in Nevada such as the RTC of Washoe County's *Electric Vehicle and Alternative Fuel - Infrastructure and Advanced Mobility Plan* acknowledge that EVs are not financially accessible to all Nevadans and that equity approaches such as rebates for new and used EVs and incentives for vehicle replacement, including lower-cost alternatives such as e-bikes, are necessary to overcome these barriers. Furthermore, education, outreach, and infrastructure development should be prioritized within historically disadvantaged communities.

⁶⁰ Evolved Energy Research et al., "Pathways and Policies to Achieve Nevada's Climate Goals," October 2020, https://gridlab.org/wp-content/uploads/2020/10/GridLab_Nevada-Report.pdf.

⁶¹ U.S. Department of Energy Energy Efficiency and Renewable Energy. "Alternative Fuels Data Center: Vehicle Registration Counts by State." Accessed February 1, 2024. <https://afdc.energy.gov/vehicle-registration>.

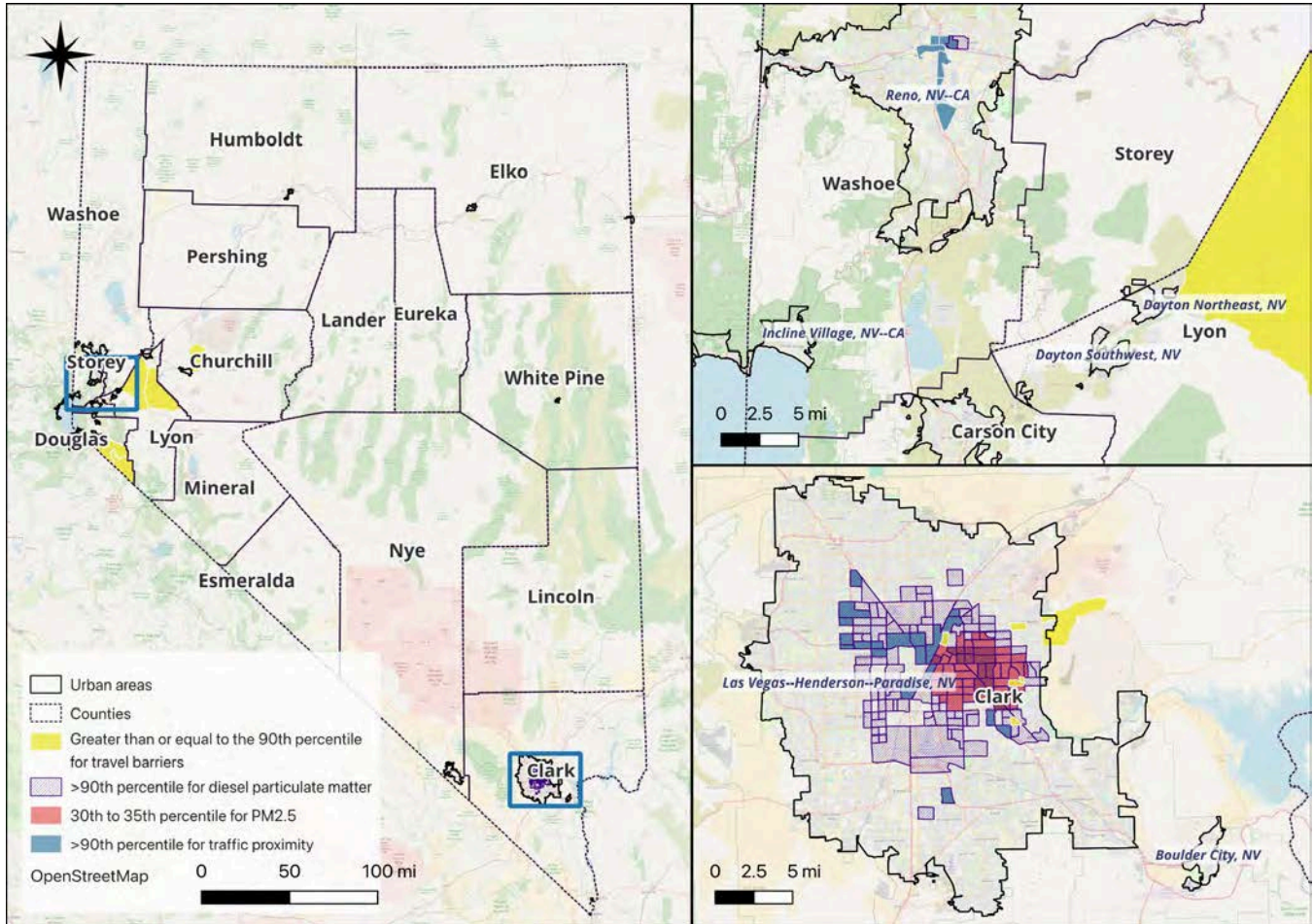


Figure 15. Census tracts LIDACs facing transportation burdens. LIDACs in Nevada with 90th percentile or higher for transportation barriers (average of relative cost and time spent on transportation), diesel particulate matter, and traffic proximity. Census tracts in Nevada are in the low percentiles for $PM_{2.5}$ levels. Source: Council on Environmental Quality, 2022.

2.4 Nevada's Energy System

Nevada has limited fossil fuel energy supplies but significant renewable energy resources. Energy resources produced within Nevada include renewable energy (i.e., solar, wind, geothermal, wood, and wood waste) and fossil fuels (crude oil). No coal, natural gas, biofuels, or nuclear energy is produced within the state (Figure 16). Non-combustible renewables are by far the largest energy resource produced in Nevada.

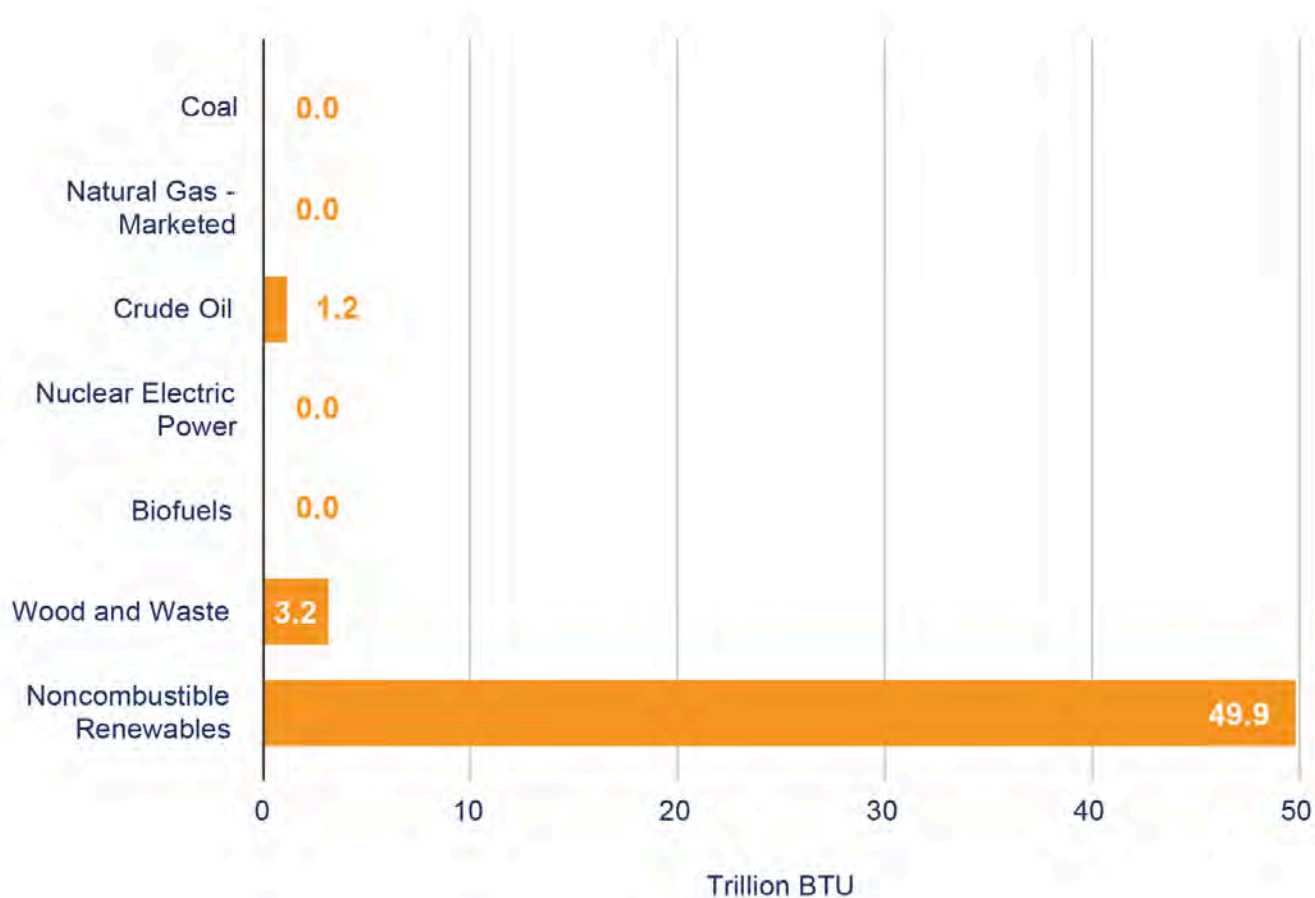


Figure 16. Nevada energy production estimates for 2021.⁶²

⁶² U.S. Energy Information Administration. "Nevada - State Profile and Energy Estimates," 2023. <https://www.eia.gov/state/?sid=NV#tabs-4>.

Most energy consumed in Nevada comes from resources originating elsewhere. According to the Energy Information Administration, more than 90% of energy consumed is imported from outside of state boundaries (630 trillion BTU compared to local production of 54 trillion BTU). Nearly half (44%) of imported energy is natural gas which is used to heat buildings, generate electricity, and power industrial processes (Figure 17). An additional 39% of imported energy comes to Nevada in the form of gasoline, diesel, and jet fuel, which are used in cars, trucks, buses, trains, and airplanes. Much of the water used for hydroelectric power also originates from other states.

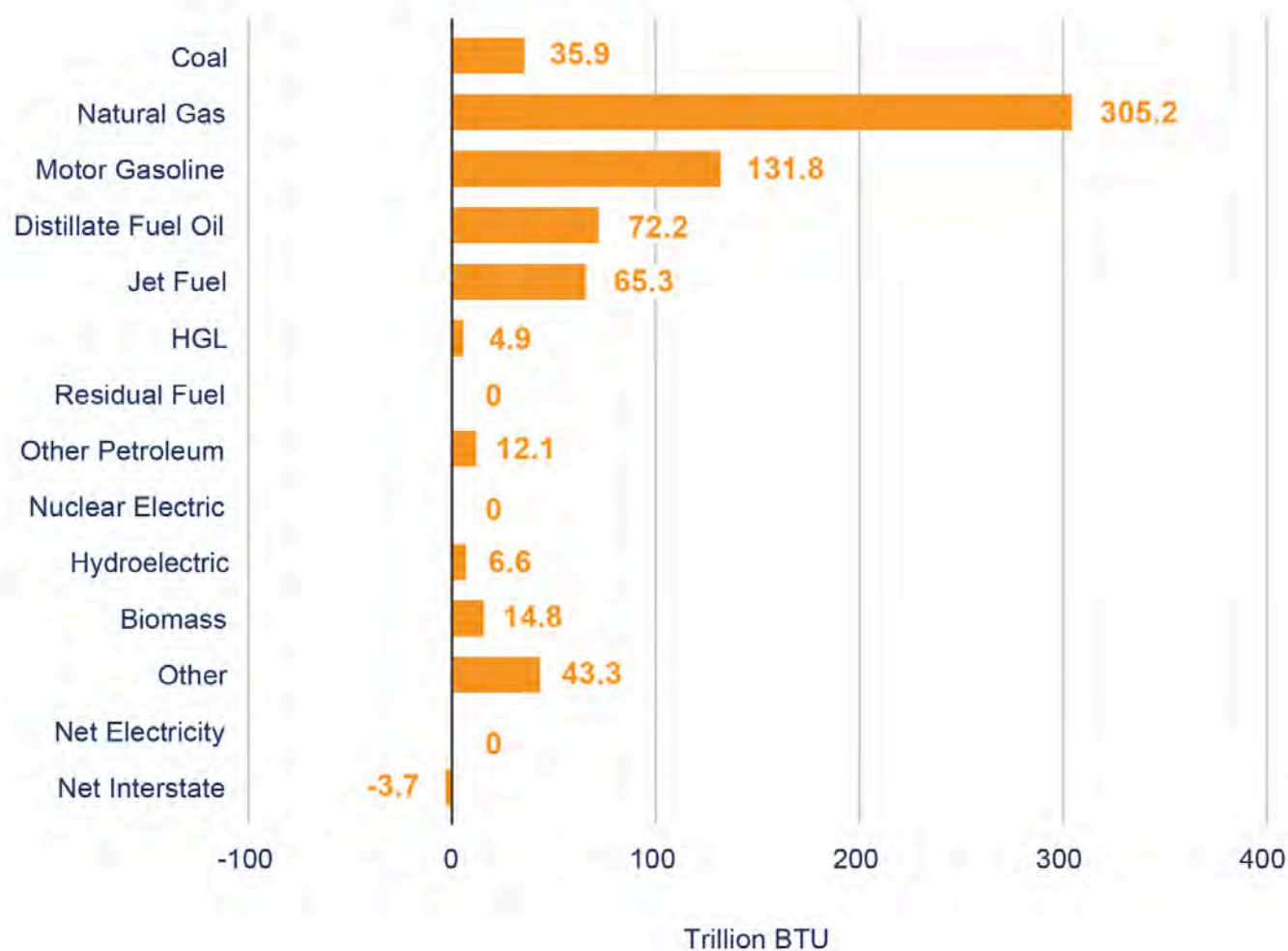


Figure 17. Nevada energy consumption estimates for 2021.⁶³

Electricity generated in Nevada is mainly produced by natural gas power plants (58%) and renewable energy installations (33%) (Figure 18). Hydroelectric power plants, coal-fired power plants, and petroleum-fired power plants make up the rest. Further discussion of the potential for clean electricity generation in Nevada can be found in Section 2.3.2.

⁶³ U.S. Energy Information Administration. "Nevada - State Profile and Energy Estimates," 2023. <https://www.eia.gov/state/?sid=NV#tabs-4>.

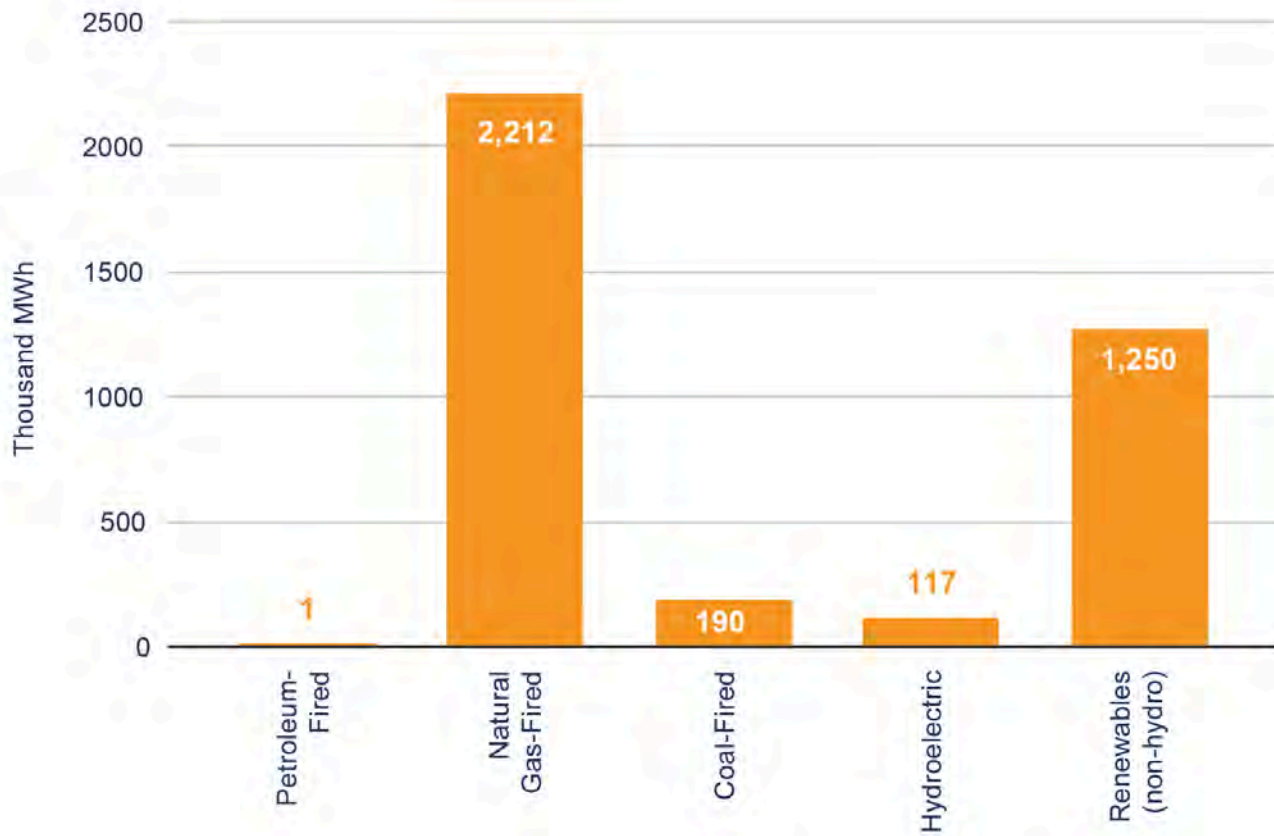


Figure 18. Nevada net electricity generation by source, October 2023.⁶⁴

⁶⁴ U.S. Energy Information Administration. "Nevada - State Profile and Energy Estimates," 2023. <https://www.eia.gov/state/?sid=NV#tabs-4>.

2.4.1 Energy Consumption

The State of Nevada's economy has become more energy efficient over the last 20 years, using 40% less energy per million dollars of GDP in 2020 than in 2001 (Figure 19).⁶⁵ This reflects the impacts of energy efficiency policies and programs at the local, state, and federal levels. It also demonstrates how the state's economy can grow while reducing overall spending on energy.

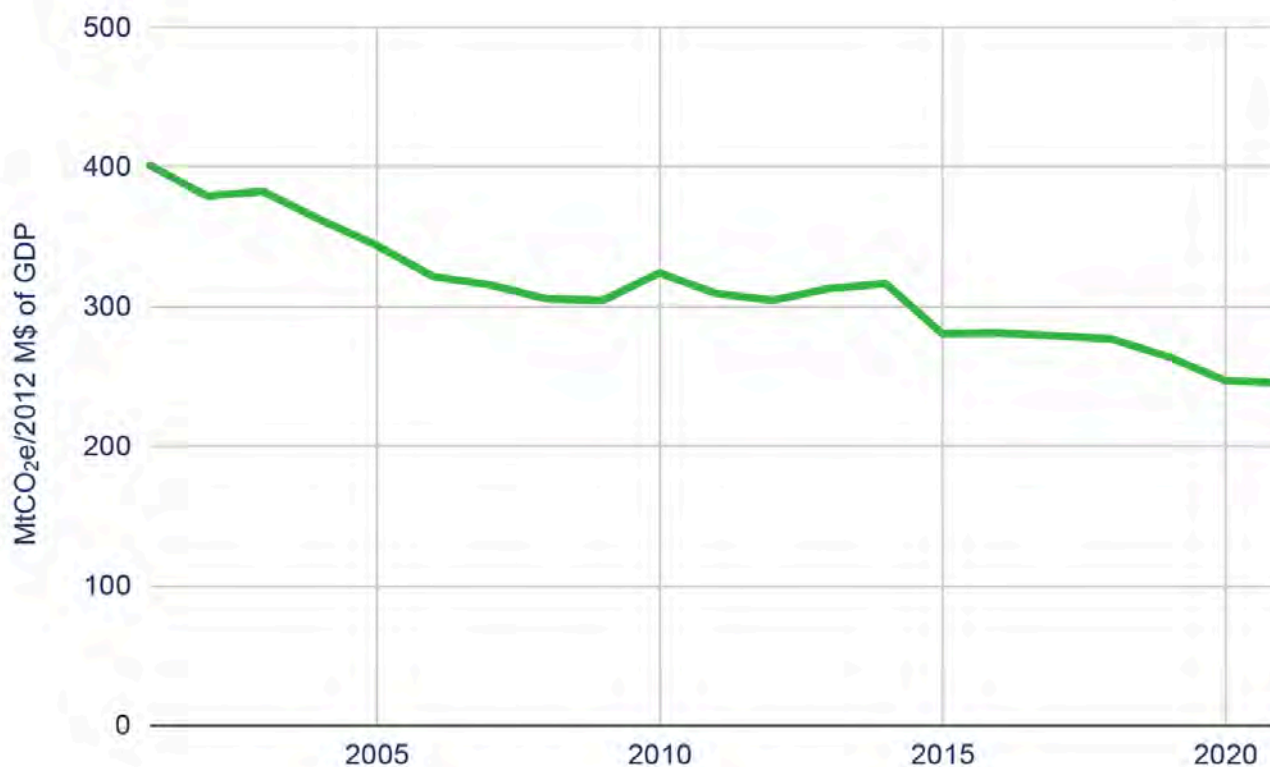


Figure 19. GHG intensity of Nevada's GDP, 2001-2021.⁶⁶

⁶⁵ U.S. Energy Information Administration. "Table 5. Energy intensity by state - State Carbon Dioxide Emissions Data," 2023. <https://www.eia.gov/environment/emissions/state/index.php>.

⁶⁶ Nevada Division of Environmental Protection. "Nevada Statewide Greenhouse Gas Emissions Inventory and Projections, 1990-2043," 2023. <https://ndep.nv.gov/air/air-pollutants/greenhouse-gas-emissions>

Energy prices have been on the rise in Nevada, especially in the past several years. Between September 2001 and September 2023, the retail price of electricity in Nevada increased by 200%, while the price of natural gas delivered to residential customers increased by 344%, with a significant spike in 2023 (Figure 20).⁶⁷ These trends suggest that transitioning from natural gas appliances to highly efficient electric ones may save households and businesses money.

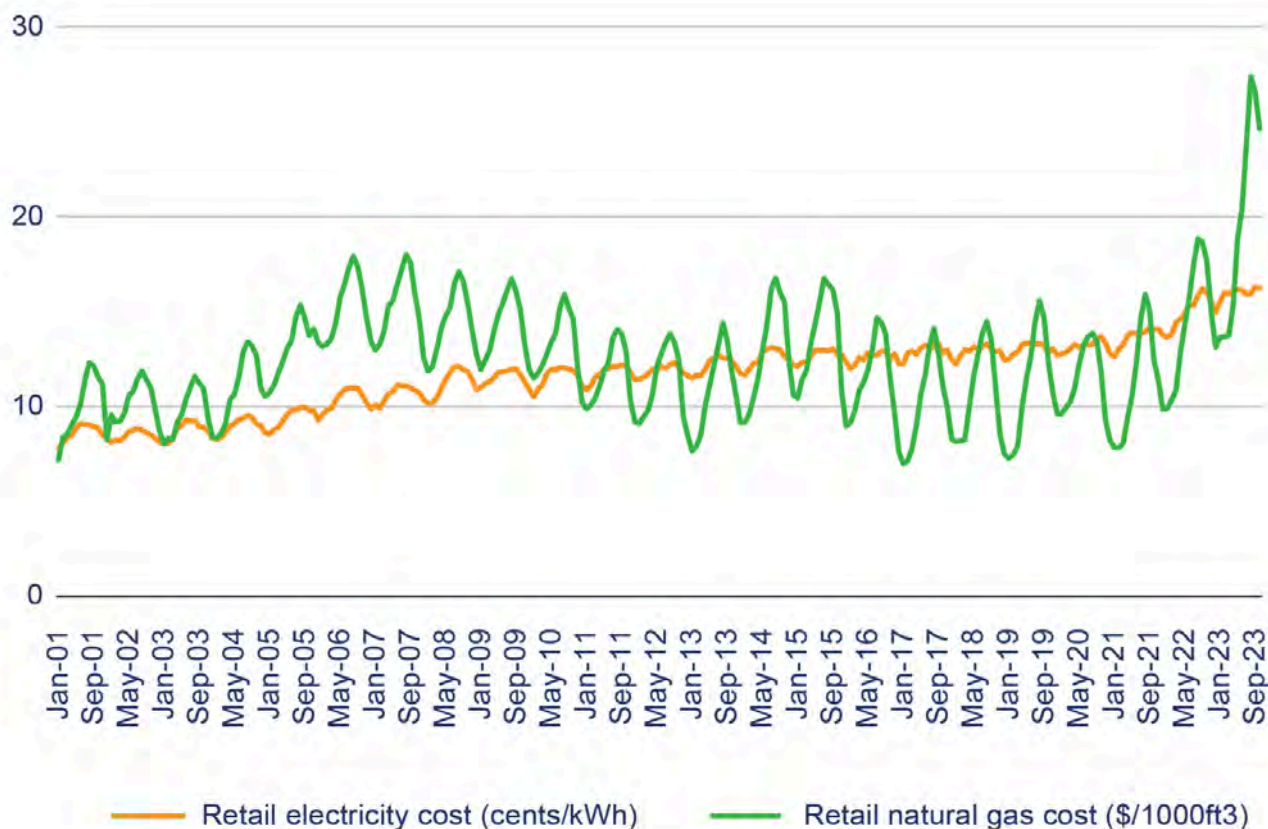


Figure 20. Monthly residential retail price of natural gas and electricity, 2001-2023.⁶⁸

Note that the costs are not directly comparable as electricity is cents/kWh and natural gas is \$/1000 ft³.⁶⁹

⁶⁷ U.S. Energy Information Administration. "Nevada Price of Natural Gas Delivered to Residential Consumers (Dollars per Thousand Cubic Feet)," 2023. <https://www.eia.gov/dnav/ng/hist/n3010nv3m.htm>.

⁶⁸ Nevada Division of Environmental Protection. "Nevada Statewide Greenhouse Gas Emissions Inventory and Projections, 1990-2043," 2023. <https://ndep.nv.gov/air/air-pollutants/greenhouse-gas-emissions>

⁶⁹ U.S. Energy Information Administration. "Average Retail Price of Electricity - Electricity Data Browser," 2023. <https://www.eia.gov/electricity/data/browser>

A transformation of Nevada’s electricity system has been underway over the last few decades (Figure 21).⁷⁰

Since 2005, electricity generation using coal has steeply declined, replaced by natural gas and renewables. Natural gas is currently the primary source of electricity, but since 2015 it has started to decrease due to the rapid growth of solar energy, and at a slower rate, geothermal. Overall, the renewable energy production in Nevada has tripled since 2011.⁷¹

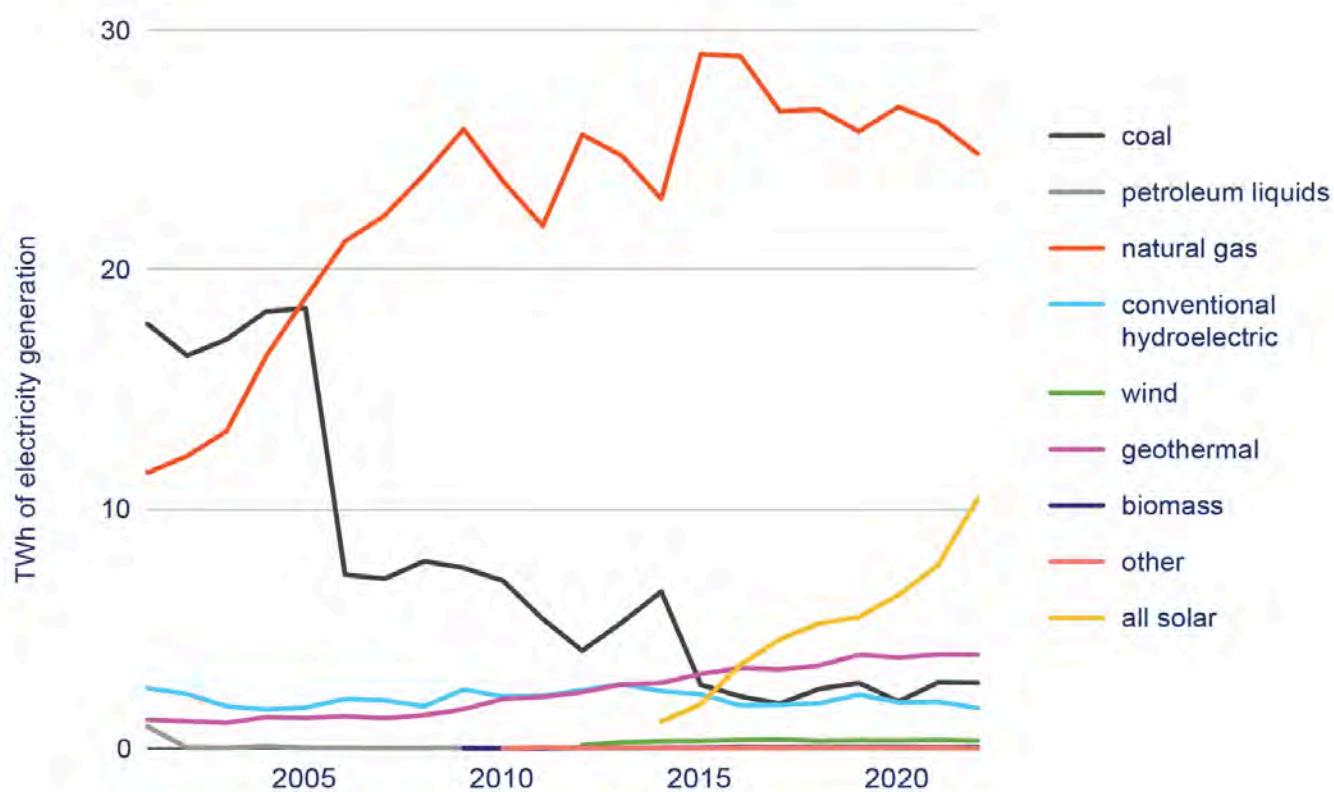


Figure 21. The evolution of electricity generation in Nevada, 1990-2021.⁷²

⁷⁰ U.S. Energy Information Administration. "Fuel Type 2021-2023, Nevada - Electricity Data Browser," 2023. <https://www.eia.gov/electricity/data/browser/#/topic/0?agg=2>.

⁷¹ U.S. Energy Information Administration. "Fuel Type 2021-2023, Nevada - Electricity Data Browser," 2023. <https://www.eia.gov/electricity/data/browser/#/topic/0?agg=2>.

⁷² Nevada Division of Environmental Protection. "Nevada Statewide Greenhouse Gas Emissions Inventory and Projections, 1990-2043," 2023. <https://ndep.nv.gov/air/air-pollutants/greenhouse-gas-emissions>

2.4.2 Clean Energy Potential

Nevada has among the highest potential for large-scale clean energy projects among all 50 states. The technical potential for commercial, residential, and utility solar photovoltaics (PVs) is 6.27 billion MWh; for wind, it is 1.13 billion MWh; for geothermal, it is 54 million MWh; and for hydropower, it is nearly 2 million MWh. This dwarfs annual electricity consumption, which was approximately 39 million MWh in 2021. Based on this, renewable electricity generated in Nevada could supply the state's annual electricity needs multiple times over. In addition to producing clean power for in-state consumption and exports to other states, electrifying vehicles and buildings is a major opportunity for accelerating renewable electricity production.

Nevada leads the nation in solar power technical potential and currently ranks sixth in the nation in total solar capacity and generation. Since 2016, the share of in-state electricity generation from solar sources has nearly tripled. Nevada has utility-scale electricity generation from geothermal energy.⁷³ Geothermal accounts for a quarter of Nevada's electricity generation from renewable sources, and 9% of the state's total electricity generation. The state also boasts the first-of-its-kind geothermal-solar hybrid facility, the Stillwater Hybrid Power Plant.

Nevada has a relatively high potential for wind generation especially given its mountainous regions; however, statewide wind energy generation is only at about 0.7%.⁷⁴ Many of the areas with high potential are owned by the federal government and therefore need federal approval for utility-scale projects. To date, only one utility-scale wind project has been installed in Nevada, the 152 MW Spring Valley Wind Project, which was constructed in 2012.⁷⁵ Technical analysis and economic feasibility studies suggest that a far greater potential for wind generation remains untapped.

2.5 Climate Policies, Programs, and Actions in Nevada

The state of Nevada has set emissions reduction goals for all GHG emitting sectors of the economy: 28% below 2005 levels by 2025, 45% below 2005 levels by 2030, and zero or near-zero by 2050. Additionally the state has set ambitious targets for improvements in energy efficiency and increases in renewable energy generation paving the way for CPRG program grants to have a transformative impact across the state and at the local level. As per Executive Order 2023-07, the state is invested in generating enough electricity in-state to meet its residents' needs, as well as becoming a regional leader in exporting solar, wind, and geothermal resources.⁷⁶ In addition to its goals to reduce GHG net emissions, Nevada has established a

⁷³ U.S. Energy Information Administration. "State of Nevada Profile Analysis." EIA, 2023. <https://www.eia.gov/state/analysis.php?sid=NV>.

⁷⁴ U.S. Office of Energy Efficiency and Renewable Energy. "Land-Based Wind Market Report: 2023 Edition," 2023. <https://www.energy.gov/sites/default/files/2023-08/land-based-wind-market-report-2023-edition.pdf>

⁷⁵ U.S. Energy Information Administration. "Preliminary Monthly Electric Generator Inventory, Electricity." Accessed February 27, 2024. <https://www.eia.gov/electricity/data/eia860m/index.php>.

⁷⁶ State of Nevada Executive Department. "Executive Order 2023-007 - Order Establishing the State of Nevada Energy Policies Objectives," 2023. https://gov.nv.gov/Newsroom/ExecOrders/2023/Executive_Order_2023-007/.

Renewable Energy Portfolio committed to ensuring that at least 50% of electricity sold to Nevadans from utilities must come from renewables by 2030.

Senate Bill 358 (2019) provides support to encourage and accelerate the development of new renewable projects, and ensure that new clean energy and energy efficiency measures benefit Nevada's residents. The co-benefits of these initiatives include improved air quality, a more diverse portfolio of electrical resources, reduced fossil fuel consumption, more stable rates for retail customers of electric service, and reduced water use.

Several state-level and regional plans and initiatives guide Nevada's path toward a more sustainable and resilient future, specifically in the transportation and building sectors. The *One Nevada Transportation Plan*, the state's long-range transportation plan, acknowledges the transportation sector as one of the largest contributors to GHG emissions, and includes recommendations for prioritized implementation of a multimodal transportation system.⁷⁷ Related plans include the statewide *Bicycle Plan* and *Inter-County and Regional Transit* plans which prioritize expanding alternative modes of transit by addressing infrastructure gaps and improving safety for all road users. Most recently, the Nevada Department of Transportation (NDOT), in partnership with the Governor's Office of Energy, Nevada State Parks, and private commercial host sites completed the "Electric Highway," a statewide infrastructure system to support EVs and provide fast-charging stations along major highways.

Nevada adopted the 2021 International Energy Conservation Code (IECC) as its model building energy code (including Electric Vehicle ready appendices) for residential and commercial buildings (ASHRAE Standard 90.1-2016).⁷⁸ Although the code is not enforced statewide, local governments are not allowed to adopt less-efficient energy codes.⁷⁹ Nevada has accessed funding to support energy efficiency upgrades, including \$10.8 million from the Weatherization Assistance Program and \$4.2 million from the State Energy Program, since 2015. The funding has been provided to 714 households for improvements in weatherization; 1.4 million square feet of building space in 1,086 buildings had retrofits and energy efficiency upgrades installed. The funding has also supported 332 new permanent jobs.

In 2017, Nevada passed commercial property assessed clean energy (C-PACE) enabling legislation, granting local governments the authority to administer their own C-PACE legislation to finance renewable energy or energy efficiency projects.⁸⁰ The State has also partnered with NV Energy, the state's premier energy provider, to develop the Lower Income Solar Energy Program (LISEP). This innovative program supports solar PV installations for low-income households in urban and rural communities, and provides incentives to community-based

⁷⁷ Nevada Department of Transportation. "One Nevada Transportation Plan," 2018. <https://www.dot.nv.gov/Home/ShowDocument?id=15670>.

⁷⁸ U.S. Department of Energy. "State and Community Energy Programs Project Map – Nevada." Energy.gov, 2023. <https://www.energy.gov/scep/articles/state-and-community-energy-programs-project-map-nevada>.

⁷⁹ American Council for an Energy-Efficient Economy. "Nevada," 2022. <https://database.aceee.org/state/nevada>.

⁸⁰ Nevada's Governor's Office of Energy. "Property Assessed Clean Energy (PACE)." Accessed January 2024. [https://energy.nv.gov/Resources/Property_Assessed_Clean_Energy_\(PACE\)](https://energy.nv.gov/Resources/Property_Assessed_Clean_Energy_(PACE)).

organizations that support low-income communities. To date, LISEP has provided assistance to over 3,500 lower-income households.⁸¹

At the local level, cities, counties, and Tribal Nations across Nevada already have committed to sustainability through the adoption of sustainability plans, the creation of sustainability departments, and the implementation of renewable energy and energy efficiency projects. Additionally, many local governments have in place innovative funding mechanisms to support decarbonization that could be enhanced by the CPRG program. Clark and Washoe counties, the most populous counties in the state, have both committed to sustainability through plans such as the *All-In Clark County Sustainability and Climate Action Plan*, the *Washoe Green Recovery Plan*, and the *Regional Transportation Commission of Washoe County Sustainability Plan*. These plans outline targets for buildings, energy, transportation, waste, and carbon sequestration, among other sectors. Several cities, including Henderson, Las Vegas, Reno-Sparks, and Carson City, are pursuing local energy efficiency and renewable energy projects. As of 2022, four cities have adopted C-PACE enabling legislation: Las Vegas, Henderson, Reno, and Fernley.⁸² Tribal Nations received funding from the US EPA in 2023 to support environmental programs on Tribal lands including climate change response plans to reduce GHG emissions and for local water quality improvements.

Nevada's investment in energy efficiency and renewable energy initiatives at the local and state level, and its existing small-scale funding mechanisms, provide a solid base for the state to take advantage of the next phase of CPRG program funding in addition to other federal funding opportunities made available through the *Inflation Reduction Act* and the Bipartisan Infrastructure Law.

⁸¹ U.S. Department of Energy. "State and Community Energy Programs Project Map – Nevada." 2023. <https://www.energy.gov/scep/articles/state-and-community-energy-programs-project-map-nevada>.

⁸² C-PACE Alliance. "Map of C-PACE Programs." April 1, 2022. <https://c-pacealliance.org/active-cpace-programs/>.

3 *Priority Climate Action Plan*

This section describes current and projected GHG emissions for the State of Nevada, the State's GHG reduction targets, and a suite of near-term, implementation-ready GHG reduction measures designed to bring Nevada closer to reaching its climate action goals.

3.1 Greenhouse Gas (GHG) Inventory

3.1.1 Scope

The Nevada Division of Environmental Protection (NDEP) prepares annual GHG inventories and projections. The most recent release is the 2023 *Nevada Statewide Greenhouse Gas Emissions Inventory and Projections, 1990-2043*.

3.1.3 GHG Accounting Method

NDEP relies on various data sources and methods to develop the GHG inventory and projections including the United States Energy Information Administration's (EIA's) State Energy Data System (SEDS), the EIA's Annual Energy Outlook (AEO), and the EPA's State Inventory Tool. The method was informed by the Intergovernmental Panel on Climate Change (IPCC) and additional federal, state, and local data sources. A *Quality Assurance Project Plan* (QAPP) was submitted to the EPA and subsequently approved. A detailed review of the data sources is available in Tables 1-3 of the GHG inventory report.⁸³

3.1.4 GHG Emissions by Sector and Gas

Gross total GHG emissions for the state were 45.4 MMtCO₂e in 2021, with sequestration reducing the total by 8.2 MMtCO₂e, for a net total of 37.2 MMtCO₂e. In the last decade, net GHG emissions have been climbing slowly after declining from a peak in 2005, oscillating around 37 MMtCO₂e. The COVID-19 pandemic resulted in a drop of 4-5 MMtCO₂e in 2020, but GHG emissions in 2021 have bounced back to pre-pandemic levels.

⁸³ Nevada Division of Environmental Protection. "Nevada Statewide Greenhouse Gas Emissions Inventory and Projections, 1990-2043," 2023. <https://ndep.nv.gov/air/air-pollutants/greenhouse-gas-emissions>



Figure 22. Gross and net GHG emissions, 1990-2021.⁸⁴

⁸⁴ Nevada Division of Environmental Protection. "Nevada Statewide Greenhouse Gas Emissions Inventory and Projections, 1990-2043," 2023. <https://ndep.nv.gov/air/air-pollutants/greenhouse-gas-emissions>

In 2021, the transportation sector was the major source of emissions, followed by electricity, industry, buildings (commercial buildings followed by residential), and agriculture (Figure 23).

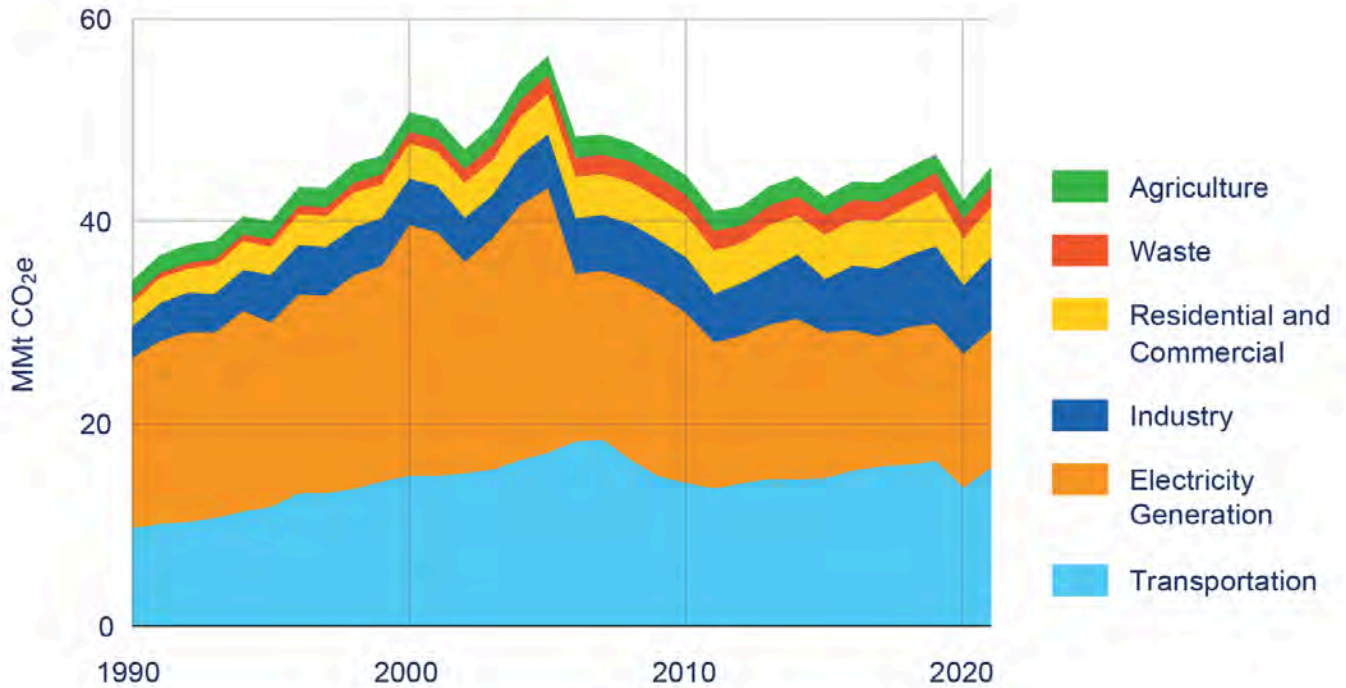


Figure 23. Gross GHG emissions by sector for Nevada, 1990-2021.⁸⁵

⁸⁵ Nevada Division of Environmental Protection. "Nevada Statewide Greenhouse Gas Emissions Inventory and Projections, 1990-2043," 2023. <https://ndep.nv.gov/air/air-pollutants/greenhouse-gas-emissions>

In 2021, transportation was the major source of emissions (34%), ahead of electricity production (30%), industry (16%), and buildings (11%), of net annual GHG emissions (37.2 MMtCO₂e) (Figure 24). Sequestration is calculated to absorb just over 8.2 MMtCO₂e per year, approximately 20% of the total.



Figure 24. GHG emissions by sector in Nevada, 2021.⁸⁶

The primary source of GHG emissions is carbon dioxide; however, the share of emissions from other gases, such as methane, is increasing (18% in 2021 versus 11% in 2000) (Figure 25).

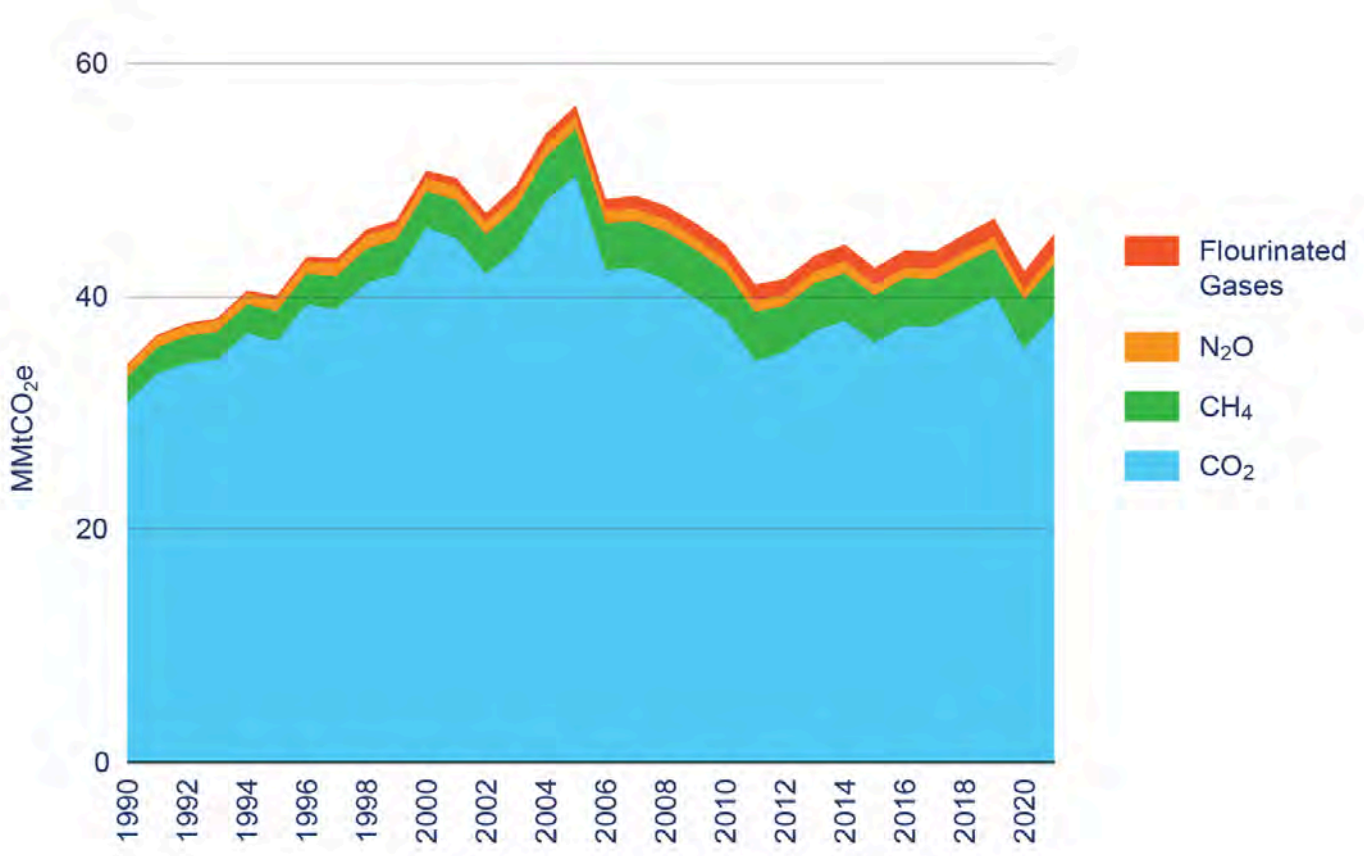


Figure 25. GHG emissions by gas in Nevada, 1990-2021.⁸⁷

In 2021, the average energy use per capita across the nation was 14.8 tons/year; Nevada’s energy use intensity is a bit lower at 12.5 tons/year. It has decreased 46% since 1970 when it was 21.9 tons/year.⁸⁸

⁸⁶ Nevada Division of Environmental Protection. “Nevada Statewide Greenhouse Gas Emissions Inventory and Projections, 1990-2043,” 2023. <https://ndep.nv.gov/air/air-pollutants/greenhouse-gas-emissions>

⁸⁷ Nevada Division of Environmental Protection. “Nevada Statewide Greenhouse Gas Emissions Inventory and Projections, 1990-2043,” 2023. <https://ndep.nv.gov/air/air-pollutants/greenhouse-gas-emissions>

⁸⁸ U.S. Energy Information Administration. “Nevada Independent Statistics and Analysis,” 2023. <https://www.eia.gov/state/?sid=NV>.

3.2 GHG Reduction Targets

The state's economy-wide GHG targets were established in 2019 by Senate Bill (SB) 254.⁸⁹ In addition to requiring annual GHG inventories and 20-year GHG projections, SB254 establishes targets to reduce emissions 28% by 2025 and 45% by 2030, and to achieve zero or net-zero by 2050, relative to 2005. Table 5 describes the projections, targets, and required emissions reductions.

Table 5. Nevada's GHG projections and targets.⁹⁰

Year	Current Business as Usual Projections			2019 SB254 Targets		
	Emissions (MMtCO ₂ e)	Emissions Reduction Compared to 2005 Emissions (MMtCO ₂ e)	Percent Reduction Compared to 2005 Emissions	Emissions (MMtCO ₂ e)	Emissions Reduction (MMtCO ₂ e)	Percent Reduction
2005	47.1	n/a	n/a	n/a	n/a	n/a
2021	37.2	9.9	21.1%	n/a	n/a	n/a
2025	35.6	11.5	24.5%	33.9	13.2	28%
2030	34.0	13.1	27.8%	25.9	21.2	45%
2050	24.4	22.7	48.2%	0	47.1	100%

⁸⁹ Nevada State Legislature. Bill SB254 Overview, Pub. L. No. 254. Accessed February 2, 2024. <https://www.leg.state.nv.us/App/NEILS/REL/80th2019/Bill/6431/Overview>.

⁹⁰ Nevada Division of Environmental Protection. "Nevada Statewide Greenhouse Gas Emissions Inventory and Projections, 1990-2043," 2023. <https://ndep.nv.gov/air/air-pollutants/greenhouse-gas-emissions>

Figure 26 illustrates historical GHG emissions estimates, future projections until 2050,⁹¹ and Nevada’s GHG targets.

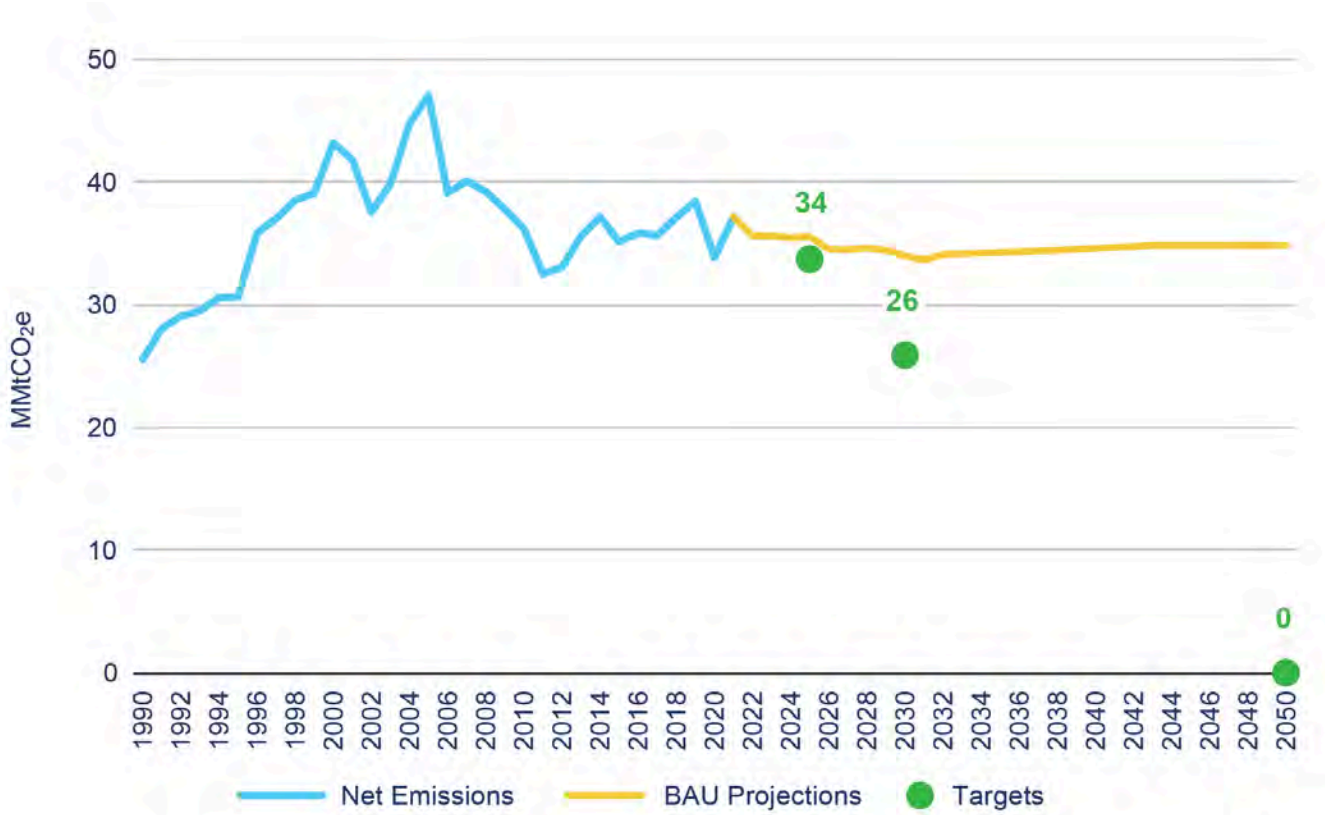


Figure 26. Illustration of historical emissions, projected emissions, and Nevada’s GHG targets.⁹²

⁹¹ GHG emissions post-2043, the state’s current 20-year projection, were held constant.

⁹² Nevada Division of Environmental Protection. “Nevada Statewide Greenhouse Gas Emissions Inventory and Projections, 1990-2043,” 2023. <https://ndep.nv.gov/air/air-pollutants/greenhouse-gas-emissions>

3.3 Focus Areas and Priority GHG Reduction Measures

3.3.1 How to Read This Section

This PCAP includes six focus areas based on emissions sectors. Each has a set of priority measures. Table 6 outlines how the following sections for each focus area is structured.

Table 6. How to read Section 3.3 Focus Area and Priority GHG Reduction Measures.

Section	Description
Focus Area Overview	High-level definitions of each focus area, outlining why the focus area is important to Nevada’s GHG emissions reduction plans and goals
Emissions Context	Current and projected emissions related to the focus area, illustrating the importance of implementing measures to reduce emissions in this area
Status in Nevada	An overview of the existing status of programs and policies related to the focus area, including what cities, counties, and state-level agencies are planning or implementing
Federal Funding	A summary of federal funding available to support measures in the focus area
Review of Authority	An overview of the authority to implement the measures or needed to be obtained to implement them
Community Engagement Feedback	Highlights of related community feedback noted during the community engagement process
GHG Emissions Reductions	Quantified GHG emissions reduction estimates for the measures in the focus area
Transformative Impacts and Co-benefits in LIDACs	A discussion of the transformative impact and co-benefits, particularly in low income and disadvantaged communities, of implementing the priority measures
Example Programs or Initiatives	Examples of possible combinations of priority measures that could be used to develop applications for CPRG Phase 2 grant funding and/or other funding sources

The term “incentivize” in this document relates to the encouragement of certain initiatives and/or actions; this includes the implementation of various funding structures such as financing, rebates, grants, revolving funds, and other financial support structures. This PCAP welcomes combining different revenue streams and collaborating among different parties to meet funding and/or financing needs. Additionally, if a measure does not mention incentivizing or funding of a program, it is not meant

to imply funding is not necessary for a measure. All reasonably expected funding needs for each measure are intended to be included, even if not explicitly stated. For example, measure B3.1 which is for the development of a deep energy retrofit program for public buildings could reasonably include funding for the retrofits to be completed through grants, revolving loans, or other funding structures.



3.3.2 Focus Area 1: Transportation

Measures in this focus area aim to increase active travel, public transit, and zero emissions vehicle (ZEV) adoption in Nevada (Table 8). This includes incentives for clean fuels, support for capacity building and workforce training, and building infrastructure. These measures will improve air quality and public health by reducing pollution and increasing physical activity. In addition, Nevadans will save money by spending less on fuel and vehicle maintenance and having better access to public transit. Jobs will be created in fields such as construction, manufacturing, and vehicle operations.

3.3.2.1 Emissions Context

In Nevada, transportation emissions peaked in 2007 but became the largest source of GHG emissions in 2015. Transportation is projected to remain the largest emissions sector through 2043. In 2021, emissions from transportation totaled 15.6 MMtCO_{2e} and accounted for 42% of the state's total gross GHG emissions. These are predominantly carbon dioxide (CO₂) emissions, with methane (CH₄) and nitrous oxide (N₂O) emissions accounting for less than 1.2% of emissions in this sector. More than 57% of transportation sector emissions came from gasoline use in 2021. Diesel accounted for 25%, aviation fuels accounted for 15%, and alternative fuels and lubricants accounted for 2%. Table 7 presents GHG historical emissions in Nevada for the sector.

*Table 7. Transportation sector GHG emissions in Nevada by fuel type, select years (MMtCO_{2e}).*⁹³

Fuel Type	1990	1995	2000	2005	2010	2015	2019	2020	2021
Gasoline	5.7	6.8	8.2	9.7	8.9	8.8	9.4	8	9
Diesel	1.4	1.9	2.7	3.8	3.3	3.1	3.9	3.9	3.9
Aviation Fuels	2.5	3	3.8	3.4	1.6	2.3	2.7	1.5	2.4
Alternative Fuels	0	0.1	0.1	0.2	0.2	0.3	0.3	0.3	0.3
Lubricants	0	0	0	0	0.1	0.1	0.1	0.1	0.1
Total Emissions	9.7	11.8	14.9	17.1	14.2	14.6	16.3	13.7	15.7

⁹³ Nevada Division of Environmental Protection. "Nevada Statewide Greenhouse Gas Emissions Inventory and Projections, 1990-2043," 2023. <https://ndep.nv.gov/air/air-pollutants/greenhouse-gas-emissions>

Projections of future emissions in the transportation sector are subject to some degree of uncertainty; shifts in travel patterns following the COVID-19 pandemic may be more or less permanent, federal initiatives such as the Safer Affordable Fuel Efficient (SAFE) Vehicles Rule Part Two and the *Inflation Reduction Act* (IRA) may have varying effects on vehicle emissions and ZEV uptake, and Clean Cars Nevada⁹⁴ may not extend beyond 2025.⁹⁵ In light of these uncertainties, NDEP’s analysis projects that transportation sector GHG emissions will slightly decrease in the future. It is estimated that transportation-related emissions will be 14.7 MMtCO₂e by 2025 and 14.5 MMtCO₂e by 2030. This will account for 34% and 35% of the GHG emissions in Nevada, respectively. Emissions reductions due to new federal and state regulations will be offset by expected population and economic growth.⁹⁶

3.3.2.2 Status of Transportation Programs in Nevada

The State of Nevada has made considerable progress in recent years in developing infrastructure to support electric and alternative fuel vehicles, supporting public and private entities’ transition to ZEVs, and enhancing alternative modes of travel such as high-speed rail and public transit.

Through a variety of funding sources and programs, electric vehicle (EV) charging infrastructure is being deployed across the state, particularly along major corridors. As of 2023, the State invested more than \$4 million in combined GOE Renewable Energy funds and VW Settlement funds to develop 30 EV charging stations along highways I-80, I-15, US 50, US 93, and US 95. In 2021, SB448 authorized NV Energy to invest \$100 million in EV charging infrastructure by 2024, as described in its *Economic Recovery Transportation Electrification Plan*. In 2022, the Nevada Department of Transportation (NDOT) developed the *Nevada Alternative Fueling Infrastructure Plan* to leverage an additional \$38 million in funding over the next five years from the federal *Infrastructure Investment and Jobs Act* (IIJA). This funding will help the state to build EV charging stations approximately every 50 miles along designated corridors within the Interstate Highway System.

In 2023, with the passage of AB262, the State made it an official policy goal to support and pursue transitioning all publicly owned vehicles to zero emission fleets by 2050. In addition, Nevada established the Clean Trucks and Buses Incentive Program (2023 AB184), to be administered by NDEP and supported by funds from the federal Carbon Reduction Program (23 U.S.C. § 175). The program, scheduled to begin in 2024, provides vouchers to support replacing older trucks and buses with- medium- and heavy-duty ZEVs. The base incentive for vouchers is dependent on gross vehicle weight rating and further increases when an entity demonstrates meeting other criteria that is designed to help underserved communities.

Nevada is one of four states that does not provide dedicated funding to support urban transit operations. The state is also statutorily prohibited from operating rail services or spending State revenue on rail expenditures. Inter-urban passenger rail is provided by Amtrak in Northern Nevada on

⁹⁴ Clean Cars Nevada incorporates California’s Low and Zero Emission Vehicle programs requiring light-duty vehicle manufacturers to adhere to stricter fleetwide GHG emission standards beginning with model year 2025.

⁹⁵ Nevada Division of Environmental Protection. “Nevada Statewide Greenhouse Gas Emissions Inventory and Projections, 1990-2043,” 2023. <https://ndep.nv.gov/air/air-pollutants/greenhouse-gas-emissions>

⁹⁶ Nevada Division of Environmental Protection. “Nevada Statewide Greenhouse Gas Emissions Inventory and Projections, 1990-2043,” 2023. <https://ndep.nv.gov/air/air-pollutants/greenhouse-gas-emissions>

the Overland Route, which connects Reno, Winnemucca, and Elko via the California Zephyr. Most transit trips take place in Clark, Washoe, and Douglas Counties. Nevada's 38 rural transit systems provide trips via vans, shuttles, and on-demand paratransit services.⁹⁷

Federal funding is typically not available to support urban transit operations; however, the federal IIJA will provide \$462 million to transit agencies across the country through 2026. This funding has the potential to help the RTC of Southern Nevada, RTC Washoe, the Carson Area Metropolitan Planning Organization (CAMPO)'s and the Tahoe Regional Planning Authority in expanding and electrifying services. Other funding sources include the Federal Transit Administration's Small Starts Program. RTC Washoe County received funding from this program to purchase four electric buses in 2012. The full funding gap for transit operations in Nevada over the next 10 years is estimated to be nearly one billion dollars, and future funding mechanisms are under review by the legislature.⁹⁸

In early 2024, NDOT received notice that \$3 billion of federal funding was approved for the Brightline West Project, a private consortium developing a high-speed rail line to connect Las Vegas and Southern California.⁹⁹ The project is projected to reduce VMT and GHG emissions along the I15 Corridor once it opens for passenger service in 2026.

State transportation revenues are also legally restricted from being spent on bicycle and pedestrian facilities unless they are part of a larger roadway project and within highway rights of way. Cities and counties are developing plans and projects to support increased active travel via other sources. For example, in October of 2023, Reno City Council expanded its "micro-mobility network" in downtown Reno with \$20 million from RTC Washoe County.¹⁰⁰ The *All-in Clark County Community Sustainability Action Plan*, adopted in 2023, set a goal to reduce transportation emissions in Clark County by investing in 2,020 miles of bicycle and pedestrian network improvements by 2040. The RTC of Southern Nevada currently has multiple plans and initiatives dedicated to active transportation, including a Complete Streets Initiative to improve safety of pedestrians, cyclists, and other road users in and around Las Vegas.

Due to a robust tourism and hospitality industry, airports in Nevada are among the country's busiest. In 2023, nearly 58 million passengers arrived and departed Las Vegas' Harry Reid International Airport, breaking pre-pandemic records.¹⁰¹ Initiatives are underway in North Las Vegas, where the Governor's Office of Economic Development recently approved \$11.7 million in tax abatements for a facility that will produce renewable diesel and sustainable aviation fuel.¹⁰² Similar facilities have been built outside

⁹⁷ Nevada Department of Transportation, "One Nevada Transportation Plan" November 2018. <https://www.dot.nv.gov/home/showpublisheddocument?id=17554>.
⁹⁸ Virginia Valentine et al. "Nevada Sustainable Transportation Funding Study_Report_Final_Appendix_Optimized_with Letter.Pdf." Google Docs, December 21, 2022. https://drive.google.com/file/d/1TNw43oB381wx8Hw6_zFXj77sjAAiEAGm/view?usp=sharing&usp=embed_facebook.

⁹⁹ U.S. Department of Transportation. "U.S. Department of Transportation Approves \$2.5 Billion in Private Activity Bonds Allocation for Brightline West Project." Accessed January 31, 2024. <https://www.transportation.gov/briefing-room/us-department-transportation-approves-25-billion-private-activity-bonds-allocation>.

¹⁰⁰ "Reno City Council Approves Downtown 'Micro-Mobility' Network," accessed January 31, 2024, <https://thisisreno.com/2023/10/reno-city-council-approves-downtown-micro-mobility-network/>.

¹⁰¹ "LAS Shatters Annual Passenger Record with 57.6 Million in 2023 | Harry Reid Airport - News," accessed February 8, 2024, <https://news.harryreidairport.com/press-release/las-shatters-annual-passenger-record-with-57-6-million-in-2023/>.

¹⁰² Noël Fletcher, "Nevada Lands Renewable Diesel Production, Distribution Hub," Transport Topics, January 31, 2024, <https://www.ttnews.com/articles/nevada-renewable-diesel-hub>.

Reno to make sustainable aviation fuel from waste such as textile, wood, paper, residual plastic, and packaging materials.¹⁰³

3.3.2.3 Federal Funding

Funding exists at the federal level to support fleet electrification, improved ZEV charging infrastructure, expansion and electrification of public transit, and active travel (see Appendix B for a complete list). The Inflation Reduction Act (IRA) includes tax credits to incentivize EV purchases. These include the Clean Vehicle Tax Credit and the Tax Credit for Previously Owned Clean Vehicles, the Commercial Clean Vehicles Tax Credit, the Tax Credit for Alternative Refueling Property (i.e., chargers), and Clean Heavy Duty-Vehicle Grants and Rebates. In addition, Environmental and Climate Justice Block Grants and the Neighborhood Access and Equity Grant Program can be used to develop EV charging infrastructure and bike and pedestrian facilities in disadvantaged communities.

Funding for transit electrification and modernization from the BIL includes Urbanized Area Formula Grants (\$33.5 billion), Rural Area Formula Grants (\$4.58 billion) including the Public Transportation on Indian Reservations Program, Capital Investment Grants (\$23 billion), State of Good Repair Grants (\$23.1 billion), a Public Transportation Innovation Program (\$193 million for transit research activities), Technical Assistance and Workforce Development (\$62 million), Low- or No- Emission Bus Grants (\$5.6 billion), and an Enhanced Mobility for Seniors and Individuals with Disabilities program (\$2.2 billion), among other initiatives. Twenty-five billion dollars of funding from the BIL is available via the Federal Aviation Administration to support energy efficiency at airport terminals, among other initiatives. The Sustainable Aviation Fuel tax credit included in the BIL is also aimed at increasing the production of sustainable fuels for aircraft.¹⁰⁴

3.3.2.4 Review of Authority

The priority measures will be implemented as incentive-based programs, which would not require additional authority to implement. NDEP has existing legal authority to apply for and receive grant funding and take actions to abate air pollution pursuant to NRS 445B.230, and the ability to cooperate and contract with other governmental entities is also addressed under NRS 445B.230 (authority) and NRS 277.180 (provides authority for contracts between one or more public agencies). Many entities have the authority and have expressed an interest in applying for funding to implement a portion of this work within specific state departments and divisions, cities, counties, Tribes, or corporate settings. NDEP intends to seek funding for measures and will subgrant to other agencies where applicable. Additional references for state/local authority provided in Appendix C.

¹⁰³ "Is Jet Fuel from Waste Finally Ready for Takeoff?" Waste Dive, accessed January 31, 2024, <https://www.wastedive.com/news/waste-jet-sustainable-aviation-fuel-fulcrum-bioenergy-saf/620365/>

¹⁰⁴ Internal Revenue Service. "Sustainable Aviation Fuel Credit | Internal Revenue Service." Accessed January 31, 2024. <https://www.irs.gov/credits-deductions/businesses/sustainable-aviation-fuel-credit>.

3.3.2.5 Community Engagement Feedback

Community workshops, technical focus groups, and a questionnaire revealed that addressing transportation emissions is a top priority for governments, residents, and businesses across the state. Several participants mentioned they would like to see current programs continue and expand, such as Clean Cars Nevada, the Clean Trucks and Buses Incentive Program, and the *Nevada Electric Vehicle Infrastructure (NEVI) Plan*. Several participants mentioned existing charging stations need to be repaired and new charging infrastructure must be guaranteed to work properly. Concerns also included the need to increase the capacity of the state's workforce to service ZEVs and install and repair charging infrastructure.

Engagement feedback revealed that LIDACs would benefit from measures that address air quality issues. This includes increasing access to ZEVs, chargers, and e-bikes for personal use, electrifying medium- and heavy-duty vehicles, expanding and electrifying public transit (for example, in Tribal communities and to key destinations such as the Tahoe-Reno Industrial Center), and improving bike and pedestrian infrastructure. Measures that received less support included developing high-speed rail projects. Engagement participants made suggestions for where public and private charging stations should be prioritized (e.g., East Las Vegas), emphasizing the need to first upgrade electricity infrastructure in those areas. To adequately reflect differing needs across the state, engagement participants stressed that both rural and urban communities should be included when implementing measures.

Throughout the development of the PCAP, interested and affected parties ranging from the American Lung Association to the Sierra Club to the American Short Line and Regional Railroad Association submitted specific project proposals for consideration in the PCAP. These included expanding medium- and heavy-duty vehicle electrification, expanding EV infrastructure, electrifying public fleets including school buses, investing in public transit and active transportation, and using urban design and infill development to minimize residents' exposure to busy roads at home and at school.

Table 8. Transportation: List of Priority Measures.

1. **Decarbonize fuels:** *This includes aligning, promoting, and incentivizing the production and use of clean transportation fuels, including electricity, green hydrogen, and low carbon sustainable aviation fuel, to reduce ongoing emissions from fossil fuel-powered transportation activities.*

T1.1 - Reduce carbon intensity of transportation fuels by incentivizing the manufacturing and sale of alternative fuels such as biodiesel and technologies such as EVs, e-bikes, hydrogen and alternative fuel vehicles that rely on renewable energy generation and/or battery storage. Incentives may include but are not limited to technical or financial support for developing manufacturing facilities, supply chain coordination or development, tax abatement, siting assistance, and bulk or cooperative purchasing.

Authority to Implement: Key agencies for transportation measures would include state, local, or Tribal, transportation authorities, air quality agencies, or planning agencies, all of which have the authority to provide funding to incentivize these types of programs. See section 3.3.2.4 above for NDEP specific authority to acquire and implement federal funding.

T1.2 - Support low carbon sustainable aviation, marine, heavy duty truck, and rail fuel development by developing an incentive program for the production and delivery of renewable fuels to supply airports, aircraft, boats, heavy duty trucks, and trains. This could include but is not limited to support for siting, financing, and tax abatements. Low carbon sustainable aviation fuel is typically biofuel made from renewable biomass and waste resources (i.e., agricultural residues, forestry and wood mill waste, municipal and solid waste streams, wastewater treatment sludge, and other fats, oils, and greases), which can reduce life cycle GHG emissions dramatically compared to conventional jet fuel.

Authority to Implement: Key agencies for transportation measures would include State, Local, or Tribal, transportation authorities, air quality agencies, or planning agencies, all of which have the authority to provide funding to incentivize these types of programs. Please see above for NDEP specific authority to acquire and implement federal funding.

2. **Build Capacity:** *This includes measures that ensure everyone, and in particular LIDACs, have access to and knowledge about the resources available to participate in the transition to ZEVs, enhanced public transit, and active travel; that the workforce in Nevada will be able to respond to the increasing demand for ZEVs, e-bikes, and low carbon fuels; and that the reductions seen through the projects are available publicly.*

T2.1 - Build technical capacity at public agencies to plan for, procure, and implement ZEVs and charging infrastructure, enhanced public transit, active transportation infrastructure, including training of staff, coordination with other levels of government, supporting workforce development, and communication and outreach campaigns.

Authority to Implement: Key agencies for transportation measures would include State, Local, or Tribal, transportation authorities, air quality agencies, or planning agencies, all of which have the authority to provide funding to incentivize these types of programs. Please see above for NDEP specific authority to acquire and implement federal funding.

T2.2 - Create integrated public databases containing data such as the number/type of ZEVs registered in Nevada and the status of infrastructure development, to enhance transparency and coordination among public agencies, the public, and interested and affected parties. Publicly available data access can ensure all actors are aware of the status of transportation actions in the state and are operating with the same shared understanding.

Authority to Implement: Key agencies for transportation measures would include State, Local, or Tribal, transportation authorities, air quality agencies, or planning agencies, all of which have the authority to provide funding to incentivize these types of programs. Please see above for NDEP specific authority to acquire and implement federal funding.

T2.3 - Enhance workforce, maintenance, and repair capacity to support planning, implementation, repair of new and used ZEVs, and infrastructure including EV chargers and alternative fueling stations. Workforce development activities could include enhancing or creating new training programs, particularly among trades such as construction and electricians, job placement programs, and apprenticeships.

Authority to Implement: Key agencies for transportation measures would include State, Local, or Tribal, transportation authorities, air quality agencies, or planning agencies, all of which have the authority to provide funding to incentivize these types of programs. Please see above for NDEP specific authority to acquire and implement federal funding.

T2.4 - Implement a public outreach and education campaign to encourage individuals and businesses to adopt ZEVs. Outreach can be, but is not limited to, online and in-person events, promotions, marketing, and geographic-specific partnerships with community-based organizations targeting diverse and historically underserved populations.

Authority to Implement: Key agencies for transportation measures would include State, Local, or Tribal, transportation authorities, air quality agencies, or planning agencies, all of which have the authority to provide funding to incentivize these types of programs. Please see above for NDEP specific authority to acquire and implement federal funding.

T2.5 Support the development of existing and new consortiums, coalitions, and other collaborative frameworks throughout Nevada’s different regions. These organizations can aid in creating a network of advisors on transportation initiatives for fleet transition to reduce fuel consumption and GHG pollution emissions.

Authority to Implement: Key agencies for transportation measures would include State, Local, or Tribal, transportation authorities, air quality agencies, or planning agencies, all of which have the authority to provide funding to incentivize these types of programs. Please see above for NDEP specific authority to acquire and implement federal funding.

3. Transition to Zero Emissions Vehicles: *This includes all measures associated with transitioning publicly and privately owned vehicles to ZEVs, including incentives, grants, rebates, and the development of carsharing programs.*

T3.1 - Incentivize public fleet transition to ZEVs among state agencies, counties, cities, schools, and public transit authorities by providing technical and financial support which could include, partial or full cost covering through incentives, grants, participant support costs, revolving loans etc., for planning, procuring, and implementing ZEVs in fleets.

Authority to Implement: Key agencies for transportation measures would include State, Local, or Tribal, transportation authorities, air quality agencies, or planning agencies, all of which have the authority to provide funding to incentivize these types of programs. Please see above for NDEP specific authority to acquire and implement federal funding.

T3.2 - Incentivize commercial fleet transition to ZEVs (medium- and heavy-duty vehicles) by developing a comprehensive set of programs and incentives to encourage ZEV adoption and vehicle fuel switching. This could include developing an incentive program for clean trucks, planning and implementing battery swapping stations and/or hydrogen fueling stations along the state’s freight corridors, and incentivizing higher sales of new medium- and heavy-duty ZEVs.

Authority to Implement: Key agencies for transportation measures would include State, Local, or Tribal, transportation authorities, air quality agencies, or planning agencies, all of which have the authority to provide funding to incentivize these types of programs. Please see above for NDEP specific authority to acquire and implement federal funding.

T3.3 - Incentivize the adoption of ZEVs by providing rebates for purchases and infrastructure installations. Ensure that ZEV adoption is accessible to LIDACs by partnering with trusted community organizations to promote the incentives and prioritizing applicants from both individuals and businesses in those communities. Rebates should be provided as close to the point of sale as possible, for both used and new ZEVs.

Authority to Implement: Key agencies for transportation measures would include State, Local, or Tribal, transportation authorities, air quality agencies, or planning agencies, all of which have the authority to provide funding to incentivize these types of programs. Please see above for NDEP specific authority to acquire and implement federal funding.

T3.4 - Provide rebates for e-bikes, e-cargo bikes, e-motorcycles, e-scooters to individuals and businesses. Provide incentives particularly for LIDACs and businesses operating in low-income areas to replace old polluting vehicles with these technologies.

Authority to Implement: Key agencies for transportation measures would include State, Local, or Tribal, transportation authorities, air quality agencies, or planning agencies, all of which have the authority to provide funding to incentivize these types of programs. Please see above for NDEP specific authority to acquire and implement federal funding.

T3.5 - Support ZEV carsharing initiatives by developing a comprehensive strategy, including program development, grant and technical assistance, and educational programming, to promote carsharing.

Authority to Implement: Key agencies for transportation measures would include State, Local, or Tribal, transportation authorities, air quality agencies, or planning agencies, all of which have the authority to provide funding to incentivize these types of programs. Please see above for NDEP specific authority to acquire and implement federal funding.

4. Develop infrastructure: *This includes all measures associated with developing supportive infrastructure for ZEVs for public and private vehicle fleets, including charging stations, in addition to public transit, bike, and pedestrian infrastructure.*

T4.1 - Develop supportive equipment for public fleet transition to ZEVs by providing grants and technical assistance for counties and municipalities to develop and implement.

Authority to Implement: Existing. Assembly Bill 262 sets a preference in state purchases for vehicles that minimize emissions and have lower costs. Key agencies for transportation measures would include State, Local, or Tribal, transportation authorities, air quality agencies, or planning agencies, all of which have the authority to provide grants and technical assistance to develop public fleet electric vehicle supportive infrastructure. Please see above for NDEP specific authority to acquire and implement federal funding.

T4.2 - Update and expand the NEVI Deployment Plan, targeting network improvements in LIDACs. Align the NEVI Plan update with technical assistance and incentive measures to ensure consistency and efficacy of the plan.

Authority to Implement: Key agencies for transportation measures would include State, Local, or Tribal, transportation authorities, air quality agencies, or planning agencies, all of which have the authority to provide funding to incentivize these types of programs. Please see above for NDEP specific authority to acquire and implement federal funding.

T4.3 - Repair existing ZEV supportive equipment and expand the EV charging network with a focus on LIDACs and key tourist destinations, based on updates to the NEVI Plan. Provide technical assistance and funding to support local governments and community organizations with implementation.

Authority to Implement: Key agencies for transportation measures would include State, Local, or Tribal, transportation authorities, air quality agencies, or planning agencies, all of which have the authority to provide funding to incentivize these types of programs. Please see above for NDEP specific authority to acquire and implement federal funding.

T4.4 - Develop infrastructure to support ZEV medium- and heavy-duty vehicles, focusing on LIDACs in proximity to freight corridors. Provide technical assistance and funding to support local governments and businesses with implementation. Infrastructure could include development of charging stations, battery swapping stations, and hydrogen fueling stations on both public and private right of way. Technical assistance could include webinars, training, partnerships, inter-agency coordination, and bulk or cooperative purchasing support.

Authority to Implement: Key agencies for transportation measures would include State, Local or Tribal, transportation authorities, air quality agencies, or planning agencies, all of which have the authority to provide funding to incentivize these types of programs. Please see above for NDEP specific authority to acquire and implement federal funding.

T4.5 - Incentivize EV chargers in new construction by providing funding and technical assistance to local governments.

Authority to Implement: Key agencies for transportation measures would include State, Local or Tribal, transportation authorities, air quality agencies, or planning agencies, all of which have the authority to provide funding to incentivize these types of programs. Please see above for NDEP specific authority to acquire and implement federal funding.

T4.6 - Fasttrack bike and pedestrian network infrastructure by providing funding and technical assistance to state agencies and local governments. Expand on and address gaps in bicycle, micro-mobility, and pedestrian networks by funding existing city and county plans and initiatives that support network improvement and development of all ages and abilities infrastructure; develop a network of public charging for e-micro mobility; and incentivize micro-mobility facilities and infrastructure for e-bikes that promotes connectivity and longer distance trips.

Authority to Implement: Key agencies for transportation measures would include State, Local or Tribal, transportation authorities, air quality agencies, or planning agencies, all of which have the authority to provide funding to incentivize these types of programs. Please see above for NDEP specific authority to acquire and implement federal funding.

T4.7 - Expand public transit in urban and rural areas, with a focus on LIDACs. Expand on and address gaps in existing public transit networks by funding existing city and county plans and initiatives that support network improvement and development of transit projects that promote connectivity, mode shift, and longer distance trips.

Authority to Implement: Key agencies for transportation measures would include State, Local or Tribal, transportation authorities, air quality agencies, or planning agencies, all of which have the authority to provide funding to incentivize these types of programs. Please see above for NDEP specific authority to acquire and implement federal funding.

3.3.2.6 GHG Emission Reductions

Emissions reductions in this focus area (Table 9) and co-pollutant reductions (Table 10) were quantified using a spreadsheet tool tailored specifically for the PCAP. This tool integrates comprehensive data sets, including the state GHG inventory, to calculate emission reductions that could result from implementation of the priority measures from 2025 to 2050. This approach provides accurate, detailed assessments of the measures' impact on reducing emissions.

Table 9. Projected GHG emissions reductions for measures in the Transportation Focus Area.

Priority Measure	Yearly Emission Reductions (MtCO ₂ e)		Cumulative Emission Reductions (MtCO ₂ e)	
	By 2025	By 2030	2025-2030	2025-2050
1. Decarbonize fuels	This measure will start reducing emissions in 2029.	51,976	77,652	1,117,172
2. Build capacity	This measure facilitates emission reductions.			
3. Transition to zero emissions vehicles	24,635	701,723	1,938,460	15,830,671
4. Develop infrastructure	This measure will start reducing emissions in 2030.	142,892	857,351	4,709,213
Total	24,635	896,591	2,873,463	21,657,056

Table 10. Projected co-pollutant reductions for priority measures in the Transportation Focus Area.

Priority Measure	Yearly Co-pollutant Reductions (metric tons)		Cumulative Co-pollutant Reductions (metric tons)		
	By 2025	By 2030	2025-2030	2025-2050	
1. Decarbonize fuels	No estimate was produced. ¹⁰⁵				
2. Build capacity	This measure facilitates the co-pollutant reductions.				
3. Transition to zero emissions vehicles	VOCs	14.3	303.2	1,014.2	7,080.2
	CO	234.2	5,021.1	16,824.8	117,286.3
	NOx	10.6	327.3	1,088.2	7,634.1
	PM _{2.5}	0.6	19.2	63.7	448.0
4. Develop infrastructure	HC	0.0	66.3	482.0	2,258.5
	CO	0.0	1,045.5	7,614.3	35,632.7
	NOx	0.0	22.5	167.0	769.2
	PM _{2.5}	0.0	3.3	24.0	113.5
Total	VOCs	14.3	303.2	1,014.2	7,080.2
	CO	234.2	6,066.6	24,439.0	152,919.0
	NOx	10.6	349.8	1,255.2	8,403.3
	PM _{2.5}	0.6	22.5	87.7	561.5

The following assumptions were used in calculating the above emissions reduction estimates. It should be noted that these assumptions were made to depict a potential pathway for Nevada to achieve its 2025 and 2030 emissions reduction goals. Implementation of the transportation priority measures are a means of working toward this scenario and Nevada ultimately meeting its emissions reduction goals. The following assumptions were used in calculating the above emission reduction estimates::

- 150,000 new EVs are registered annually in Nevada by 2030; the charging infrastructure will increase accordingly (1 charging station is available for every 20 EVs by 2030). In the years leading up to 2030, EV registrations will not increase at a steady rate. Rather, adoption will increase over time with the onset of educational programs, outreach, charging infrastructure, and increased visibility of benefits. Therefore, projects are assumed to scale up over time, resulting in the targets above.
- Public fleets will incorporate 1,000 EVs by 2030. Also, 800 clean heavy-duty vehicles will be in use by 2030.
- The net GHG emissions reduction specifically for EV adoption considers both the decrease in fossil fuel consumption and the increase in electricity consumption from the grid. For more detailed information, please refer to Appendix A.

¹⁰⁵ The variation in co-pollutant emissions from synthetic alternative fuels, influenced by their diverse types and production techniques, means that not all synthetic fuels guarantee lower emissions of co-pollutants compared to conventional fuels. Given the emerging state of alternative fuel technology and the limited data on co-pollutant emissions, accurately assessing their environmental benefits is challenging. This limitation is the primary reason why co-pollutant emissions were not produced.

- Bike use grows, replacing vehicle trips, due to the development of bike infrastructure and 200,000 e-bikes are in use by 2030 thanks to rebates.
- Active travel mode share increases, due to development of bike and pedestrian network infrastructure.
- 2% of the state's flights are powered by sustainable aviation fuels by 2030.
- At least 40% of EV registrations, charging installations, and e-bike+ rebates will take place in LIDAC census tracts.

3.3.2.7 Transformative Impact and Co-benefits in LIDACs

Reducing emissions from transportation provides many direct benefits to all Nevadans. LIDACs will particularly benefit because they are socially and economically disadvantaged and currently overburdened by climate pollution. Research indicates that LIDACs are less able to anticipate, cope with, and recover from the adverse impacts of climate pollution and climate change.¹⁰⁶

One direct benefit from measures in this focus area is reduced household spending on transportation. This is due to the adoption of low-maintenance electric vehicles, an expansion of public transit services, and increased use of e-bikes. When low-income households save money on transportation, they have more money available for housing, food, medicine, education, and savings.

Another direct benefit are improvements in local air quality in rural areas due to reductions in fossil fuel combustion. The adoption of ZEVs and expanded public transit and active travel will reduce criteria air contaminants, ozone, PM_{2.5} and diesel emissions. This will improve public health and increase life expectancy, because air pollution worsens diseases such as asthma and the likelihood of premature death.¹⁰⁷ This impact is particularly important in LIDACs where health insurance is generally less accessible.

Noise from vehicles will be reduced due to the adoption of ZEVs, and the expansion of public transit, active travel, and carsharing will reduce noise in high-traffic areas. Exposure to high road noise levels is harmful to physical and mental health.¹⁰⁸ This has the potential to impact long-term education, income, and employment outcomes, particularly for disadvantaged Nevadans.

Measures in this focus area will promote biking and walking and reduce car trips. These shifts will reduce diesel, ozone, and PM_{2.5} emissions, reduce traffic congestion in high-population areas, increase physical activity, and increase social interactions. Measures will also reduce transportation barriers and improve access to primary services, businesses, jobs, and education. This is particularly important in LIDACs that may be underserved or experience underinvestment, meaning jobs and services are not located nearby.

¹⁰⁶ "Climate Change and Social Vulnerability in the United States - A Focus on Six Impacts," accessed February 8, 2024, https://www.epa.gov/system/files/documents/2021-09/climate-vulnerability_september-2021_508.pdf

¹⁰⁷ Academy of Science of South Africa et al., "Air Pollution and Health – A Science-Policy Initiative," *Annals of Global Health* 85, no. 1 (December 16, 2019): 140, <https://doi.org/10.5334/aogh.2656>.

¹⁰⁸ Ana Ndrepepa and Dorothee Twardella, "Relationship between Noise Annoyance from Road Traffic Noise and Cardiovascular Diseases: A Meta-Analysis," *Noise and Health* 13, no. 52 (May 1, 2011): 251, <https://go.gale.com/ps/i.do?p=AONE&u=googlescholar&id=GALE|A256051278&v=2.1&it=r&sid=googleScholar&asid=3b4ee161>

Indirect benefits from measures in this focus area include increased job opportunities. As ZEV adoption increases, more workers will be needed in the electrician and construction trades and manufacturing. Expanding public transit will increase demand for bus drivers, train conductors, and vehicle fleet maintenance workers. Jobs related to vehicle sales and maintenance, gasoline and diesel fuel sales, and private vehicle sharing and taxis may be lost over time.

Reducing emissions from transportation will most directly benefit LIDACs that experience the highest levels of diesel and PM_{2.5} pollution, traffic proximity, transportation barriers, and a number of low-income households. Figure 27 shows LIDACs that are in the 90th percentile or above for these categories.¹⁰⁹ This means that the census tract has a higher measurement of burden than 90% of all other census tracts. Only LIDACs in Reno and Clark County meet this threshold for the burdens shown. LIDACs in East Las Vegas, where percentiles for PM_{2.5} and diesel levels, traffic proximity, and barriers to transportation are highest in the state, will benefit the most from the priority measures in this focus area. LIDACs in eastern parts of Reno, particularly near the airport, experience high levels of PM_{2.5} and traffic proximity, and will also benefit from these measures.

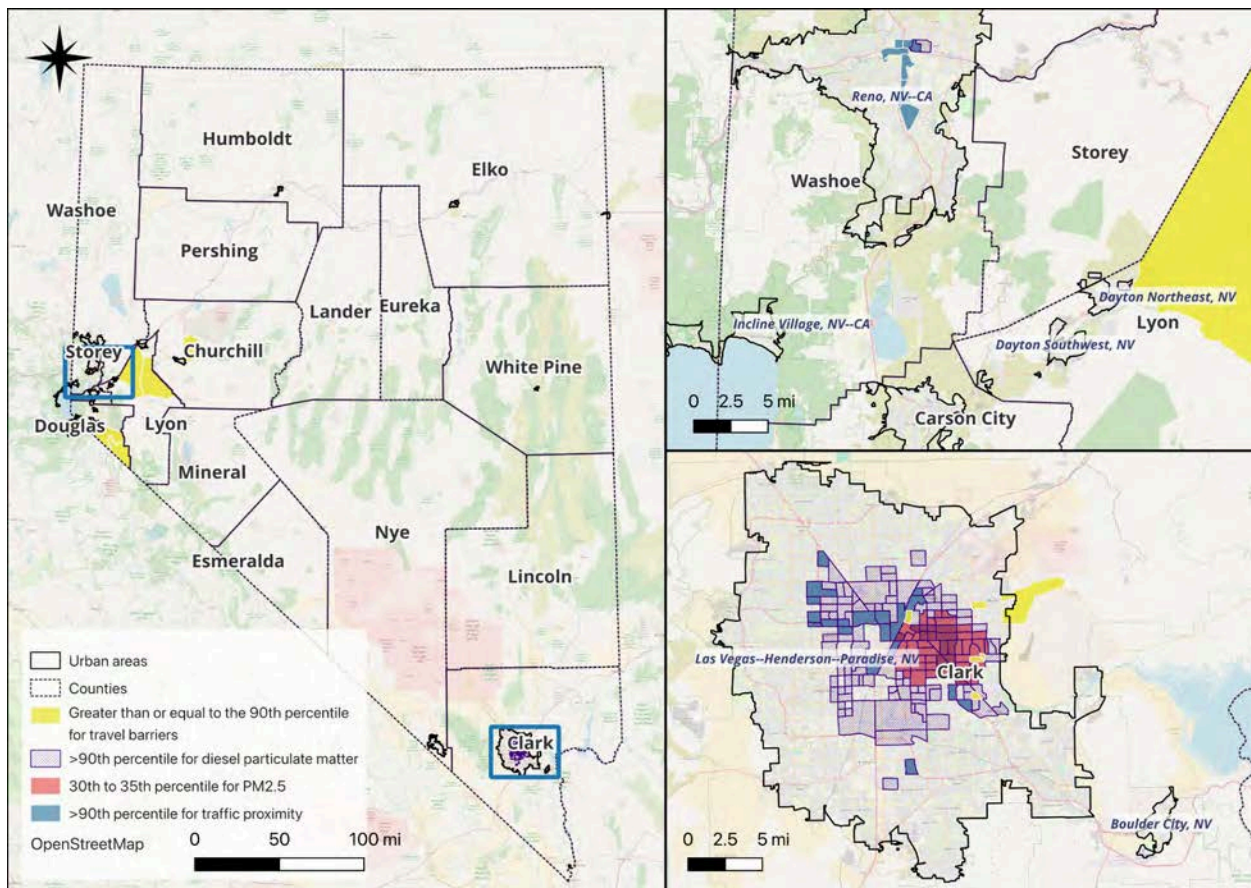


Figure 27. LIDAC census tracts most benefited by measures within the Transportation Focus Area.
 Source: Council on Environmental Quality, 2022.

¹⁰⁹ No census tracts in Nevada are higher than the 35th percentile for PM_{2.5} levels, but LIDACs with relatively higher levels of PM_{2.5} pollution will benefit more than other areas from the transportation measures in this PCAP.

3.3.2.8 Example Programs or Initiatives

Table 11 offers examples of how various measures within the Transportation Focus Area can be combined and implemented. Actual implementation may vary.

Table 11. Example programs or initiatives targeting transportation emissions.

Description	Priority Measures
Clean Transportation 4 All	
<p>Develop a comprehensive strategy, including program development, grant and technical assistance, and educational programming, to promote clean transportation options for all.</p> <p>Provide incentives particularly for low-income people living in priority areas and businesses operating in low-income areas to replace old polluting vehicles with new, clean transportation.</p>	<ul style="list-style-type: none"> ● T2.1 - Build capacity at public agencies ● T2.2 - Create public databases ● T2.4 - Implement a public outreach and education campaign ● T3.3 - Incentivize the adoption of zero emissions vehicles (ZEVs) by providing rebates for purchases and infrastructure installations ● T3.4 - Provide rebates for e-bikes, e-cargo bikes, e-motorcycles, and e-scooters to individuals and businesses. ● T3.5 - Support ZEV carsharing initiatives by developing a comprehensive strategy
Nevada Clean Fleets Initiative	
<p>Develop a comprehensive set of programs and incentives to encourage adoption and conversion to clean fleets, including:</p> <ul style="list-style-type: none"> ● Converting state, county, municipal, transit, and large-scale commercial fleets to zero-emission, electric, and alternative fuel vehicles; ● Updating and repairing existing electric vehicle (EV) infrastructure; and ● Promoting alternative fuel vehicles and EV adoption. <p>Encourage and support state agencies, county governments of the five most populous counties, and businesses with the largest fleets to convert fleets to ZEVs by 2030, and encourage and support remaining counties to convert fleets to ZEVs by 2035.</p>	<ul style="list-style-type: none"> ● T2.1 - Build technical capacity at public agencies ● T2.2 - Create public databases ● T2.3 - Enhance workforce, maintenance, and repair capacity ● T2.4 - Implement a public outreach and education campaign ● T3.1 - Incentivize public fleet electrification (i.e., among state agencies, counties, cities, schools, and public transit authorities) ● T3.2 - Incentivize large commercial fleet electrification (medium- and heavy-duty vehicles) ● T4.1 - Develop public fleet EV supportive equipment (EVSE) ● T4.2 - Update and expand the <i>NEVI Deployment Plan</i>, targeting network improvements in LIDACs ● T4.3 - Repair existing EVSE and expand the EV charging network with a focus on LIDACs and key tourist destinations ● T4.4 - Develop infrastructure to support medium- and heavy-duty ZEVs

Description**Priority Measures****Clean Trucks Incentive Program**

Develop incentive program for clean trucks, plan and develop battery swapping stations and/or hydrogen fueling stations for medium- and heavy-duty trucks along the state's freight corridors; incentivize large commercial fleets to electrify; incentivize higher sales of new medium- and heavy-duty trucks; and promote reduction in carbon intensity of all transportation fuels by 2030.

- T1.1 - Reduce carbon intensity of transportation fuels by incentivizing the manufacturing and sale of alternative technologies
- T2.3 - Enhance workforce, maintenance, and repair capacity
- T3.2 - Incentivize large commercial fleet electrification (medium- and heavy-duty vehicles)
- T4.2 - Update and expand the NEVI Deployment Plan, targeting network improvements in LIDACs
- T4.4 - Develop infrastructure to support ZEV medium- and heavy-duty vehicles
-

Supercharge EV Charging

Develop a statewide ZEV infrastructure plan to incentivize the adoption of ZEV across the state, building on the NEVI Deployment Plan. At the same time, provide grants and technical assistance for counties and municipalities to develop and implement ZEVs; incentivize EV stations for on-site parking; and target network improvements in select low-income and priority areas.

- T2.1 - Build technical capacity at public agencies
- T2.2 - Create public databases
- T2.3 - Enhance workforce, maintenance, and repair capacity
- Develop public fleet electric vehicle supportive equipment (EVSE)
- T4.2 - Update and expand the NEVI Deployment Plan, targeting network improvements in LIDACs
- T4.3 - Repair existing EVSE and expand the EV charging network with a focus on LIDACs and key tourist destinations
- T4.5 - Incentivize EV chargers in new construction
-

Sustainable Community Pathways Program

Expand on and address gaps in existing public transit, bicycle, micro-mobility, carsharing and pedestrian networks by funding existing city and county plans and initiatives that support network improvement and development of all ages and abilities infrastructure; develop a network of public charging for e-micro mobility; and incentivize micro-mobility facilities and infrastructure for e-bikes that promotes connectivity and longer distance trips.

- T2.1 - Build technical capacity at public agencies
- T3.4 - Provide rebates for e-bikes, e-cargo bikes, e-motorcycles, and e-scooters to individuals and businesses
- T3.5 - Support ZEV carsharing initiatives by developing a comprehensive strategy
- T4.6 - Fasttrack bike and pedestrian network infrastructure
- T4.7 - Expand public transit in urban and rural areas, with a focus on LIDACs

Description**Priority Measures****Nevada Clean Green Tourism Program**

Enhance the state's reputation for green tourism by planning and implementing the expansion of public transit within the state; incentivizing reductions in the carbon intensity of transportation fuels; developing sustainable aviation fuels near airports; and enhancing seamless EV charging and multi-modal network connections for residents and visitors.

- T1.1 - Reduce carbon intensity of transportation fuels by incentivizing the manufacturing and sale of alternative technologies
- T1.2 - Support low carbon sustainable aviation fuel development by developing an incentive program for the production and delivery of renewable fuels to supply airports and aircraft
- T2.4 - Implement a public outreach and education campaign
- T4.3 - Repair existing EVSE and expand the EV charging network with a focus on LIDACs and key tourist destinations
- T4.5 - Incentivize EV chargers in new construction
- T4.6 - Fasttrack bike and pedestrian network infrastructure
- T4.7 - Expand public transit in urban and rural areas, with a focus on LIDACs



3.3.3 Focus Area 2: **Buildings**

Measures in this focus area aim to reduce energy use and emissions in both residential and commercial buildings (Table 11). This includes expanding programs that support pre-weatherization, weatherization, electric upgrades, and retrofits. In addition, measures incentivize making new buildings more energy efficient than current standards. Through these measures, local governments and Tribes will be supported in improving buildings, training workers, and incentivizing residents and businesses in this area.

3.3.3.1 Emissions Context

In Nevada, buildings represent the fourth largest source of emissions by sector. In 2021, emissions from commercial and residential buildings totaled 4.9 MMtCO₂e and accounted for 11% of the state’s total GHG emissions. Residential emissions totaled 2.6 MMtCO₂e and commercial emissions totaled 2.2 MMtCO₂e. Emissions in this sector are predominantly CO₂, with CH₄ and N₂O accounting for less than 1% of the total emissions. Assuming business-as-usual, and no significant programmatic or policy changes to support efficiency, emissions are projected to increase in the future. It is estimated that emissions will be 5.2 MMtCO₂e by 2025 and 5.5 MMtCO₂e by 2030, accounting for 12% and 13% of the GHG emissions in Nevada, respectively. Table 12 presents GHG historical emissions in Nevada for the sector.¹¹⁰

Table 12. Buildings sector GHG emissions in Nevada by fuel type, select years (MMtCO₂e)¹¹¹

Fuel Type	1990	1995	2000	2005	2010	2015	2019	2020	2021
Residential Sub-Sector									
Coal	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Petroleum	0.26	0.18	0.20	0.21	0.20	0.14	0.14	0.16	0.16
Natural Gas	0.94	1.14	1.64	2.02	2.17	2.05	2.66	2.54	2.47
Wood	0.02	0.03	0.03	0.02	0.02	0.02	0.02	0.02	0.02

¹¹⁰ Nevada Division of Environmental Protection. “Nevada Statewide Greenhouse Gas Emissions Inventory and Projections, 1990-2043,” 2023. <https://ndep.nv.gov/air/air-pollutants/greenhouse-gas-emissions>

¹¹¹ Nevada Division of Environmental Protection. “Nevada Statewide Greenhouse Gas Emissions Inventory and Projections, 1990-2043,” 2023. <https://ndep.nv.gov/air/air-pollutants/greenhouse-gas-emissions>

Sub-Total	1.22	1.34	1.87	2.24	2.39	2.20	2.82	2.72	2.65
Commercial Sub-Sector									
Coal	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Petroleum	0.24	0.41	0.23	0.29	0.20	0.54	0.58	0.54	0.57
Natural Gas	0.83	1.03	1.40	1.47	1.63	1.65	1.95	1.43	1.69
Wood	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00
Sub-Total	1.07	1.44	1.64	1.77	1.83	2.20	2.53	1.97	2.27
Total Emissions	2.30	2.78	3.51	4.01	4.22	4.40	5.35	4.69	4.92

3.3.3.2 Status of Building Programs in Nevada

Nevada has programs in place at the state and local levels to support energy efficiency programs in buildings. The measures in this focus area aim to scale up successful existing programs, and develop new programs that address identified gaps.

Nevada adopted the 2021 International Energy Conservation Code (IECC) as its model building energy code (including Electric Vehicle ready appendices) for residential and commercial buildings (ASHRAE Standard 90.1-2016). Although the code is not enforced statewide, local governments are not permitted to adopt less-efficient energy codes.¹¹²

In terms of existing residential buildings, Nevada has accessed millions of dollars of federal funding to support energy efficiency upgrades since 2015. This includes \$10.8 million from the Department of Energy’s (DOE) Weatherization Assistance Program and \$4.2 million from the State Energy Program. The funding has been used to support weatherizing 714 households and retrofitting and improving the energy efficiency of 1.4 million square feet of commercial building space in 1,086 buildings. The funding has also supported 332 new permanent jobs.¹¹³

The Home Energy Retrofit Opportunities for Seniors (HEROS) Program, managed by the GOE, helps people living at the federal poverty level weatherize their homes.¹¹⁴

¹¹² Nevada’s Governor’s Office of Energy. “Energy Codes in Nevada.” 2021. https://energy.nv.gov/Programs/Building_Energy_Codes/.

¹¹³ U.S. Department of Energy. “State and Community Energy Programs Project Map – Nevada.” Energy.gov, 2023. <https://www.energy.gov/scep/articles/state-and-community-energy-programs-project-map-nevada>.

¹¹⁴ Nevada’s Governor’s Office of Energy. “Home Energy Retrofit Opportunities for Seniors (HEROS).” 2021. [https://energy.nv.gov/Programs/Home_Energy_Retrofit_Opportunities_for_Seniors_\(HEROS\)/](https://energy.nv.gov/Programs/Home_Energy_Retrofit_Opportunities_for_Seniors_(HEROS)/).

At the local level, counties have also adopted plans to support energy efficiency projects. For example, one of the main pillars of the *All-In Clark County Community Sustainability and Climate Action Plan* calls for smart buildings and development. Scaling up existing efficiency programs by a factor of six in Clark County has the potential to reduce building sector emissions by 35% by 2030.¹¹⁵ Clark County plans to establish a revolving energy fund to use savings from efficiency projects to fund additional climate action. Clark County also plans to develop a commercial and public building benchmarking program and an energy disclosure ordinance for buildings 100,000 sq ft and larger. Similarly, ReEnergize Reno calls on improving the efficiency of commercial, industrial, and multifamily buildings by 20% by 2025.¹¹⁶ Measures in this focus area support the implementation of these plans.

3.3.3.3 Federal Funding

Several federal funding opportunities currently support energy efficiency in the buildings sector (see Appendix B for a complete list). For residential buildings, existing programs provide support for homeowners and renters, as well as contractor training and workforce development. These include the Homeowner Managing Energy Savings Program, the High-Efficiency Electric Home Rebate Program, the Residential Energy Efficiency Tax Credit, the New Energy Efficient Home Tax Credit, and the Home Energy Efficiency Contractor Training. Additionally, programs like the Environmental and Climate Justice Block Grants, the Green and Resilient Retrofit Program, and the Neighborhood Access and Equity Grant Program have a specific focus on improving buildings in LIDACs. For commercial buildings, programs such as the Solar for All Program, the Energy Efficiency and Conservation Block Grant Program, and the Energy Efficient Commercial Buildings Deduction can be used to catalyze energy efficiency projects in Nevada. Federal funding from Renew America's Schools Program and the Energy Efficiency and Conservation Block Grant Program could also be used to support energy retrofits for public-serving buildings.

3.3.3.4 Review of Authority

The priority measures will be implemented as incentive-based programs, which would not require additional authority to implement. NDEP has existing legal authority to apply for and receive grant funding pursuant to NRS 445B.230(2) and the ability to cooperate and contract with other governmental entities is also addressed under NRS 445B.230(3) and NRS 277.180 (provides authority for contracts between one or more public agencies). Many entities have the authority and have expressed an interest in applying for funding to implement a portion of this work within specific state departments and divisions, cities, counties, Tribes, or corporate settings. NDEP intends to seek funding for measures and will subgrant to other agencies where applicable.

¹¹⁵ Clark County Department of Environment and Sustainability. "All-In Clark County: Bold Action for A Sustainable Future," 2023. https://allin.clarkcountynv.gov/resources/ID_77/Documents/CC_CSCAP_FINAL.pdf.

¹¹⁶ City of Reno. "ReEnergize Reno," 2023. <https://www.reno.gov/community/sustainability/reenergize-reno/>.

3.3.3.5 Community Engagement Feedback

Community workshops revealed that reducing emissions from buildings is a top priority for residents and organizations across the state. Several participants mentioned that many resources are already available for energy efficiency retrofits. However, a discussion arose about the challenges homeowners and small and medium business owners have in accessing these resources. Participants also mentioned they would like to see measures that both improve energy efficiency and scale up renewable energy installations, especially solar. Many participants were already aware of the Nevada Clean Energy Fund (NCEF) and other financing mechanisms and emphasized the importance of continuing to support these programs in the PCAP. Finally, they spoke about the opportunity to develop a Residential Property Assessed Clean Energy (R-PACE) program in Nevada.

Participants recommended that measures address the lack of energy efficiency in older homes through pre-weatherization and weatherization, particularly in LIDACs. Participants explained that there are existing areas with low-moderate income levels and below-average access to financial assistance programs, including a lack of funding opportunities for pre-weatherization assistance. They also provided suggestions for particular streets and neighborhoods that may be a good fit for community-scale retrofit projects. The need to include both rural and urban communities, as well as addressing the needs of renters, was emphasized. Others suggested that retrofitting schools and adding rooftop solar installations to them presents a unique opportunity in Nevada, given the number of schools in LIDACs that are in need of upgrading and the state's renewable energy potential.

Additional suggestions of how to design the measures to benefit LIDACs include focusing on multifamily housing and mobile homes; creating workforce development programs in conjunction with the projected increasing demand for weatherization and renewable energy projects; streamlining processes; and developing educational and outreach programs to increase community awareness and offer technical assistance in navigating different incentives and opportunities. Finally, participants noted that housing affordability issues and energy burdens place an undue burden on lower-income residents, so measures that could reduce average household fuel costs are particularly helpful.

Table 13. Buildings: List of priority measures.

1. **Build Capacity:** *These measures ensure that the public, in particular LIDACs, have access to and knowledge about resources available for residential retrofits; that the workforce in Nevada will be able to respond to increased demand for both small- and large-scale energy efficiency and renewable energy projects; and that information about reductions seen through the projects are publicly available.*

B1.1 - Develop an education and outreach campaign that informs residents of existing and upcoming weatherization and residential retrofit programs. Outreach can be, but is not limited to, online and in-person events, promotions, marketing, and geographic-specific partnerships with community-based organizations targeting diverse and historically underserved populations.

Authority to Implement: Key agencies for building electrification measures would include State, Local or Tribal, buildings authorities, energy offices, air quality agencies, or planning agencies, all of which have the authority to provide funding to incentivize these types of programs. Please see above for NDEP specific authority to acquire and implement federal funding.

B1.2 - Work with local secondary and post-secondary schools and clean energy companies to train and develop a skilled workforce to respond to increasing demands in the retrofit and clean energy sector. Workforce development activities could include enhancing or creating new training programs, particularly among trades such as construction and electricians, job placement programs, and apprenticeships.

Authority to Implement: Key agencies for building electrification measures would include State, Local or Tribal, buildings authorities, energy offices, air quality agencies, or planning agencies, all of which have the authority to provide funding to incentivize these types of programs. Please see above for NDEP specific authority to acquire and implement federal funding.

B1.3 - Develop training programs to enable public agencies to understand the suite of energy efficiency and retrofit opportunities available for their communities. This could include, but is not limited to, staff training, coordination with other levels of government, grant writing support, supporting workforce development activities, and communication and outreach campaigns.

Authority to Implement: Key agencies for building electrification measures would include State, Local or Tribal, buildings authorities, energy offices, air quality agencies, or planning agencies, all of which have the authority to provide funding to incentivize these types of programs. Please see above for NDEP specific authority to acquire and implement federal funding.

B1.4 - Create a public database containing data such as the number of retrofits performed, the number of new energy-efficient buildings, or the number of people employed in jobs related to energy efficiency. The database will enhance transparency and coordination among public agencies, the public, and interested and affected parties. Publicly available data access can ensure all actors are aware of the status of building energy efficiency actions in the state and are operating with the same shared understanding.

Authority to Implement: Key agencies for building electrification measures would include State, Local or Tribal, buildings authorities, energy offices, air quality agencies, or planning agencies, all of which have the authority to provide funding to incentivize these types of programs. Please see above for NDEP specific authority to acquire and implement federal funding.

2. Expand Financing: *This includes support for and enhancement of existing financing mechanisms for retrofit, weatherization, and assistance programs, as well as exploration of new and alternative funding mechanisms to help meet the sector's goals.*

B2.1 - Expand the Nevada Clean Energy Fund (NCEF) by continuing to increase its budget, staffing, and scope of services, with an emphasis on providing service to both residents and businesses in LIDACs. Ensure that data from use of the fund is available in publicly accessible formats. Coordinate partnerships between the NCEF and state agencies, local governments, businesses, and community organizations. Funding could be used to develop financing mechanisms that fund building measures in addition to measures in the transportation, energy system, and industry focus areas.

Authority to Implement: Key agencies for building electrification measures would include State, Local or Tribal, buildings authorities, energy offices, air quality agencies, or planning agencies, all of which have the authority to provide funding to incentivize these types of programs. Please see above for NDEP specific authority to acquire and implement federal funding.

B2.2 - Explore the potential of R-PACE programs to support residents finance pre-weatherization and retrofits. Research and evaluate the success of R-PACE programs in other states. Develop program guidelines for the implementation of R-PACE programs within the state. Coordinate with workforce development and public agency capacity building.

Authority to Implement: Key agencies for building electrification measures would include State, Local or Tribal, buildings authorities, energy offices, air quality agencies, or planning agencies, all of which have the authority to provide funding to incentivize these types of programs. Please see above for NDEP specific authority to acquire and implement federal funding.

B2.3 - Explore the potential of alternative financing mechanisms to support lower emission buildings, such as community land trusts, on-bill financing, and a CPRG Revolving Loan Fund. Coordinate state agencies, local governments, businesses, and community organizations and develop a framework for implementing funding mechanisms appropriate to different community needs. Identify federal funding sources and potential local supplements. Promote the funding opportunities to residents and businesses via public outreach and education campaigns.

Authority to Implement: Key agencies for building electrification measures would include State, Local or Tribal, buildings authorities, energy offices, air quality agencies, or planning agencies, all of which have the authority to provide funding to incentivize these types of programs. Please see above for NDEP specific authority to acquire and implement federal funding.

B2.4 Explore the potential of C-PACE programs to support commercial businesses to finance energy-efficiency and renewable energy projects. Research and evaluate the success of C-PACE programs in other states. Develop program guidelines for the implementation of C-PACE programs at the local government level. Coordinate with workforce development and public agency capacity building.

Authority to Implement: Key agencies for building electrification measures would include State, Local or Tribal, buildings authorities, energy offices, air quality agencies, or planning agencies, all of which have the authority to provide funding to incentivize these types of programs. Please see above for NDEP specific authority to acquire and implement federal funding.

3. Retrofit Buildings: *These are measures associated with the labor and programmatic aspects of building retrofits, such as design, equipment upgrades, and construction, as well as rooftop solar.*

B3.1 - Develop a public building deep energy retrofit program. This program could prioritize schools located in LIDACs. The program should be holistic and support improvements to basic infrastructure that may be needed prior to energy efficiency upgrades or electrification. Support public agencies, local governments, and school districts with technical capacity building such as guidebooks or training, and bulk or cooperative purchasing. Report on progress in publicly accessible databases.

Authority to Implement: Key agencies for building electrification measures would include State, Local or Tribal, buildings authorities, energy offices, air quality agencies, or planning agencies, all of which have the authority to provide funding to incentivize these types of programs. Please see above for NDEP specific authority to acquire and implement federal funding.

B3.2 - Develop a residential deep energy retrofit program, prioritizing LIDACs, individually or through a coalition. The program should be holistic and support improvements to basic infrastructure that may be needed prior to energy efficiency upgrades or electrification, including emergency appliance loans to help low income households make the switch to heat pumps or heat pump water heaters. Coordinate state agencies, local governments, businesses, and community organizations in planning and executing the program. Leverage multiple funding streams such as the Nevada Housing Division's Weatherization Assistance Program (WAP) and the federal Home Electrification and Appliance Rebates (HEAR) program. Promote the program via public outreach and education campaigns, coordinate workforce development efforts, and monitor the program's progress and share data in publicly accessible databases.

Authority to Implement: Key agencies for building electrification measures would include State, Local or Tribal, buildings authorities, energy offices, air quality agencies, or planning agencies, all of which have the authority to provide funding to incentivize these types of programs. Please see above for NDEP specific authority to acquire and implement federal funding.

B3.3 - Develop a commercial deep energy retrofit program, prioritizing and supporting businesses located in LIDACs. The program should be holistic and support improvements to basic infrastructure that may be needed prior to energy efficiency upgrades or electrification. Coordinate state agencies, local governments, businesses, and community organizations in planning and executing the program. Promote the program via public outreach and education campaigns, coordinate workforce development efforts, and monitor the program's progress and share data in publicly accessible databases.

Authority to Implement: Key agencies for building electrification measures would include State, Local or Tribal, buildings authorities, energy offices, air quality agencies, or planning agencies, all of which have the authority to provide funding to incentivize these types of programs. Please see above for NDEP specific authority to acquire and implement federal funding.

B3.4 - Convert mobile home power from gas to electric. Work with local governments and mobile home park operators to promote electric equipment that can replace gas space and water heating equipment at the end of its useful life. Provide incentives and rebates for equipment replacement. Coordinate with workforce development training and energy efficiency upgrades.

Authority to Implement: Key agencies for building electrification measures would include State, Local or Tribal, buildings authorities, energy offices, air quality agencies, or planning agencies, all of which have the authority to provide funding to incentivize these types of programs. Please see above for NDEP specific authority to acquire and implement federal funding.

B3.5 - Incentivize high-efficiency, all-electric new buildings. Work with local governments and the construction industry to identify and support incentives for reducing energy use in new buildings. Consider different incentives for residential, commercial, and industrial buildings. Align incentives across jurisdictions whenever possible. Incentives could include density bonuses, expedited or streamlined permitting, tax abatements, or similar mechanisms. Coordinate with workforce development.

Authority to Implement: Key agencies for building electrification measures would include State, Local or Tribal, buildings authorities, energy offices, air quality agencies, or planning agencies, all of which have the authority to provide funding to incentivize these types of programs. Please see above for NDEP specific authority to acquire and implement federal funding.

B3.6 - Pair retrofits with onsite renewable energy (rooftop solar). Incorporate the installation of renewable energy at the time of energy efficiency upgrades to maximize the benefits and reduce the number of interventions per building. Provide rebates, tax incentives, or similar benefits to residents and businesses that incorporate renewable energy into retrofits. Coordinate with workforce development and public outreach and education campaigns.

Authority to Implement: Key agencies for building electrification measures would include State, Local or Tribal, buildings authorities, energy offices, air quality agencies, or planning agencies, all of which have the authority to provide funding to incentivize these types of programs. Please see above for NDEP specific authority to acquire and implement federal funding.

4. Transform Communities: *These measures enable LIDACs to maximize benefits from retrofit projects by empowering local organizations and coalitions. These measures include large-scale, site-specific transformative projects that serve as a model of how to improve energy efficiency and renewable energy for other communities across the state.*

B4.1 - Empower community retrofit organizations (e.g, non-profits, co-ops) to participate in the clean energy sector effectively and competitively, while building community capacity. Provide technical assistance in the form of training, webinars, and guidebooks, as well as funding to support operations or expansion of services. Coordinate local governments, community-based organizations, businesses, and workforce development efforts to support.

Authority to Implement: Key agencies for building electrification measures would include State, Local or Tribal, buildings authorities, energy offices, air quality agencies, or planning agencies, all of which have the authority to provide funding to incentivize these types of programs. Please see above for NDEP specific authority to acquire and implement federal funding.

B4.2 - Fund and support Tribes in advancing climate projects, setting priorities, and identifying the direct impact of projects on Tribal communities within and outside of Tribal lands. Support the expansion of solar projects on Tribal lands, capitalizing on existing and ongoing projects. Provide coordination and capacity building support as requested.

Authority to Implement: Key agencies for building electrification measures would include State, Local or Tribal, buildings authorities, energy offices, air quality agencies, or planning agencies, all of which have the authority to provide funding to incentivize these types of programs. Please see above for NDEP specific authority to acquire and implement federal funding.

B4.3 - Target one to three LIDACs for complete and holistic low carbon transformation projects. Identify LIDACs which have both the capacity and the desire to undertake community-scale building retrofits and renewable energy development. Coordinate local governments, community organizations, businesses, and residents to build on existing efforts by providing funding, training, and technical support. Ensure that basic infrastructure upgrades are included so energy efficiency and electrification benefits are maximized.

Authority to Implement: Key agencies for building electrification measures would include State, Local or Tribal, buildings authorities, energy offices, air quality agencies, or planning agencies, all of which have the authority to provide funding to incentivize these types of programs. Please see above for NDEP specific authority to acquire and implement federal funding.

B4.4 - Incentivize EV chargers in multifamily housing. Work with local governments and the construction industry to identify and support incentives for including EV chargers in new construction. Consider different incentives for residential, commercial, and industrial buildings. Align incentives across jurisdictions whenever possible. Incentives could include density bonuses, expedited or streamlined permitting, tax abatements, or similar mechanisms. Coordinate with workforce development.

Authority to Implement: Key agencies for building electrification measures would include State, Local or Tribal, buildings authorities, energy offices, air quality agencies, or planning agencies, all of which have the authority to provide funding to incentivize these types of programs. Please see above for NDEP specific authority to acquire and implement federal funding.

B4.5 - Incentivize rooftop solar installations in multifamily housing. Work with local governments and the construction industry to identify and support incentives for incentivizing rooftop solar in new construction. Consider different incentives for residential, commercial, and industrial buildings. Align incentives across jurisdictions whenever possible. Incentives could include density bonuses, expedited or streamlined permitting, tax abatements, or similar mechanisms. Coordinate with workforce development.

Authority to Implement: Key agencies for building electrification measures would include State, Local or Tribal, buildings authorities, energy offices, air quality agencies, or planning agencies, all of which have the authority to provide funding to incentivize these types of programs. Please see above for NDEP specific authority to acquire and implement federal funding.

3.3.3.6 GHG Emission Reductions

Quantifying this measure leverages a tailored spreadsheet tool, conceived specifically for the PCAP, to estimate emission reductions. This tool integrates comprehensive data sets, including a state greenhouse gas inventory, to calculate emissions reductions from 2025 to 2050. This methodological approach ensures accurate, detailed assessments of the measure's impact on reducing emissions, supporting Nevada's sustainability goals. Table 14 and Table 15 present the emissions reductions.

Table 14. Projected GHG emissions reductions for priority measures in the Buildings Focus Area.

Priority Measure	Yearly Emissions Reductions (MTCO ₂ e)		Cumulative Emissions Reductions (MTCO ₂ e)	
	by 2025	by 2030	2025–2030	2025–2050
1. Build Capacity	This measure facilitates emissions reductions.			
2. Expand Financing	This measure facilitates emissions reductions.			
3. Retrofit Buildings	62,788	602,495	1,778,636	16,443,883
4. Transform Communities	This measure facilitates emissions reductions.			
Total	62,788	602,495	1,778,636	16,443,883

Table 15. Projected co-pollutant reductions for priority measures in the Buildings Focus Area.

Priority Measure		Yearly Co-pollutant Reductions (metric tons)		Cumulative Co-pollutant Reductions (metric tons)	
		by 2025	by 2030	2025—2030	2025—2050
1. Build Capacity	This measure facilitates the co-pollutant reductions.				
2. Expand Financing	This measure facilitates the co-pollutant reductions.				
3. Retrofit Buildings	CO	19.6	163.1	492.4	4,573.8
	NOx	52.9	510.4	1,525.3	13,659.7
	SO2	5.7	109.6	307.6	2,512.7
	PM _{2.5}	1.3	22.8	64.4	530.1
	VOCs	2.8	24.7	74.8	681.1
4. Transform Communities	This measure facilitates the co-pollutant reductions.				
Total	CO	19.6	163.1	492.4	4,573.8
	NOx	52.9	510.4	1,525.3	13,659.7
	SO2	5.7	109.6	307.6	2,512.7
	PM _{2.5}	1.3	22.8	64.4	530.1
	VOCs	2.8	24.7	74.8	681.1

The following assumptions were used in calculating the above emissions reduction estimates. It should be noted that these assumptions were made to depict a potential pathway for Nevada to achieve its 2025 and 2030 emissions reduction goals. Implementing the buildings priority measures is a means of working towards this scenario and helping Nevada meeting its emissions reduction goals. The following assumptions were used in calculating the above emission reduction estimates:

- Residential buildings achieve the following goals by 2030: 10% of single family and multifamily buildings are retrofitted to 30% energy efficiency, 10% of existing mobile homes will be retrofitted and 50% of new mobile homes are energy efficient, 50% of new single family and multifamily buildings are well insulated, solar rooftops are added to about 60,000 homes (~5% of homes in the state).
- Non-residential buildings achieve the following goals by 2030: 50% of school and government buildings are retrofitted and have rooftop solar installed and 7% of commercial and industrial buildings are retrofitted.
- All the years leading up to 2030 will not see equal gains in energy efficiency and renewable energy projects. Rather, there will be an increase in adoption over time with the onset of educational programs and outreach and the increased visibility of benefits. Therefore, projects are assumed to scale up over time, resulting in the targets above.

- Installing heat pumps and upgrading other equipment was not calculated separately from building retrofits because such upgrades would only amplify the overall emissions reductions; however, the extent to which it would is unclear at this moment.
- At least 40% of single family and multifamily housing retrofits will take place in LIDAC census tracts.
- We have assumed that financing for residential energy retrofits will continue, but we have not assumed that enabling legislation for Residential PACE has passed in this scenario because further studies need to be undertaken in order to determine the feasibility of the program.
- Like the residential sector, the target above assumes a scaling up of projects in the non-residential sector over time.
- Of the 716 schools in Nevada, the priority for school retrofits will be those in LIDACs.
- Solar installations on schools or public buildings are 50 kW.
- The State has already passed Commercial PACE (C-PACE), as have several local jurisdictions in Nevada, including Las Vegas, Henderson, Reno, Fernley, Clark County, and Pershing County.¹¹⁷ This scenario assumes that at least a few more jurisdictions will pass C-PACE enabling legislation, catalyzing energy-efficiency projects for the commercial sector.
- The “Transform Communities” measure integrates components from various measures and focus areas. To prevent double counting and ensure accurate emissions accounting, reductions were not separately quantified for this specific measure.

¹¹⁷ C-PACE Alliance. “Map of C-PACE Programs.” Maps, April 1, 2022. <https://c-pacealliance.org/active-cpace-programs/>.

3.3.3.7 Transformative Impact and Benefits in LIDACs

Reducing emissions from buildings provides many direct benefits to all Nevadans. LIDACs will particularly benefit because they are socially and economically disadvantaged and currently overburdened by climate pollution.

Direct benefits include reduced energy bills from upgraded energy appliances and building envelopes. Updated HVAC systems and building envelopes will help residents to cope with wildfires and extreme heat and maintain more livable temperatures in their homes during power outages. Additionally, moving away from fossil fuels will also directly improve indoor and outdoor air quality. This will improve public health outcomes through less exposure to co-pollutants (SO₂, NO_x, VOCs, and NH₃). Rooftop solar will reduce energy bills and improve energy security. Finally, school upgrades will directly benefit children, an inherently vulnerable population.

Indirect benefits include increased demand for energy efficiency and renewable energy projects. This will spur the creation of training programs and jobs, specifically in construction, manufacturing, and the electrician trade. According to the American Council for an Energy Efficient Economy, initial investments in energy efficiency result in immediate job opportunities, while the savings from reduced energy costs could result in additional investment in other businesses, creating additional jobs.¹¹⁸ Approximately 33,000 people in Nevada already work in the energy sector, specifically in energy efficiency, battery energy storage, and solar; this industry is well positioned to scale-up operations.¹¹⁹ Relatedly, building capacity of nonprofits and community organizations in this sector could result in increased capacity of community organizations to respond to other community needs.

Reducing emissions from buildings will most directly benefit LIDACs that experience the highest levels of housing and energy burdens (costs) and have the largest number of homes without indoor plumbing and/or kitchens. Figure 28 shows LIDACs that are in the 90th percentile or above for these categories. This means that the census tract has a higher burden measurement than 90% of all other census tracts. LIDACs in Clark County, Washoe County, Carson City, Lyon County, Mineral County, Esmeralda County, and Nye County have one or more census tracts meeting these thresholds. LIDACs in East Las Vegas and north Reno are in the 90th percentile for two or more of these categories, indicating that these are places where residents would most benefit from improved, energy-efficient housing.

¹¹⁸ American Council for an Energy-Efficient Economy. "How Does Energy Efficiency Create Jobs? Fact Sheet," n.d. <https://www.aceee.org/files/pdf/fact-sheet/ee-job-creation.pdf>.

¹¹⁹ Nevada Clean Energy Fund. "The Nevada Energy Landscape." Nevada Clean Energy Fund. Accessed February 2, 2024. <https://nevadacef.org/learn>.

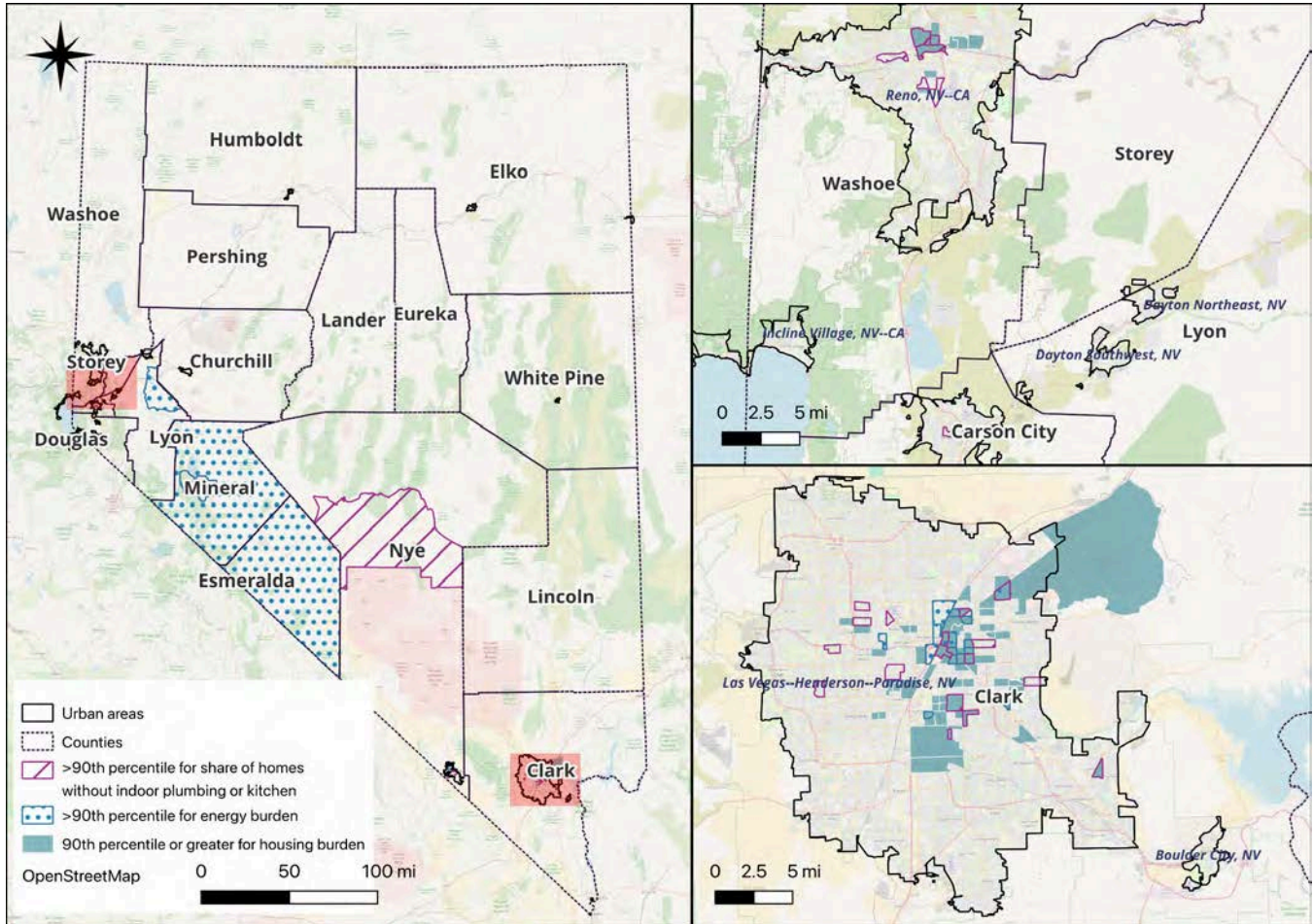


Figure 28. LIDAC census tracts that will most benefit from measures in Focus Area 2: Buildings. Source: Council on Environmental Quality, 2022.

3.3.3.8 Potential Programs or Initiatives

This section offers examples of how to implement various measures within the Buildings Focus Area (Table 16). Actual implementation may vary.

Table 16. Example programs within Focus Area 3: Buildings.

Description	Measures
Nevada Resilient Homes Program (Residential)	
<p>This is a statewide residential building efficiency program prioritizing low-income neighborhoods and/or disadvantaged communities. The program could expand</p>	<ul style="list-style-type: none"> • B1.2 - Work with local secondary and post-secondary schools and clean energy companies to train and develop a skilled workforce to respond to increasing demands in the retrofit and clean energy sector. • B2.2 - Explore the potential of R-PACE to support residents in financing pre-weatherization and retrofits.

pre-weatherization programs, provide incentives to promote energy retrofits in existing buildings, provide emergency appliance loans, reduce emissions in new construction, and incentivize full electrification in new buildings, as well as on-site renewable energy generation for existing buildings.

- B3.2 - Develop a residential deep energy retrofit program, prioritizing LIDACs individually or through a coalition.
- B3.5 - Incentivize high-efficiency, all-electric new buildings.
- B4.4 - Incentivize EV chargers in multifamily housing.

Transform an Entire Neighborhood or Community

Support the development of a holistic emissions-free and energy-affordable community by adding key services within walking/biking distance; developing transit infrastructure; completing housing retrofits; using solar generation; and implementing a district energy system. (Examples include: East Las Vegas, Tahoe Basin)

- B3.1 - Develop a public building deep energy retrofit program. This program could prioritize schools located in LIDACs.
- B3.2 - Develop a residential deep energy retrofit program, prioritizing LIDACs, individually or through a coalition.
- B3.6 - Pair retrofits with on-site renewable energy (rooftop solar).
- B4.1 - Empower community retrofit organizations (i.e., non-profits, co-ops) to participate in the clean energy sector effectively and competitively, while building community capacity.
- B4.3 - Target 1–3 LIDACs for complete and holistic low-carbon transformation projects.

Smart Energy Nevada Program (Commercial)

Launch a statewide commercial building efficiency program. Expand non-residential building retrofits program and net zero new construction programs, including shifting to airsource or geothermal heat pumps for heating and cooling, incentivizing urban infill, supporting the use of low-carbon materials in new constructions, and expanding energy-saving performance contracting.

- B1.4 - Create public databases.
- B2.3 - Explore the potential of alternative financing mechanisms to support lower-emission buildings
- B3.3 - Develop a commercial deep energy retrofit program, prioritizing and supporting businesses located in LIDACs.
- B3.5 - Incentivize high-efficiency, all-electric new buildings.
- B3.6 - Pair retrofits with on-site renewable energy (rooftop solar).



3.3.4 Focus Area 3: Energy System

It is Nevada’s energy policy to focus on developing and maintaining a robust, diverse energy supply portfolio, a balanced approach to electric and natural gas energy supply, and transportation fuels that emphasize affordability and reliability for consumers.¹²⁰ Measures in this focus area aim to reduce GHG emissions related to producing energy and electricity. Measures support skill building, knowledge sharing, and encouraging the use of renewable energy and energy storage. This includes incentives for local governments, Tribes, utilities, and industry to develop solar, wind, and geothermal resources; produce green hydrogen and biofuels; and add behind-the-meter resources such as batteries. Additional measures incentivize improving the performance of the electricity grid through utility planning, upgrading existing infrastructure, and building new transmission lines. Measures to reduce emissions from existing fossil fuel power plants include incentives for switching to green hydrogen and/or batteries.

This shift will reduce air pollution, decrease energy costs, create high-quality jobs, and stimulate sustainable economic growth, creating environmental and social benefits for all Nevadans.

3.3.4.1 Emissions Context

In Nevada, electricity generation emissions peaked in 2005 and were the largest source of emissions until 2015. Since 2015, emissions from this sector have continued to decrease due to an overall shift from burning coal to using more natural gas and renewables. In 2021, emissions from electricity generation contributed to 30% of the state's GHG emissions, totalling 13.7 MMtCO₂e. Natural gas accounted for 79.2% of the emissions, coal accounted for 20.7%, and petroleum accounted for 0.1%.¹²¹ Table 17 presents GHG historical emissions in Nevada for the sector.

*Table 17. Electricity generation sector GHG emissions in Nevada by fuel type, select years (MMtCO₂e).*¹²²

Fuel Type	1990	1995	2000	2005	2010	2015	2019	2020	2021
Natural Gas	1990	3.4	6.6	8.13	9.6	11.6	11.6	10.8	11.0
Coal	1.3	14.9	18.1	18.06	7.1	2.8	2.3	2.0	2.6

¹²⁰ Nevada Executive Department. “Executive Order 2023-007 - Order Establishing the State of Nevada Energy Policies Objectives,” 2023. https://gov.nv.gov/Newsroom/ExecOrders/2023/Executive_Order_2023-007/.

¹²¹ Nevada Division of Environmental Protection. “Nevada Statewide Greenhouse Gas Emissions Inventory and Projections, 1990-2043,” 2023. <https://ndep.nv.gov/air/air-pollutants/greenhouse-gas-emissions>

¹²² Nevada Division of Environmental Protection. “Nevada Statewide Greenhouse Gas Emissions Inventory and Projections, 1990-2043,” 2023. <https://ndep.nv.gov/air/air-pollutants/greenhouse-gas-emissions>

Petroleum	15.3	0.0	0.1	0.02	0.0	0.0	0.0	0.0	0.0
Total Emissions	0.3	18.26	24.77	26.21	16.75	14.42	13.89	12.86	13.65

It is estimated that emissions will be 12.2 MMtCO₂e by 2025 and 10.2 MMtCO₂e by 2030, accounting for 28% and 24% of the GHG emissions in Nevada, respectively. This estimation considers all fossil-fuel-fired electricity generated in Nevada.¹²³ With the increasing adoption of renewable energy sources and the State's commitment to reducing emissions, a decline in GHG emissions from this sector is projected. The shift towards renewable energy, particularly under the enhanced Renewable Portfolio Standard, is expected to play a key role in achieving the State's emissions reduction goals.

3.3.4.2 Status of Energy Generation in Nevada

Nevada primarily relies on imported fossil fuel energy, and the state's energy consumption outstrips its production by sixfold, primarily due to limited local production of natural gas and crude oil and the absence of coal production. In 2022, natural gas powered 56% of the state's electricity generation, the lowest amount in 17 years. Solar energy, a significant contributor, provided 23% of the total electricity, ranking Nevada sixth nationally in solar generation. Hoover Dam contributed 4% to Nevada's in-state generation. Notably, Nevada produced 24% of the U.S.'s geothermal electricity in 2022, second only to California.¹²⁴

¹²³ Not all electricity generated in Nevada is consumed in Nevada, and not all electricity that is consumed in Nevada is generated in Nevada. In 2021, it is estimated that about 1.976 MMtCO₂e in emissions were generated from electricity transmitted out of state.

¹²⁴ US Energy Information Administration. "Nevada- State Profile and Energy Estimates ," 2023. <https://www.eia.gov/state/?sid=NV#tabs-4>

Nevada has very favorable conditions for the production of renewable energy, with a technical potential for solar, wind, and geothermal energy that could cover the state energy demand several times over (see Section 2.3.2).

Energy costs in Nevada have risen notably over the years. From September 2001 to September 2023, there was a 200% increase in retail electricity prices. In the same period, the cost of natural gas delivered to homes surged by 344%, experiencing a particularly sharp rise in 2023.¹²⁵ This contrasts with the state's potential to produce local renewable energy at a relatively low cost and even produce green hydrogen or sustainable fuels using renewable sources that may be boosted by federal incentives included in the *Inflation Reduction Act* and the Bipartisan Infrastructure Law.

In 2019, the Nevada Legislature passed a law to expand solar energy to low-income customers without requiring them to install their own solar systems. In response, NV Energy recently launched the Expanded Solar Access Program to support community-based solar projects. At full capacity, the Expanded Solar Access Program has the potential to serve more than 8,700 low-income households and more than 15,000 households that would otherwise be unable to install solar panels due to rental agreements or space constraints.¹²⁶

The Nature Conservancy (TNC) leads a "Mining the Sun" program that offers an innovative approach to repurposing former mine lands and brownfields into clean-energy hubs, addressing the clean energy siting dilemma. By leveraging degraded lands, this strategy aims to minimize land-use conflicts, capitalize on federal incentives, and use existing infrastructure to facilitate renewable energy projects. It promises to revitalize these lands and benefit communities, landowners, and the environment by significantly contributing to Nevada's carbon-reduction goals. TNC estimates that the solar energy generation potential of using minefields and brownfield sites in Nevada could reach 20,219 megawatts. This project stands as a testament to the potential of transforming under used lands into valuable resources for sustainable development.¹²⁷

3.3.4.3 Federal Funding

Several existing sources of federal funding support measures to decarbonize the energy sector (see Appendix B for a complete list). For example, the Advanced Energy Manufacturing and Recycling Grant Program aims to help small- and medium-sized manufacturers build new facilities or retrofit existing ones to produce or recycle advanced energy products, specifically in communities where coal mines or coal power plants have closed.¹²⁸ The Renewable Electricity Production Tax Credit essentially provides a federal tax credit for electricity generated by qualified renewable energy resources, including electricity generated from landfill gas, open-loop biomass, municipal solid waste resources, and small irrigation power facilities.¹²⁹ Similarly, the Internal Revenue Service's Energy-Efficient Commercial

¹²⁵ US Energy Information Administration. "Fuel Type 2021-2023, Nevada - Electricity Data Browser," 2023.

<https://www.eia.gov/electricity/data/browser/#/topic/0?agg=2>.

¹²⁶ NV Energy. "Expanded Solar Access Program (ESAP)." Accessed February 2, 2024.

<https://www.nvenergy.com/cleanenergy/solar/expanded-solar-access-program>

¹²⁷ The Nature Conservancy. "Mining the Sun: Benefits of Solar Energy on Former Mine Sites", August 2023.

<https://www.nature.org/en-us/what-we-do/our-priorities/tackle-climate-change/climate-change-stories/mining-the-sun-solar-energy-former-mine-sites/>.

¹²⁸ US Energy Office of Manufacturing and Energy Supply Chains. "Advanced Energy Manufacturing and Recycling Grants." Energy.gov. Accessed February 1, 2024. <https://www.energy.gov/mesc/advanced-energy-manufacturing-and-recycling-grants>.

¹²⁹ Environmental Protection Agency. "Renewable Electricity Production Tax Credit Information." Collections and Lists, August 28, 2020.

<https://www.epa.gov/lmop/renewable-electricity-production-tax-credit-information>.

Building Deduction provides a tax deduction for building owners of energy-efficient commercial building (new and retrofit) properties.¹³⁰ The US DOE also has a package of funding opportunities to facilitate siting, constructing/modifying, and financing electric transmission facilities through the Transmission Facilitation Program, the Transmission Facility Financing Program, and the Transmission Siting and Economic Development Grants Program. Other funding sources, such as the Environmental and Climate Justice Block Grants, the Neighborhood Access and Equity Grant Program, and the Solar for All Grant Program, benefit underserved communities while supporting clean-energy initiatives.

3.3.4.4 Review of Authority

The priority measures will be implemented as incentive-based programs, which would not require additional authority. NDEP has existing legal authority to apply for and receive grant funding pursuant to NRS 445B.230(2), and the ability to cooperate and contract with other governmental entities is also addressed under NRS 445B.230(3) (authority) and NRS 277.180 (provides authority for contracts between one or more public agencies). Many entities have the authority to and have expressed an interest in applying for funding to implement a portion of this work within specific state departments and divisions, cities, counties, Tribes, or corporate settings. NDEP intends to seek funding for measures and will subgrant to other agencies where applicable.

3.3.4.5 Community Engagement Feedback

Decarbonizing the energy system received strong support from interested and affected parties. The feedback, gathered through emails, workshops, and a focus group, emphasized the need to address both renewable energy and energy storage initiatives. Specifically, participants mentioned the need to modernize the state's energy grid to handle additional technologies, such as microgrids. Others mentioned incorporating advanced geothermal technologies, recognizing their potential for reliable and clean energy production. A few participants mentioned the possibility of using nuclear power to replace natural gas power plants in the long term. Additionally, there was a recommendation to include biofuel production from biomass in the decarbonization of the energy system measure, recognizing its potential for sustainable energy and waste reduction. Concerns were raised about the public perception and licensing processes for rooftop solar installers, suggesting a need for standardization and improved public awareness. Participants also mentioned the different energy profiles between northern and southern Nevada, highlighting the need to tailor projects and policies appropriately. With relevance to LIDACs, several participants highlighted the need for training and development in renewable energy sectors to create job opportunities and enhance skills. Additionally, much of the feedback given highlighted the inadequacies in the existing electric infrastructure in LIDACs, emphasizing the need for upgrades and equitable access to renewable energy.

Many entities have the authority to and have expressed an interest in applying for funding to implement a portion of this work within specific state departments and divisions, cities, counties, Tribes, or corporate settings.

¹³⁰ Internal Revenue Service. "Energy Efficient Commercial Buildings Deduction." Accessed February 1, 2024. <https://www.irs.gov/credits-deductions/energy-efficient-commercial-buildings-deduction>.

Table 18. Energy system: List of priority measures.

1. **Build Capacity:** *To enhance capacity for decarbonizing the energy system, these measures will focus on training public agency staff in renewable energy, energy storage, grid enhancement, green hydrogen, and biofuel technologies; creating a comprehensive public database of renewable energy installations; and developing specialized training programs to bolster workforce skills in maintenance and repair of these technologies. Additionally, they include engaging in public outreach and education to increase awareness and support for renewable energy.*

E1.1 - Build technical capacity at public agencies to plan for, procure, and implement renewable energy, energy storage, grid enhancement, green hydrogen, and biofuel projects. This will include training staff, coordinating with other levels of government, supporting workforce development, and developing communication and outreach campaigns.

Authority to Implement: Key agencies for energy system measures would include State, Local or Tribal; energy offices; utilities commissions; air quality agencies; and planning agencies, all of which have the authority to provide funding to incentivize these types of programs. Please see above for NDEP-specific authority to acquire and implement federal funding.

E1.2 - Create publicly informed and accessible databases of renewable energy, energy storage, grid enhancement, green hydrogen, and biofuel installations to enhance transparency and coordination among public agencies, the public, and interested and affected parties. Publicly available data access can ensure all actors are aware of the status of clean energy actions in the state and are operating with the same shared understanding.

Authority to Implement: Key agencies for energy system measures would include State, Local or Tribal; energy offices; utilities commissions; air quality agencies; and planning agencies, all of which have the authority to provide funding to incentivize these types of programs. Please see above for NDEP-specific authority to acquire and implement federal funding.

E1.3 - Support planning and implementation of new renewable energy, energy storage, grid enhancement, green hydrogen, and biofuel systems. Enhance workforce training, particularly in the maintenance and repair of renewable energy systems including solar panels and batteries. Workforce development activities could include enhancing or creating training programs for trades such as construction and electricians and offering job placement programs and apprenticeships.

Authority to Implement: Key agencies for energy system measures would include State, Local or Tribal; energy offices; utilities commissions; air quality agencies; and planning agencies, all of which have the authority to provide funding to incentivize these types of programs. Please see above for NDEP-specific authority to acquire and implement federal funding.

E1.4 - Use public outreach and education to encourage communities and businesses to deploy renewable energy, energy storage, grid enhancement, green hydrogen, and biofuel projects. Outreach can be, but is not limited to, online and in-person events, promotions, marketing, and geographic-specific partnerships with community-based organizations targeting diverse and historically underserved populations that could benefit from these projects.

Authority to Implement: Key agencies for energy system measures would include State, Local or Tribal; energy offices; utilities commissions; air quality agencies; and planning agencies, all of which have the authority to provide funding to incentivize these types of programs. Please see above for NDEP-specific authority to acquire and implement federal funding.

2. **Accelerate Renewable Energy Generation:** *These measures include funding for distributed generation, community solar projects, and cooperatives; offering incentives for solar and wind projects that yield enhanced community benefits; promoting energy storage solutions; and expanding the Transmission Facilitation Program. In collaboration with utilities, these measures will develop and implement grid modernization plans, prioritizing LIDACs. They will also promote the adoption of smart-grid and behind-the-meter technologies, support the production of green fuels (e.g., biofuels from biomass or synthetic fuels from green hydrogen), and incentivize the development of advanced geothermal energy solutions.*

E2.1 - Fund distributed generation in residential, public, and commercial buildings; community renewable projects; and renewable cooperatives: Support the development of community energy plans, especially in rural and disadvantaged areas. Provide state, local, and/or Tribal-backed loans and grants for community-scale renewable projects (monthly fee to subscribe to the service without living close by or needing the capacity to install solar panels on their homes or businesses). Support the creation of “Solar Gardens” and/or solar cooperatives to help generate electricity for rural and smaller communities.

Authority to Implement: Key agencies for energy system measures would include State, Local or Tribal; energy offices; utilities commissions; air quality agencies; and planning agencies, all of which have the authority to provide funding to incentivize these types of programs. Please see above for NDEP-specific authority to acquire and implement federal funding.

E2.2 -Incentivize Renewable energy and energy storage projects with enhanced community benefits such as lower-cost energy, job creation, economic development, public parks, public buildings, job training programs, and/or measures to protect the environment. This could be achieved by developing projects that can guarantee economic benefits, ensure accountability, and/or address environmental justice concerns.

Authority to Implement: Key agencies for energy system measures would include State, Local or Tribal; energy offices; utilities commissions; air quality agencies; and planning agencies, all of which have the authority to provide funding to incentivize these types of programs. Please see above for NDEP-specific authority to acquire and implement federal funding.

E2.3 - Expand Transmission Facilitation Program, adding grants and revolving funds for developing new transmission lines, upgrading existing transmission infrastructure, and connecting microgrids.

Authority to Implement: Key agencies for energy system measures would include State, Local or Tribal; energy offices; utilities commissions; air quality agencies; and planning agencies, all of which have the authority to provide funding to incentivize these types of programs. Please see above for NDEP-specific authority to acquire and implement federal funding.

E2.4 - Work with utilities to develop and implement comprehensive grid modernization plans, with a focus on LIDACs. Include resources to assess how much the existing grid can be enhanced using the best available technologies and design new transmission lines.

Authority to Implement: Key agencies for energy system measures would include State, Local or Tribal; energy offices; utilities commissions; air quality agencies; and planning agencies, all of which have the authority to provide funding to incentivize these types of programs. Please see above for NDEP-specific authority to acquire and implement federal funding.

E2.5 - Incentivize behind-the-meter and smart-grid technologies. Use grants, revolving funds, and community awareness activities to deploy these technologies, focusing on LIDACs that are electrifying their energy consumption with smart technologies, allowing them to become prosumers.

Authority to Implement: Key agencies for energy system measures would include State, Local or Tribal; energy offices; utilities commissions; air quality agencies; and planning agencies, all of which have the authority to provide funding to incentivize these types of programs. Please see above for NDEP-specific authority to acquire and implement federal funding.

E2.6 - Incentivize and support green fuel production projects, such as green hydrogen and biofuels (including biomass to biofuel). This includes offering grants and revolving funds, investing in research and development to improve green fuel technologies and their efficiency, developing collaboration networks with industries to connect production with demand for green fuels, and working with LIDAC and other communities to develop projects with enhanced community benefits, such as lower-cost energy, job creation, economic development, public parks, job training programs, and/or measures to protect the environment.

Authority to Implement: Key agencies for energy system measures would include State, Local or Tribal; energy offices; utilities commissions; air quality agencies; and planning agencies, all of which have the authority to provide funding to incentivize these types of programs. Please see above for NDEP-specific authority to acquire and implement federal funding.

E2.7 - Incentivize enhanced geothermal. This includes offering grants and revolving funds, investing in research and development to improve enhanced geothermal technologies and their flexibility, and working with LIDAC and other communities to develop projects with enhanced community benefits, such as lower-cost energy, job creation, economic development, public parks, job training programs, and/or measures to protect the environment.

Authority to Implement: Key agencies for energy system measures would include State, Local or Tribal; energy offices; utilities commissions; air quality agencies; and planning agencies, all of which have the authority to provide funding to incentivize these types of programs. Please see above for NDEP-specific authority to acquire and implement federal funding.

3. **Clean the Grid:** *These measures focus on repurposing existing fossil-fuel-based power stations and incentivizing retrofitting these plants using green-hydrogen-based fuels. Additionally, these measures encourage the adoption of energy storage technologies such as Carnot batteries or gravity batteries. This dual approach decreases reliance on fossil fuels and enhances the efficiency and sustainability of the energy grid by optimizing the use of renewable energy sources.*

E3.1 - Incentivize retrofitting fossil-fuel-powered thermal power plants to use green-hydrogen-based fuels. This includes offering grants and revolving funds and investing in the research and development required to deploy technologies that could retrofit existing fossil-fuel power plants to run with green-hydrogen-based fuels, enabling companies to keep existing jobs and reduce negative impacts to communities around the power plants.

Authority to Implement: Key agencies for energy system measures would include State, Local or Tribal; energy offices; utilities commissions; air quality agencies; and planning agencies, all of which have the authority to provide funding to incentivize these types of programs. Please see above for NDEP-specific authority to acquire and implement federal funding.

E3.2 - Incentivize adopting Carnot or gravity batteries for storing surplus green electricity. This includes offering grants and revolving funds and investing in the research and development required to deploy these technologies such as those that could retrofit existing fossil-fuel power plants to become Carnot batteries.

Authority to Implement: Key agencies for energy system measures would include State, Local or Tribal; energy offices; utilities commissions; air quality agencies; and planning agencies, all of which have the authority to provide funding to incentivize these types of programs. Please see above for NDEP-specific authority to acquire and implement federal funding.

4. Clean Energy Hubs Program: *These measures center on repurposing former mine lands and brownfields into clean energy hubs, addressing the clean energy siting dilemma. By leveraging degraded lands, this strategy aims to minimize land-use conflicts and use existing infrastructure to facilitate renewable energy projects.*

E4.1 - Identify former mine lands and brownfields and characterize their potential to produce renewable energy, existing transmission capacity available nearby each site and communities potentially affected.

Authority to Implement: Key agencies for energy system measures would include State, Local or Tribal; land-use agencies; energy offices; utilities commissions; environmental agencies; and planning agencies, all of which have the authority to provide funding to incentivize these types of programs. Please see above for NDEP-specific authority to acquire and implement federal funding.

E4.2 - Design suitable business models for each potential clean energy hub. For each potential clean energy hub, engage with interested and affected parties to explore and co-design a suitable business model that enhances community benefits, such as lower cost energy, job creation, economic development, public parks, job training programs, and/or measures to protect the environment.

Authority to Implement: Key agencies for energy system measures would include State, Local or Tribal; energy offices; utilities commissions; air quality agencies; and planning agencies, all of which have the authority to provide funding to incentivize these types of programs. Please see above for NDEP-specific authority to acquire and implement federal funding.

E4.3 - Incentivize implementing clean energy hubs in former mine lands and brownfields. This includes offering grants and revolving funds to deploy renewable energy and address environmental justice concerns around the site. This could be achieved by developing project agreements that guarantee economic benefits, ensure accountability, and address environmental justice concerns.

Authority to Implement: Key agencies for energy system measures would include State, Local or Tribal; energy offices; utilities commissions; air quality agencies; and planning agencies, all of which have the authority to provide funding to incentivize these types of programs. Please see above for NDEP-specific authority to acquire and implement federal funding.

3.3.4.6 GHG Emission Reductions

Quantifying these measures leverages a tailored spreadsheet tool, conceived specifically for the PCAP, to estimate emission reductions. This tool integrates comprehensive data sets, including a state greenhouse gas inventory, to calculate emissions reductions from 2025 to 2050. This methodological approach ensures accurate, detailed assessments of the measure's impact on reducing emissions, supporting Nevada's sustainability goals. Table 19 and Table 20 present the emission reductions.

Table 19. Projected GHG emission reductions for Energy System priority measures.

Priority Measure	Yearly Emissions Reductions (MTCO _{2e})		Cumulative Emissions Reductions (MTCO _{2e})	
	by 2025	by 2030	2025–2030	2025–2050
1. Build Capacity	This measure facilitates the emissions reductions.			
2. Accelerate Renewable Energy Generation	1,389,966	5,999,602	19,874,591	139,850,699
3. Clean the Grid	This measure was quantified in measure 2 as a change in grid generation.			
4. Clean Energy Hubs Program	This measure facilitates the emissions reductions.			
Total	1,389,966	5,999,602	19,874,591	139,850,699

Table 20. Projected co-pollutant reductions for priority measures in Energy System Focus Area.

Priority Measure		Yearly Co-pollutant Reductions (metric tons)		Cumulative Co-pollutant Reductions (metric tons)	
		by 2025	by 2030	2025–2030	2025–2050
1. Build Capacity	This measure facilitates the co-pollutant reductions.				
2. Accelerate Renewable Energy Generation	NOx	449.1	4,615.6	14,210.4	103,665.0
	SO ₂	246.9	2,537.9	7,813.6	57,000.1
	PM _{2.5}	48.8	502.0	1,545.5	11,274.7
	VOCs	14.9	153.4	472.2	3,445.1
3. Clean the Grid	This measure was quantified in measure 2 as a change in grid generation.				
4. Clean Energy Hubs Program	This measure facilitates the co-pollutant reductions.				
Total	NOx	449.1	4,615.6	14,210.4	103,665.0
	SO ₂	246.9	2,537.9	7,813.6	57,000.1
	PM _{2.5}	48.8	502.0	1,545.5	11,274.7
	VOCs	14.9	153.4	472.2	3,445.1

The following assumptions were used in calculating the above emission reduction estimates. It should be noted that these assumptions were made to depict a potential pathway for Nevada to achieve its 2025 and 2030 emission reduction goals. Implementing the energy system priority measures is a means of working towards this scenario and helping Nevada meet its emission reduction goals. The following assumptions were used in calculating the above emission reduction estimates:

- By 2030, the measure will achieve an additional 800 MW of renewable energy generation with enhanced community benefits and 140 MW in Nevada Tribal Renewable Energy projects.
- The implementation rate of renewable and energy storage projects starts in 2025 with small deployments, considering the time required to build capacity and construct the projects. Therefore, projects are assumed to scale over time, achieving the targets by 2030. About 90% of the installed energy capacity will be solar and approximately 10% will be wind with enhanced community benefits.
- To prioritize low-income housing residents and smaller rural communities, positively credit these communities more often for using renewable energy. At least 50% of Community Renewable Empowerment will benefit LIDAC census tracts. There is also a possibility of being tied to Lower Income Solar Energy Programs, as per SB 145, which will enable the program to grow more quickly.
- The average size of Community Renewable Empowerment projects will be 10 MW.
- Nevada Tribal Renewable energy projects will have an average size of 20 MW, and at least seven will start operations by 2030.

- By deploying renewable energy sources, developing energy storage projects, upgrading the grid infrastructure, and implementing grid modernization initiatives, the grid is expected to achieve a 59% reduction in GHG emissions by 2030 compared to the GHG projections from the state greenhouse gas inventory.¹³¹ Financial incentives and technical support from federal and state agencies will be critical in facilitating these advancements. Other important solutions that were not quantified but that could boost the benefits of this measure further include incentivizing retrofitting of fossil-fuel-powered thermal power plants or adopting energy storage systems for storing surplus green electricity.

3.3.4.7 Transformative Impact and Co-benefits in LIDACs

Decarbonizing the energy system focuses on enhancing renewable energy production to reduce energy costs, spur economic development, and create high-quality jobs, particularly benefiting LIDACs through more affordable energy bills and improved air quality. By reducing fossil fuel emissions, Nevada aims to establish a more resilient and independent energy system, significantly lowering its carbon footprint and promoting sustainable practices, which will reduce environmental justice issues in the state. This initiative is poised to bring about substantial improvements in public health outcomes by reducing exposure to harmful pollutants.

In terms of indirect benefits, an increased deployment of renewable energy, energy storage, grid enhancement, green hydrogen, and biofuel projects will induce the creation of training programs and jobs, particularly in the electrician, and construction trades and the manufacturing industry. The introduction of renewable energy projects may result in job losses, especially jobs related to fossil-fuel power plants, but this impact can be mitigated if that infrastructure is retrofitted.

The deployment of renewable energy, energy storage, grid enhancement, green hydrogen, and biofuel projects will most directly benefit LIDACs that are located in census tracts that rank greater than or equal to the 90th percentile for energy burden and that are low income, totaling 21 census tracts and three Tribal areas (Las Vegas, Timbisha Shoshone, and Walker River) across five counties with 58,724 residents. LIDACs, especially those in census tracts that rank greater than or equal to the 90th percentile for poverty and unemployment, will benefit from reductions in energy burden as well as from new employment opportunities, as will LIDACs that rank greater than or equal to the 90th percentile for PM_{2.5} exposure levels, as emissions from electricity generation decrease over time. Figure 29 illustrates that census tracts in East Las Vegas, north Reno, and in the Lyon, Mineral, Esmeralda, Nye, and Clark counties are at or above the 90th percentile for multiple relevant indicators.

¹³¹ Nevada Division of Environmental Protection. "Nevada Statewide Greenhouse Gas Emissions Inventory and Projections, 1990-2043," 2023. <https://ndep.nv.gov/air/air-pollutants/greenhouse-gas-emissions>

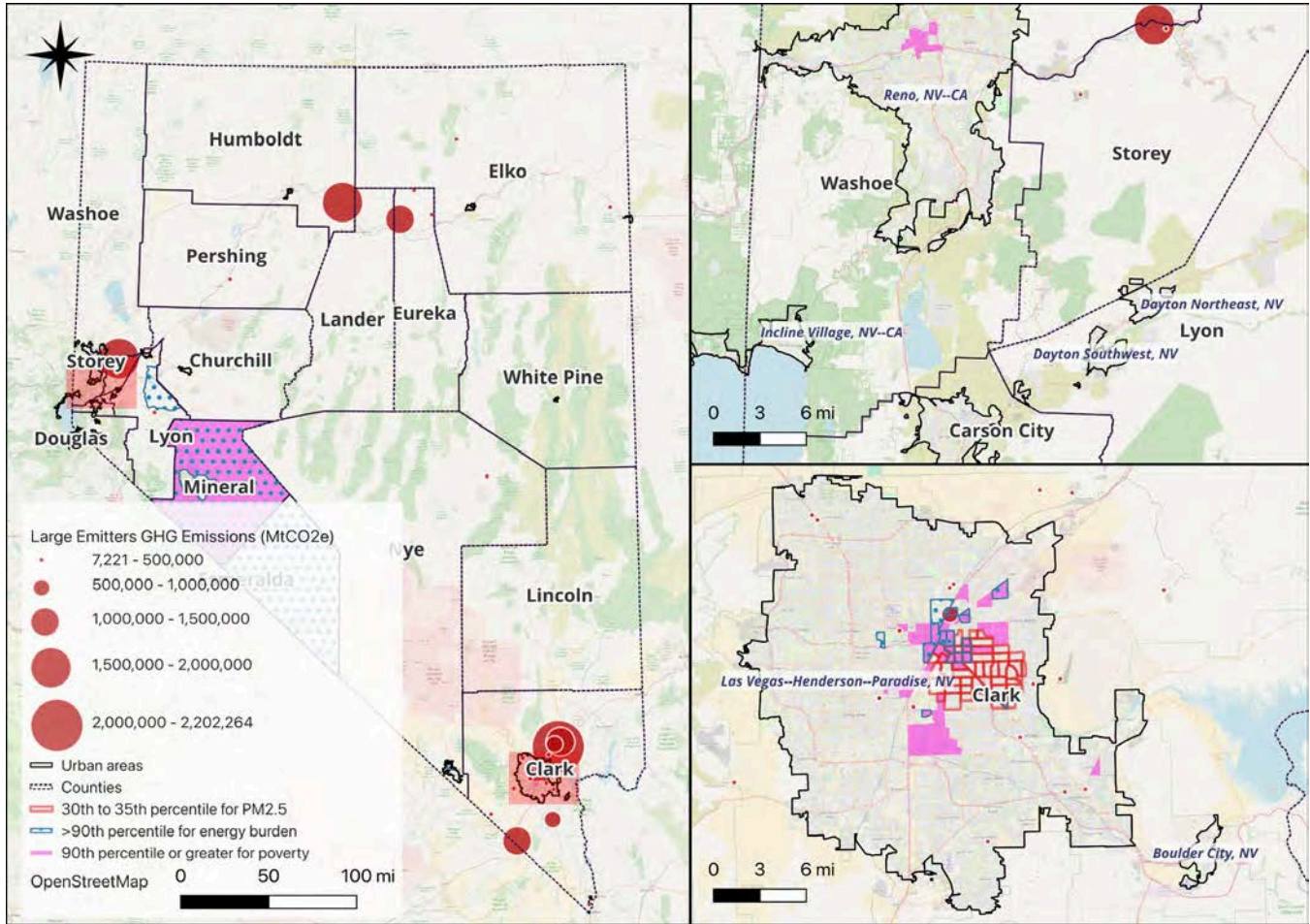


Figure 29. LIDAC census tracts that will most benefit from measures within the Energy System Focus Area.

Source: Council on Environmental Quality, 2022.

3.3.4.8 Example Programs or Initiatives

This section offers examples of how various measures within the Energy System Focus Area can be packaged together to develop comprehensive and transformative energy system programs or initiatives across the state (Table 21).

Table 21. Example programs within Focus Area 3: Energy System.

Description	Measures
Solar Gardens/Solar Cooperative Program	
<p>Support the development of community energy plans by providing state-backed loans and grants for community-scale renewable and energy storage projects. Support the creation of “Solar Gardens” and/or solar cooperatives to help generate electricity for rural and smaller communities.</p>	<ul style="list-style-type: none"> ● E1.1 - Build technical capacity at public agencies. ● E1.2 - Create public databases of renewable energy installations. ● E1.3 - Support planning and implementation of new renewable energy, energy storage, grid enhancement, green hydrogen, and biofuel systems. Enhance workforce training, particularly in the maintenance and repair of renewable energy systems including solar panels and batteries. ● E1.4 - Provide public outreach and education. ● E2.1 - Fund distributed generation in residential, public, and commercial building; community renewable projects; and renewable cooperatives. ● E2.2 - Incentivize renewable energy and energy storage projects with enhanced community benefits. ● E2.5 - Incentivize behind-the-meter and smart-grid technologies.
Community-Centered Renewable Empowerment Plan	
<p>Accelerate community-centered transition to renewable energy by developing incentives and measures to streamline permitting for community renewable energy projects; developing training programs for local officials on renewable project approval processes; and incentivizing projects with the highest level of community benefits.</p>	<ul style="list-style-type: none"> ● E1.1 - Build technical capacity at public agencies. ● E1.2 - Create public databases of renewable energy installations. ● E1.3 - Support planning and implementation of new renewable energy, energy storage, grid enhancement, green hydrogen, and biofuel systems. Enhance workforce training, particularly in the maintenance and repair of renewable energy systems including solar panels and batteries. ● E1.4 - Provide public outreach and education. ● E2.2 - Incentivize renewable energy and energy storage projects with enhanced community benefits. ● E2.3 - Expand Transmission Facilitation Program ● E 2.4 - Work with utilities to develop and implement comprehensive grid modernization plans, with a focus on LIDACs. Including resources to assess how much the existing grid can be enhanced using the best available technologies and design new transmission lines. ● E2.7 - Incentivize enhanced geothermal

Description

Measures

Modernize Nevada’s Transmission Network Program

Provide financial and technical support to modernize Nevada's grid for future energy demands, including upgrading grid infrastructure and development of high-capacity transmission lines for renewable integration. Capitalize on the Transmission Facilitation Program (TFP) (\$2.5 billion revolving fund) for development of new transmission lines; require that utilities develop comprehensive grid modernization plans; and develop programs to support smart-grid and/or behind-the-meter technologies.

- E1.1 - Build technical capacity at public agencies
- E1.2 - Create public databases of renewable energy installations
- E1.3 - Support planning and implementation of new renewable energy, energy storage, grid enhancement, green hydrogen, and biofuel systems. Enhance workforce training, particularly in the maintenance and repair of renewable energy systems including solar panels and batteries.
- E1.4 - Provide public outreach and education.
- E2.2 - Incentivize renewable energy and energy storage projects with enhanced community benefits.
- E2.3 - Expand Transmission Facilitation Program.
- E2.4 - Work with utilities to develop and implement comprehensive grid modernization plans, focusing on LIDACs. Include resources to assess how much the existing grid can be enhanced using the best available technologies and design new transmission lines.
- E2.5 - Incentivize behind-the-meter and smart-grid technologies.

Retrofitting Thermal Power Plants

Transforming existing fossil-fuel-based thermal power plants offers two sustainable options: (1) retrofitting them to run on green hydrogen, significantly reducing emissions and (2) modifying them into Carnot batteries for efficient energy storage and discharge, using surplus green electricity. This dual approach promotes eco-friendly operations and enhances grid stability.

- E1.1 - Build technical capacity at public agencies.
- E1.2 - Create public databases of renewable energy installations.
- E1.3 - Support planning and implementation of new renewable energy, energy storage, grid enhancement, green hydrogen, and biofuel systems. Enhance workforce training, particularly in the maintenance and repair of renewable energy systems including solar panels and batteries.
- E1.4 - Provide public outreach and education.
- E2.6 - Incentivize and support green fuel production projects such as green hydrogen and biofuels (including biomass to biofuel).
- E3.1 - Incentivize fossil-fuel-powered thermal power plants to retrofit to use green-hydrogen-based fuels
- E3.2 - Incentivize adopting Carnot or gravity batteries for storing surplus green electricity.

Description	Measures
Clean Energy Hubs Program	
<p>Repurpose former mine lands and brownfields into clean energy hubs, addressing the clean energy siting dilemma. By leveraging degraded lands, this strategy aims to minimize land-use conflicts and use existing infrastructure to facilitate renewable energy projects.</p>	<ul style="list-style-type: none"> ● E1.1 - Build technical capacity at public agencies. ● E1.2 - Create public databases of renewable energy installations. ● E1.3 - Support planning and implementation of new renewable energy, energy storage, grid enhancement, green hydrogen, and biofuel systems. Enhance workforce training, particularly in the maintenance and repair of renewable energy systems including solar panels and batteries. ● E1.4 - Provide public outreach and education ● E2.2 - Incentivize renewable energy and energy storage projects with enhanced community benefits. ● E2.3 - Expand Transmission Facilitation Program. ● E2.4 - Work with utilities to develop and implement comprehensive grid modernization plans, focusing on LIDACs. Include resources to assess how much the existing grid can be enhanced using the best available technologies and design new transmission lines. ● E2.5 - Incentivize behind-the-meter and smart-grid technologies. ● E2.6 - Incentivize and support green fuel production projects such as green hydrogen and biofuels. ● E2.7 - Incentivize enhanced geothermal. ● E4.1 - Identify former mine lands and brownfields and characterize their potential to produce renewable energy, existing transmission capacity nearby and potential affected communities. ● E4.2 - Design suitable business models for each potential clean energy hub. For each potential clean energy hub, engage with interested and affected parties to explore and co-design a suitable business model that enhances community benefits, such as lower-cost energy, job creation, economic development, public parks, job training programs and/or measures to protect the environment. ● E4.3 - Incentivize implementing clean energy hubs in former mine lands and brownfields.



3.3.5 Focus Area 4: Industry

Measures in this focus area aim to create business opportunities and jobs while lowering production costs, reducing environmental impacts, and enhancing community benefits. Key measures include turning industrial sites and brownfields into clean energy hubs, encouraging renewable energy and green hydrogen production near industry, reducing methane leaks, and promoting technological innovation. This includes supporting innovative projects that reduce GHGs beyond carbon dioxide (e.g., nitrous oxide, hydrofluorocarbons, and perfluorinated compounds) in hard-to-decarbonize industries such as cement manufacturing. Measures will also support the mining industry in transitioning to zero emissions vehicles.

3.3.5.1 Emissions Context

This sector encompasses emissions from various sources within the industrial domain: emissions from stationary combustion of fossil fuels used in industrial settings, emissions from industrial processes (both from manufacturing and from the use or consumption of end products like ozone-depleting substances or their substitutes), and fugitive emissions from natural gas and oil systems, which include production, flaring, transmission for natural gas, as well as the production, refining, and transportation of oil systems.

In Nevada, industrial GHG emissions are still rising. In 2021, the sector contributed to 16% of the state's annual GHGs emissions, totalling 7.2 MMtCO₂e. Of this total, stationary combustion accounted for 51.8%, industrial processes accounted for 33.5%, and gas and oil accounted for 14.4%.¹³² These estimates include CO₂, CH₄, N₂O, and fluorinated gases (which includes HFCs, PFCs, and SF₆). Table 22 presents GHG historical emissions in Nevada for the sector.

Table 22. Industry sector GHG emissions in Nevada by sub-sector, select years (MMtCO₂e).¹³³

Sub-Sector	1990	1995	2000	2005	2010	2015	2019	2020	2021
Stationary Combustion	2.16	3.07	2.49	2.82	2.75	2.14	4.32	3.41	3.75
Industrial Processes	0.44	1.06	1.46	1.64	1.86	2.17	2.33	2.32	2.41

¹³² Nevada Division of Environmental Protection. "Nevada Statewide Greenhouse Gas Emissions Inventory and Projections, 1990–2043," 2023. <https://ndep.nv.gov/air/air-pollutants/greenhouse-gas-emissions>

¹³³ Nevada Division of Environmental Protection. "Nevada Statewide Greenhouse Gas Emissions Inventory and Projections, 1990–2043," 2023. <https://ndep.nv.gov/air/air-pollutants/greenhouse-gas-emissions>

Natural Gas and Oil Systems	0.50	0.57	0.68	0.85	0.90	0.97	1.01	1.02	1.03
Total Emissions	3.10	4.70	4.62	5.31	5.51	5.27	7.66	6.75	7.19

Emissions from Nevada's industrial sector are projected to increase continuously through 2030. It is estimated that emissions will reach 7.6 MMtCO₂e by 2025 and 7.7 MMtCO₂e by 2030, accounting for 17% and 18% of the GHG emissions in Nevada, respectively. The increase in emissions is attributed to slight but consistent rises in both stationary combustion and industrial process emissions. However, these projections do not factor in the potential impact of the phasedown of ozone-depleting substance substitutes.¹³⁴

3.3.5.2 Status of Industrial Activities in Nevada

Nevada's GHG emissions inventory for the industrial sector includes processes related to multiple economic activities. The industrial sector in Nevada is diverse, reflecting the state's unique geographical and economic landscape. Key activities within this sector include: mining (Nevada is a leading producer of gold, silver, and other minerals), manufacturing (this includes a range of activities, from the production of gaming and slot machines to advanced manufacturing in aerospace, automotive parts, and clean energy technology components), cement manufacturing, lime manufacturing, limestone and dolomite use, soda ash use, urea consumption, ozone-depleting substance substitutes use, semiconductor manufacturing, electric power transmission and distribution systems activities, and activities associated with fossil fuel industries.

The principal policies guiding the industrial sector in Nevada focus on economic development, innovation, and economic diversification. These policies include economic diversification efforts through organizations like the Governor's Office of Economic Development (GOED).¹³⁵ Nevada is working to diversify its economy beyond gaming and tourism by attracting high-tech, manufacturing, and green energy companies. The GOED aims to foster a dynamic, innovative, and enduring economy that generates well-paying employment opportunities. Its core mission is to secure high-quality employment for the people of Nevada, guided by goals set in the inaugural State Plan for Economic Development. These goals focus on establishing a unified economic development framework, promoting key industry sectors, increasing international engagement, stimulating innovation, and improving educational and workforce training opportunities to support economic growth.

Within NDEP, the Bureau of Mining Regulation and Reclamation (BMRR) collaborates with various state, federal, and local entities to regulate mining operations. The BMRR has a core mission to protect

¹³⁴ Nevada Division of Environmental Protection. "Nevada Statewide Greenhouse Gas Emissions Inventory and Projections, 1990-2043," 2023. <https://ndep.nv.gov/air/air-pollutants/greenhouse-gas-emissions>

¹³⁵ "Nevada's State Economic Development." February 2, 2024. <https://goed.nv.gov/>

Nevada's water quality from mining activities and ensure that areas disturbed by mining are restored to conditions that are safe, stable, and suitable for productive use after mining has ceased.¹³⁶

Nevada's industrial sector could leverage grants and incentives from the IRA aimed at increasing energy efficiency and electrification. This could reduce operational costs and support the state's goals for reducing greenhouse gas emissions.

The bipartisan Creating Helpful Incentives to Produce Semiconductors (CHIPS) Act provides \$52.7 billion in incentives for American semiconductor research, development, manufacturing, and workforce development.¹³⁷ Nevada could attract investments in high-tech manufacturing facilities, especially given its strategic location and existing industrial base. This funding could support the implementation of upgrades and new investment projects that reduce PFC emissions related to semiconductor manufacturing.

3.3.5.3 Federal Funding

There are several federal programs that can contribute to funding measures related to this focus area (see Appendix B for a complete list). For example, the Loans Programs Office under the DOE has dedicated funding through the Title 17 Clean Energy Financing Program to repurpose, upgrade, or replace existing energy infrastructure to operate more efficiently with lower emissions.¹³⁸ Similarly, the Grid Resilience and Innovation Partnership Program, intended to improve the resilience of the power system to extreme weather events, includes two different funding opportunities. The first is to enhance the reliability and efficiency of the electric power system. The second is to provide financial assistance to state, Tribal, and local governments and public utilities to collaborate with electricity sector owners in developing innovative transmission, storage, and distribution infrastructure projects.¹³⁹ The Advanced Energy Manufacturing and Recycling Grant Program, also through the US DOE, provides grants to small- and medium-sized manufacturers to build new facilities or retrofit existing facilities that produce or recycle advanced energy products. The US DOE's Clean Energy Demonstration Program on Current and Former Mine Land, funded by the Bipartisan Infrastructure Law and *Inflation Reduction Act*, is dedicated to projects that demonstrate innovative mine land conversion in clean energy projects.¹⁴⁰ Finally, the State of Nevada received an allocation under the Energy Efficiency and Conservation Block Grant Program Formula Grant. Eligible entities can use this funding for projects that cut carbon emissions, improve energy efficiency, and reduce energy use.¹⁴¹

¹³⁶ Bureau of Mining Regulation and Reclamation (BMRR). "BMRR 445A Mining Regulations: Summary for Reference," September 3, 2020. <https://ndep.nv.gov/land/mining/laws-regulations>

¹³⁷ The White House. "FACT SHEET: CHIPS and Science Act Will Lower Costs, Create Jobs, Strengthen Supply Chains, and Counter China," August 9, 2022. <https://www.whitehouse.gov/briefing-room/statements-releases/2022/08/09/fact-sheet-chips-and-science-act-will-lower-costs-create-jobs-strengthen-supply-chains-and-counter-china/>.

¹³⁸ US Energy Loan Programs Office. "Title 17 Clean Energy Financing." Energy.gov. Accessed February 1, 2024. <https://www.energy.gov/lpo/title-17-clean-energy-financing>.

¹³⁹ US Energy GRID Deployment Office. "Grid Resilience and Innovation Partnerships (GRIP) Program." Energy.gov. Accessed February 1, 2024. <https://www.energy.gov/gdo/grid-resilience-and-innovation-partnerships-grip-program>.

¹⁴⁰ US Energy Office of Clean Energy Demonstrations. "Clean Energy Demonstration Program on Current and Former Mine Land." Energy.gov. Accessed February 1, 2024. <https://www.energy.gov/oced/CEML>.

¹⁴¹ US Department of Energy. "EECBG Program Formula Grant Application Hub." Energy.gov. Accessed February 2, 2024. <https://www.energy.gov/scep/eeecbg-program-formula-grant-application-hub>.

3.3.5.4 Review of Authority

The priority measures will be implemented as incentive-based programs, which would not require additional authority to implement. NDEP has existing legal authority to apply for and receive grant funding pursuant to NRS 445B.230(2) and the ability to cooperate and contract with other governmental entities is also addressed under NRS 445B.230(3) (authority) and NRS 277.180 (provides authority for contracts between one or more public agencies). Many entities have the authority to and have expressed an interest in applying for funding to implement a portion of this work within specific state departments and divisions, cities, counties, Tribes, or corporate settings. NDEP intends to seek funding for measures and will subgrant to other agencies where applicable.

3.3.5.5 Community Engagement Feedback

Community engagement feedback was particularly supportive for measures that decarbonized industrial activities. For example, participants suggested the need for healthcare sector education around the environmental impact of anesthetic gasses, and they recommended various educational initiatives. Additionally, there was a call for the implementation of a Refrigerant Incentive Program aiming to promote the use of environmentally friendly refrigerants. Repurposing former industrial facilities (e.g., abandoned mines) to produce or store electricity was also identified as an opportunity. In general, there was support for electrifying industrial energy as much as possible. These suggestions reflect a community-driven approach towards reducing greenhouse gas emissions in this key sector.

Many entities have the authority and have expressed an interest in applying for funding to implement a portion of this work within specific state departments and divisions, cities, counties, Tribes, or corporate settings.

Table 23. Industry: List of priority measures.

- 1. Build Capacity:** *To enhance capacity for decarbonizing industrial activities, these measures will focus on several key areas: building technical capacity within public agencies to effectively manage and guide decarbonization efforts; creating comprehensive public databases that track and showcase clean industrial initiatives across the state; enhancing the workforce's skills in maintenance and repair, specifically for clean technology and processes; and engaging in extensive public outreach and education to raise awareness and support for these decarbonization efforts among key interested and affected parties.*

I1.1 - Build technical capacity at public agencies to plan for, procure, and implement clean industrial initiatives (e.g., green hydrogen, energy storage, electrification of industrial processes, low-emission cement, refrigerant substitution, etc.). This includes training staff, coordinating with other levels of government, supporting workforce development, communicating, and developing an outreach campaign.

Authority to Implement: Key agencies for industrial measures would include State, Local or Tribal; industrial agencies; economic development agencies; air quality agencies; and planning agencies, all of which have the authority to provide funding to incentivize these types of programs. Please see above for NDEP-specific authority to acquire and implement federal funding.

I1.2 - Create public databases of clean industrial initiatives such as green hydrogen, energy storage, electrification of industrial processes, low-emission cement, and refrigerant substitution, etc.

Authority to Implement: Key agencies for industrial measures would include State, Local or Tribal; industrial agencies; economic development agencies; air quality agencies; and planning agencies, all of which have the authority to provide funding to incentivize these types of programs. Please see above for NDEP-specific authority to acquire and implement federal funding.

I1.3 - Enhance workforce, maintenance, and repair capacity to support planning, implementation of green hydrogen, energy storage, electrification of industrial processes, low-emission cement, and refrigerant substitution initiatives, etc. Workforce development activities could include enhancing old or creating new training programs, particularly for trades such as construction, engineering, manufacturing, mechanics, drivers and electricians. It could also include implementing job placement programs and apprenticeships.

Authority to Implement: Key agencies for industrial measures would include State, Local or Tribal; industrial agencies; economic development agencies; employment and training agencies; air quality agencies; and planning agencies, all of which have the authority to provide funding to incentivize these types of programs. Please see above for NDEP-specific authority to acquire and implement federal funding.

I1.4 - Promote public outreach and education to encourage industries to deploy green hydrogen, energy storage, electrification of industrial processes, low-emission cement, and refrigerant substitution initiatives, etc. Outreach can be, but is not limited to, online and in-person events, promotions, marketing, and geographic-specific partnerships among businesses and communities as well as engagement with interested and affected parties to explore suitable business models that could enhance community benefits.

Authority to Implement: Key agencies for industrial measures would include State, Local or Tribal; industrial agencies; economic development agencies; air quality agencies; or planning agencies, all of which have the authority to provide funding to incentivize these types of programs. Please see above for NDEP-specific authority to acquire and implement federal funding.

2. Decarbonize Energy-Intensive Industries: *To accelerate the decarbonization of energy-intensive industries, this action includes providing incentives to convert former industrial sites and brownfields into hubs for clean energy production and offering incentives for renewable energy and green hydrogen generation in proximity to energy-intensive industrial facilities. Additionally, these actions encourage the adoption of clean technologies, focusing on energy efficiency, electrification of industrial processes, and the use of heat batteries. They also incentivize the use of hydrogen-fueled or electric mining trucks and vehicles.*

I2.1 - Incentivize repurposing former industrial sites and brownfields into clean energy hubs. This includes offering grants and revolving funds to deploy renewable energy, green hydrogen, and energy storage and to address environmental justice concerns around the site. This could be achieved by developing project agreements that can guarantee economic benefits, ensure accountability, and address environmental justice concerns.

Authority to Implement: Key agencies for industrial measures would include State, Local or Tribal; energy offices; industrial agencies; economic development agencies; air quality agencies; or planning agencies, all of which have the authority to provide funding to incentivize these types of programs. Please see above for NDEP-specific authority to acquire and implement federal funding.

I2.2 - Incentivize the production of renewable energy and green hydrogen near energy-intensive industrial facilities. This includes identifying potential industrial areas with the highest potential to transform their energy consumption and supporting the implementation of the projects with grants and revolving funds.

Authority to Implement: Key agencies for industrial measures would include State, Local or Tribal; energy offices; industrial agencies; economic development agencies; air quality agencies; and planning agencies, all of which have the authority to provide funding to incentivize these types of programs. Please see above for NDEP-specific authority to acquire and implement federal funding.

12.3 - Incentivize the implementation of clean technologies, including energy efficiency and electrification of industrial processes and heat batteries. Potential ways to support this measure include offering financial incentives and investing in research and development to deploy these technologies.

Authority to Implement: Key agencies for industrial measures would include State, Local or Tribal; energy offices; industrial agencies; economic development agencies; air quality agencies; and planning agencies, all of which have the authority to provide funding to incentivize these types of programs. Please see above for NDEP-specific authority to acquire and implement federal funding.

12.4 - Incentivize hydrogen-fueled or electric mining trucks and vehicles by developing a comprehensive set of programs and incentives to encourage ZEV adoption and vehicle fuel switching. This could include developing an incentive program for clean trucks and hydrogen fueling stations.

Authority to Implement: Key agencies for industrial measures would include State, Local or Tribal; energy offices; industrial agencies; transportation agencies; air quality agencies; and planning agencies, all of which have the authority to provide funding to incentivize these types of programs. Please see above for NDEP-specific authority to acquire and implement federal funding.

3. Reduce Industrial Emissions: *To reduce industrial emissions in Nevada, this action includes offering incentives for innovative projects in sectors where emissions are hard to reduce, such as in cement production, electricity transmission, and refrigerants, and focuses on gasses like nitrous oxide, hydrofluorocarbons, and perfluorinated compounds. It also emphasizes incentivizing programs for detecting, repairing, and using methane leaks. Additionally, the plan involves providing incentives to holistically transform industrial sites, incorporating sustainable practices and technologies to significantly lower emissions.*

13.1 - Incentivize innovative projects related to hard-to-electrify sectors (e.g., cement manufacturing) and difficult-to-reduce GHGs beyond carbon dioxide (e.g., nitrous oxide, hydrofluorocarbons, and perfluorinated compounds) by developing grants that encourage research and the implementation of demonstrative projects. This can include programs that incentivize the manufacturing and market penetration of new refrigerants that have lower global warming potential, reduce emissions of SF₆ on electricity transmission, produce low-carbon concrete using alternative materials and recycling concrete, produce low-carbon cement by electrolysis, and reduce emissions of N₂O related to the use of anesthetic gasses.

Authority to Implement: Key agencies for industrial measures would include State, Local or Tribal; energy offices; industrial agencies; economic development agencies; air quality agencies; and planning agencies, all of which have the authority to provide funding to incentivize these types of programs. Please see above for NDEP-specific authority to acquire and implement federal funding.

13.2 - Reduce methane emissions from industrial activities by implementing leak detection, repair, and utilization systems and by developing comprehensive programs and incentives to identify methane leaks in Nevada and control methane emissions from abandoned and operational sites.

Authority to Implement: The Nevada Department of Industry, working with the Nevada Department of Environmental Protection, has the authority to incentivize methane mitigation programs.

13.3 - Incentivize programs and initiatives that take a holistic approach to transforming industrial sites by developing grants that encourage research and the implementation of demonstrative projects. The holistic transformation of industrial sites can include creating a smart grid to manage energy use, generation, and storage; replacing vehicle fleets with EVs that offer bi-directional energy supplies; using waste and wastewater to produce renewable natural gas; leveraging wastewater heat or industrial heat for space and domestic water heating; implementing initiatives that enhance CO₂ use for plant growth; improving high-energy process efficiency; and employing thermal energy storage powered by renewables for industrial heat and power.

Authority to Implement: Key agencies for industrial measures would include State, Local or Tribal; energy offices; industrial agencies; economic development agencies; air quality agencies; and planning agencies, all of which have the authority to provide funding to incentivize these types of programs. Please see above for NDEP-specific authority to acquire and implement federal funding.

3.3.5.6 GHG Emission Reductions

The quantification of these measures leverages a tailored spreadsheet tool, conceived specifically for the PCAP, to estimate emission reductions. This tool integrates comprehensive data sets, including a state greenhouse gas inventory, to calculate emissions reductions from 2025 to 2050.

This methodological approach ensures accurate, detailed assessments of the measure's impact on reducing emissions, which supports Nevada's sustainability goals. Table 24 and Table 25 present the emission reductions.

Table 24. Projected GHG emission reductions for Industrial Priority measures.

Priority Measure	Yearly Emissions Reductions (MtCO ₂ e)		Cumulative Emissions Reductions (MtCO ₂ e)	
	by 2025	by 2030	2025–2030	2025–2050
1. Build Capacity	This measure facilitates the emissions reductions.			
2. Decarbonize Energy-Intensive industries	This measure will start reducing emissions in 2029.	203,410	260,765	4,328,955
3. Reduce Industrial Emissions	364	53,219	78,604	1,142,990
Total	364	256,629	339,369	5,471,945

Table 25. Projected co-pollutant reductions for priority measures in the Industrial Focus Area.

Priority Measure		Yearly Co-pollutant Reductions (metric tons)		Cumulative Co-pollutant Reductions (metric tons)	
		by 2025	by 2030	2025–2030	2025–2050
1. Build Capacity	This measure facilitates the co-pollutant reductions.				
2. Decarbonize Energy-Intensive Industries	CO	0.0	656.1	841.6	13,964.2
	NOx	0.0	748.1	958.6	15,920.4
	SO ₂	0.0	4.9	6.2	103.3
	PM _{2.5}	0.0	40.8	52.3	868.4
	VOCs	0.0	109	140	2,321
3. Reduce Industrial Emissions	CO	0.5	27.8	48.2	603.9
	NOx	1.8	268.3	394.5	5,759.7
	SO ₂	0.0	6.8	9.1	144.8
	PM _{2.5}	0.0	9.3	13.3	199.8
	VOCs	0.1	4.9	8.2	105.5
Total	CO	0.5	683.9	889.8	14,568.1
	NOx	1.8	1,016.3	1,353.2	21,680.1
	SO ₂	0.0	11.6	15.3	248.1
	PM _{2.5}	0.0	50.1	65.9	1,068.2
	VOCs	0.1	113.9	148.0	2,426.8

The following assumptions were used in calculating the above emission reduction estimates. It should be noted that these assumptions were made to depict a potential pathway for Nevada to achieve its

2030 emission reduction goal. The measures related to this focus area generally produce emission reductions after 2025 because most of these solutions require a longer construction time. Implementing the industrial priority measures is a means of working towards this scenario and helping Nevada meet its emission reduction goals. The following assumptions were used in calculating the above emission reduction estimates:

- The measure will replace 804,011 MWh of fossil fuels in energy-intensive industries by 2030: 100 MW solar and 100 MW wind dedicated to producing electricity to feed electrolyzers and heat batteries, 27 MW electrolyzers, and 1,000 MWh heat batteries.
- The implementation rate of projects to decarbonize energy-intensive industries through the electrification of thermal and motor uses currently fueled by fossil fuels starts in 2029 and achieves the above goals by 2030.
- The energy-intensive uses are fueled by near-site wind and solar, where electricity is stored in heat batteries or transformed into clean hydrogen to fuel 24/7 industrial activities.
- This project operates under the assumption that a multifaceted approach to energy management within an industrial area can significantly enhance environmental outcomes and operational efficiency. This will primarily benefit LIDACs, which are usually located closer to industrial facilities and are disproportionately impacted by air pollution. By establishing a smart grid capable of alternating between consuming, generating, and storing energy, the project aims to optimize energy use dynamically.
- Replacing traditional vehicle fleets with EVs equipped with bi-directional energy capabilities reduces carbon emissions and integrates vehicles into the energy management system.
- A 15% reduction in greenhouse gas emissions by 2030 is anticipated for both the cement manufacturing sector and the air conditioning and refrigeration sector, based on the National Emissions Inventory of the EPA for Nevada.
- Other necessary solutions were not quantified but could further boost the benefits of this measure. Actions such as using waste and wastewater to generate renewable natural gas, along with using waste heat from wastewater or industrial processes for heating, embody a commitment to resource efficiency and circular economy principles. Introducing CO₂ into plant-growing areas to boost photosynthesis and crop yields further exemplifies the project's holistic approach to leveraging industrial by-products for environmental gain. Low-carbon cement production, reduced emissions from methane leaks, programs to replace refrigerants, and emissions from anesthetic gases are among other strategies aimed at reducing emissions.

3.3.5.7 Transformative Impact and Co-benefits in LIDACs

The decarbonization of industrial activities provides significant benefits for Nevada, notably reducing production costs and spurring economic development through the creation of high-quality jobs in emerging low-carbon industries and subsectors. By transforming industrial sites into clean energy hubs and prioritizing renewable energy and green technologies, this measure fosters economic growth and ensures reductions in air, water, and soil pollution, which will particularly benefit LIDACs. This strategic

approach aligns with environmental goals and enhances community well-being and economic resilience.

In terms of indirect benefits, an increased deployment of renewable energy, energy storage, energy efficiency, green hydrogen, and biofuel projects will induce the creation of training programs and jobs, particularly in the electrician, mechanic, and construction trades and the manufacturing industry.

LIDACs in proximity to industrial areas, Risk Management Plan facilities, and Superfund sites will directly benefit from reductions in water pollution and air pollution in the form of PM_{2.5}, ozone, and diesel emissions, and increased employment opportunities in renewable energy and low-carbon industries. Figure 30 shows that LIDACs that rank at the 90th⁺ percentile or higher for these burdens are primarily located in East Las Vegas. Figure 30 also shows that brownfields, mining tailing sites, and large emitters are located across the state, including in relatively close proximity to LIDACs.

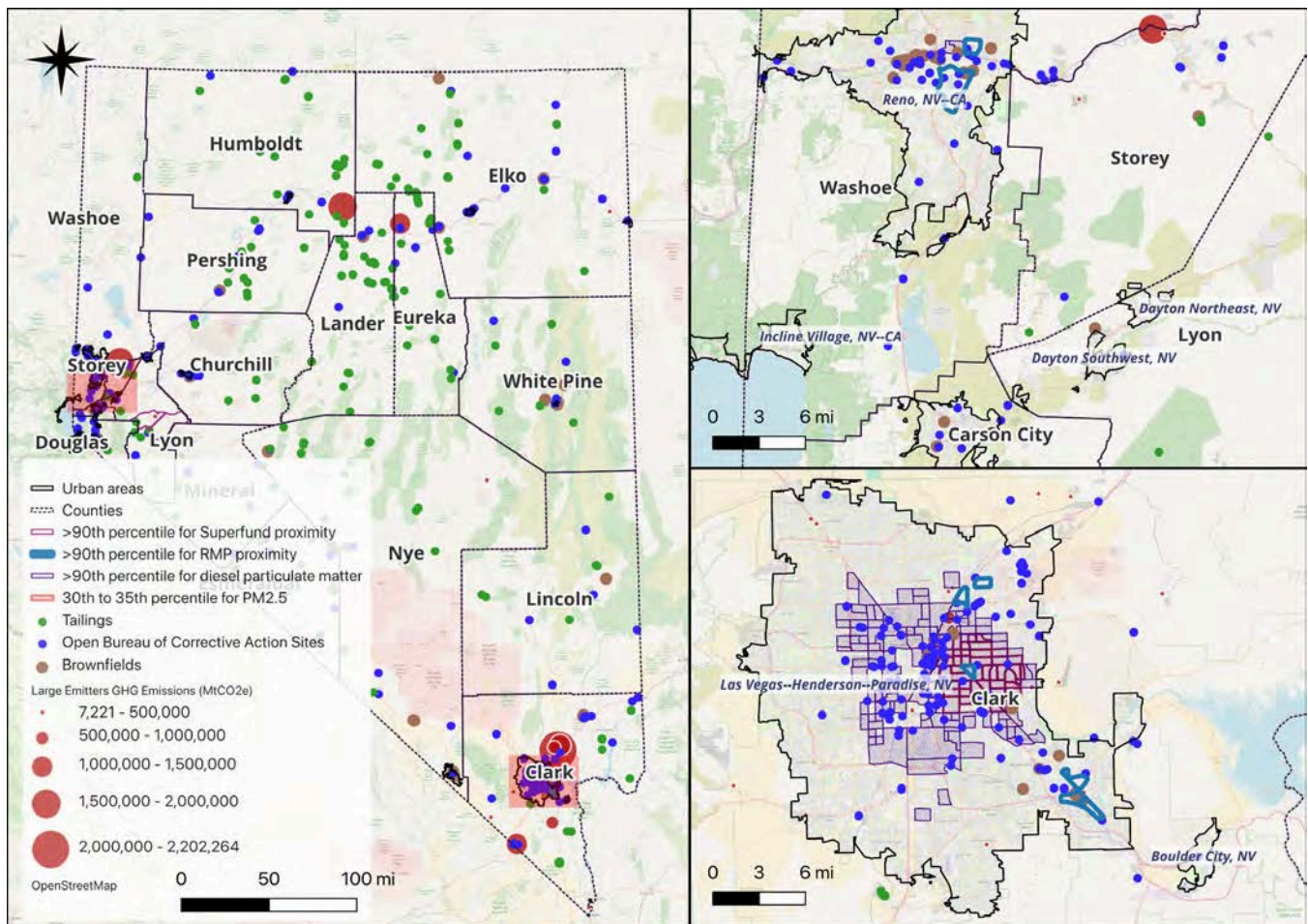


Figure 30. LIDAC census tracts that will most benefit from measures within the Industry Focus Area.

LIDACs in census tracts that rank at the 90th percentile or higher for Superfund proximity, RMP facility proximity, and diesel levels, as well as at the 30th to 35th percentile for PM_{2.5} exposure. The locations of large emitters

(according to the EPA), open Bureau of Corrective Action sites, brownfields, and tailings from mining activities are also included.

3.3.5.8 Example Programs or Initiatives

This section offers examples of how various measures within the Industry Focus Area can be packaged together to develop comprehensive and transformative industrial decarbonization programs across the state.

Table 26. Potential programs or initiatives within Focus Area4: Decarbonize Industrial Activities.

Description	Measures
Transform an Industrial Area	
<p>Develop a holistic strategy to transform an industrial site towards greater energy integration and self-sufficiency. Efforts may include creating a smart grid to alternate between using, generating, and storing energy in the area; replacing vehicle fleets with EVs; using waste and waste water to produce RNG; using wastewater heat and/or industrial heat to heat spaces and domestic water; piping CO₂ to stimulate plant growth; improving process efficiencies; and using thermal energy storage powered by renewables for industrial heat and power.</p>	<p>I1.1 - Build technical capacity at public agencies. I1.2 - Create public databases of clean industrial initiatives. I1.3 - Enhance workforce, maintenance, and repair capacity. I1.4 - Public outreach and education. I.2.1 - Incentivize repurposing former industrial sites and brownfields into clean energy hubs. I2.2 - Incentivize the production of renewable energy and green hydrogen near energy-intensive industrial facilities. I2.3 - Incentivize the implementation of clean technologies, including energy efficiency and electrification of industrial processes and heat batteries. I2.4 - Incentivize hydrogen-fueled or electric mining trucks and vehicles by developing a comprehensive set of programs and incentives to encourage ZEV adoption and vehicle fuel switching. I3.1 - Incentivize innovative projects related to hard-to-electrify sectors (e.g., cement manufacturing) and difficult-to-reduce GHGs beyond carbon dioxide (e.g., nitrous oxide, hydrofluorocarbons, and perfluorinated compounds) by developing grants that encourage research and the implementation of demonstrative projects. I3.2 - Reduce methane emissions from industrial activities by implementing leak detection, repair, and utilization systems and by developing comprehensive programs and incentives to identify methane leaks in Nevada and control methane emissions from abandoned and operational sites. I3.3 - Incentivize programs and initiatives that take a holistic approach to transforming industrial sites. T3.2 - Incentivize large commercial fleet electrification (medium- and heavy-duty vehicles) by developing a comprehensive set of programs and incentives to encourage ZEV adoption and vehicle fuel switching. T4.4 - Develop infrastructure to support ZEV medium- and heavy-duty vehicles. E1.3 - Support planning and implementation of new renewable energy, energy storage, grid enhancement, green hydrogen, and biofuel systems. Enhance workforce training, particularly in the maintenance and repair of renewable energy systems including solar panels and batteries. E2.5 - Incentivize behind-the-meter and smart-grid technologies. E2.6 - Incentivize and support green fuel production projects, such as green hydrogen and biofuels. E3.1 - Incentivize retrofitting fossil-fuel-powered thermal power plants to use green-hydrogen-based fuels. E3.2 - Incentivize adoption of Carnot or gravity batteries for storing surplus green electricity.</p>

Description	Measures
Clean Industry Program	
<p>Capitalize on the IRA's financial incentives for renewable energy and green hydrogen to increase development and implementation of clean technologies, including energy efficiency and electrification of industrial processes and heat batteries and promote hydrogen-fueled or electric mining trucks and vehicles.</p>	<p>I1.1 - Build technical capacity at public agencies. I1.2 - Create public databases of clean industrial initiatives. I1.3 - Enhance workforce, maintenance, and repair capacity. I1.4 - Public outreach and education I2.2 - Incentivize the production of renewable energy and green hydrogen near energy-intensive industrial facilities. I2.3 - Incentivize the implementation of clean technologies, including energy efficiency and electrification of industrial processes and heat batteries. I2.4 - Incentivize hydrogen-fueled or electric mining trucks and vehicles by developing a comprehensive set of programs and incentives to encourage ZEV adoption and vehicle fuel switching.</p>
Industrial Sector Emission Reduction Incentives	
<p>Incentivize changes to activities with high carbon intensity, including routine natural gas flaring and venting, and fugitive methane emissions from new and existing facilities.</p>	<p>I1.1 - Build technical capacity at public agencies. I1.2 - Create public databases of clean industrial initiatives. I1.3 - Enhance workforce, maintenance, and repair capacity. I1.4 - Promote public outreach and education I3.1 - Incentivize innovative projects related to hard-to-abate sectors (e.g., cement, electricity transmission, refrigerants, etc.) and GHGs (e.g., nitrous oxide, hydrofluorocarbons, and perfluorinated compounds). I3.2 - Incentivize implementing methane leak, detection, repair, and utilization programs. I3.3 - Incentivize programs and initiatives that take a holistic approach to transforming industrial sites.</p>



3.3.6 Focus Area 5: Waste

Measures in this focus area incentivize diverting waste, composting, and developing a circular economy. The measures aim to significantly reduce the amount of organic waste and recyclable material that goes to landfills. This includes creating business opportunities for waste processing and the sale of recycled products. Waste diversion will reduce GHG emissions, prolong the life of landfills, and create new jobs and businesses.

3.3.6.1 Emissions Context

In 2021, waste constituted 5% of Nevada's total annual greenhouse gas emissions, totalling 2 MMtCO₂e. By 2030, the waste sector is projected to account for 6% of total GHG emissions in Nevada.^{142, 143} In 2021, the State disposed of 3.3 million tons of Municipal Solid Waste (MSW) and 1.8 million tons of Industrial and Special Waste, resulting in a combined total of approximately 5 million tons of waste. In contrast, Nevadans recycled 1 million tons of waste in 2021, 33% of which was organic material.¹⁴⁴ In Clark County, Nevada's most populous county, estimated emissions resulting from solid waste disposal contributed to 12.5% of the county's total greenhouse gas emissions in 2022.¹⁴⁵ The following table presents GHG historical emissions in Nevada for the sector.

Table 27. Waste sector GHG emissions in Nevada by sub-sector, select years (MMtCO₂e).¹⁴⁶

Sub-Sector	1990	1995	2000	2005	2010	2015	2019	2020	2021
Solid Waste	0.37	0.59	0.91	1.58	1.68	1.63	1.60	1.61	1.75
Municipal Solid Waste	0.34	0.53	0.89	1.44	1.72	1.85	1.96	1.99	2.11
Industrial	0.03	0.05	0.09	0.14	0.17	0.18	0.19	0.19	0.21
Flaring	0.00	0.00	-0.07	0.00	-0.21	-0.08	-0.23	-0.26	-0.26

¹⁴²Nevada Division of Environmental Protection. "Nevada Statewide Greenhouse Gas Emissions Inventory and Projections, 1990-2043," 2023.

<https://ndep.nv.gov/air/air-pollutants/greenhouse-gas-emissions>

¹⁴³ Nevada Division of Environmental Protection. "2022 State of Nevada Sustainable Materials Management Plan," 2022.

https://ndep.nv.gov/uploads/land-waste-solid-swmp-docs/2022_Nevada_Sustainable_Materials_Management_Plan_12-14-2022.pdf

¹⁴⁴ Nevada Division of Environmental Protection. "2023 Recycling and Waste Reduction Report," 2023.

https://www.leg.state.nv.us/Division/Research/Documents/RTTL_NRS444A.070_2023.pdf

¹⁴⁵ Clark County Department of Environment and Sustainability. "All-In Clark County: Bold Action for A Sustainable Future," 2023.

https://allin.clarkcountynv.gov/resources/ID_77/Documents/CC_CSCAP_FINAL.pdf

¹⁴⁶ Nevada Division of Environmental Protection. "Nevada Statewide Greenhouse Gas Emissions Inventory and Projections, 1990-2043," 2023.

<https://ndep.nv.gov/air/air-pollutants/greenhouse-gas-emissions>

Landfill Gas to Energy	0.00	0.00	0.00	0.00	0.00	-0.32	-0.32	-0.32	-0.32
Wastewater	0.12	0.15	0.20	0.24	0.26	0.28	0.30	0.31	0.31
Total Emissions	0.49	0.74	1.10	1.82	1.94	1.91	1.90	1.91	2.05

Emissions from Nevada's waste sector are projected to increase continuously through 2030. It is estimated that emissions will reach 2.2 MMtCO₂e by 2025 and 2.5 MMtCO₂e by 2030, accounting for 5% and 6% of the GHG emissions in Nevada, respectively.¹⁴⁷

NDEP recognizes the importance of waste diversion and the development of markets for recycled materials (i.e., the circular economy) in its 2023 Sustainable Materials Management Plan. Since 1991, the State of Nevada has been striving to meet or surpass its recycling rate goal of 25%.¹⁴⁸ These measures aim to contribute to the reduction of waste while significantly diminishing emissions, specifically those of methane gas from organic waste in landfills.

3.3.6.2 Status of Waste Programs in Nevada

Currently, the main method for managing end-of-life products and materials in Nevada is landfilling, primarily due to its low relative cost; however, this method does not consider landfilling's environmental and social impacts. To address this, these measures aim to enhance the state's initiatives in waste diversion and establishing a circular economy. Presently, NDEP oversees 98 waste facilities, including landfills, composting facilities, public waste bin sites, and transfer facilities. In Southern Nevada, solid waste regulation falls under the Southern Nevada Health District, while in the north, it is managed by the Washoe County Health District.¹⁴⁹

Six counties—Carson City, Clark, Douglas, Elko, Nye, and Washoe—have implemented recycling programs, covering nearly 90% of Nevada's population as of 2020.¹⁵⁰ In 2019, Carson City achieved a 35% recycling rate, partly attributed to its new single-stream recycling and organics collection program. In Douglas City, there is no curbside collection of recyclables, but there is a successful composting program that contributed to its 57% recycling rate in 2019. Elko County offers curbside recycling, but it is only available to single-family homes.¹⁵¹ Washoe County recycles approximately 33% of its waste and is exploring piloting a curbside green waste collection and composting program, as outlined in their Green Recovery Plan.¹⁵² Finally, Clark County plays a crucial role in influencing the state's recycling

¹⁴⁷ Nevada Division of Environmental Protection. "Nevada Statewide Greenhouse Gas Emissions Inventory and Projections, 1990-2043," 2023. <https://ndep.nv.gov/air/air-pollutants/greenhouse-gas-emissions>

¹⁴⁸ Nevada Division of Environmental Protection. "2023 Recycling and Waste Reduction Report," 2023. https://www.leg.state.nv.us/Division/Research/Documents/RTTL_NRS444A_070_2023.pdf

¹⁴⁹ Nevada Division of Environmental Protection. "2022 State of Nevada Sustainable Materials Management Plan," 2022. https://ndep.nv.gov/uploads/land-waste-solid-swmp-docs/2022_Nevada_Sustainable_Materials_Management_Plan_12-14-2022.pdf

¹⁵⁰ Nevada Division of Environmental Protection. "2022 State of Nevada Sustainable Materials Management Plan," 2022.

¹⁵¹ Nevada Division of Environmental Protection. "Annual Recycling Rate Data," 2023. <https://ndep.nv.gov/nevada-recycles/recycle/reports>

¹⁵² Office of Emergency Management & Homeland Security. "Washoe County Green Recovery Plan," 2022. <https://www.washoecounty.gov/em/files/WC-Green-Recovery-Plan-FINAL.pdf>

rate, primarily due to its substantial population and the implementation of single-stream collection, starting in 2016.¹⁵³ As of 2019, the County has reported a recycling rate of 20% and a household waste diversion rate of 19.7%, with aspirations to elevate it to 40% by the year 2030. To achieve this target, the County intends to assess the feasibility of expanding its residential curbside green-waste recycling program and eliminating organics from its waste stream. The County estimates that 11% of the emissions reductions targeted for 2030 will come from diverting organic waste from its landfills.¹⁵⁴

In 2022, Nevada generated 325,000 tons of organic material, constituting 29% of its recyclables. However, it is crucial to note that not all organic materials were composted. As outlined in the State's 2022 Sustainable Management Plan, there is an emphasis on establishing the groundwork for a more circular and sustainable system. By implementing initiatives such as source reduction strategies, organic diversion policies, and reuse programs, Nevada aims to achieve its waste sector goals.¹⁵⁵

3.3.6.3 Federal Funding

There are several federal funding opportunities that can support waste diversion and the promotion of the circular economy. These include the following grants from the EPA: Solid Waste Infrastructure for Recycling Grants, the Consumer Recycling Education and Outreach Grant Program, and the Pollution Prevention and Environmental Education Grant Program (see Appendix B for a complete list). The Solid Waste Infrastructure for Recycling Program by the EPA provides grants to states, territories, communities, Tribes, and intertribal consortia to improve post-consumer materials management and improve local waste management systems. For example, the Shoshone-Paiute Tribes of the Duck Valley Indian Reservation received a recycling grant through the program. This grant helps maintain their waste transfer station, specialized monofills, and a fully run recycling center.¹⁵⁶ The U.S. Department of Agriculture also offers a Solid Waste Management

¹⁵³ Nevada Division of Environmental Protection. "2022 State of Nevada Sustainable Materials Management Plan," 2022.

https://ndep.nv.gov/uploads/land-waste-solid-swmp-docs/2022_Nevada_Sustainable_Materials_Management_Plan_12-14-2022.pdf

¹⁵⁴ Clark County Department of Environment and Sustainability. "All-In Clark County: Bold Action for A Sustainable Future," 2023.

https://allin.clarkcountynv.gov/resources/ID_77/Documents/CC_CSCAP_FINAL.pdf

¹⁵⁵ Nevada Division of Environmental Protection. "2022 State of Nevada Sustainable Materials Management Plan," 2022.

https://ndep.nv.gov/uploads/land-waste-solid-swmp-docs/2022_Nevada_Sustainable_Materials_Management_Plan_12-14-2022.pdf

¹⁵⁶ Environmental Protection Agency. "Recycling Grant Selectees and Recipients." Announcements and Schedules, August 21, 2023.

<https://www.epa.gov/infrastructure/recycling-grant-selectees-and-recipients>.

Grant for public bodies providing technical assistance and training to reduce or eliminate pollution of water resources and improve planning and management of solid waste sites. However, this assistance is only available in rural areas and towns with a population of 10,000 or less.

3.3.6.4 Review of Authority

The priority measures will be implemented as incentive-based programs, which would not require additional authority. NDEP has existing legal authority to apply for and receive grant funding pursuant to NRS 445B.230(2) and the ability to cooperate and contract with other governmental entities is also addressed under NRS 445B.230(3) (authority) and NRS 277.180 (provides authority for contracts between one or more public agencies). Many entities who have the authority have expressed an interest in applying for funding to implement a portion of this work within specific state departments and divisions, cities, counties, Tribes, or corporate settings. NDEP intends to seek funding for measures and will subgrant to other agencies where applicable.

3.3.6.5 Community Engagement Feedback

Insights from community engagement workshops indicate that residents support expanding the state's waste diversion programs. Specifically, residents from both Clark County and Washoe County identified the initiation of yard waste collection as a feasible and easily achievable goal. A Clark County resident expressed a particular interest in expanding their composting program, while a Washoe County resident lamented the lack of any composting capacity in their region. Additionally, opportunities such as food recovery programs and yard waste collection for commercial businesses were suggested. One individual highlighted the need for more recycling programs but acknowledged the perceived cost-effectiveness challenges due to heating expenses. Furthermore, food recovery was highlighted as a method for strengthening community resilience. Suggestions were made to tie hunger-fighting initiatives associated with waste reduction initiatives. Overall, there was widespread support for these initiatives.

Table 28. Waste: List of Priority Measures

1. Build Capacity: *These measures are designed to promote the state's capacity to divert waste from landfills, with an emphasis on curbside collection of organic waste.*

W1.1 - Develop an education and outreach campaign to help residents understand how to reduce organic waste and compost and to teach them about waste's connection to greenhouse gas emissions. Outreach can be, but is not limited to, marketing campaigns, providing pamphlets, establishing geographic-specific partnerships among communities and schools, and engaging with interested and affected parties.

Authority to Implement: Key agencies for waste reduction measures would include state, local and Tribal governments; waste management authorities; environmental protection agencies; sustainability entities; and planning agencies, all of which have the authority to provide funding to incentivize these types of programs. Please see above for NDEP-specific authority to acquire and implement federal funding.

W1.2 - Develop a plan for piloting or scaling-up green waste curbside collection and composting at the local government level. Initiatives from Clark County and Washoe County could be used as precedents. Piloting could involve, but is not limited to, single-family homes and neighborhoods, while scaling-up would involve the inclusion of apartment buildings and local businesses, as well as enlarging the geographic area of existing waste collection.

Authority to Implement: Key agencies for waste reduction measures would include state, local, and Tribal governments; waste management authorities; environmental protection agencies; sustainability entities; and planning agencies, all of which have the authority to provide funding to incentivize these types of programs. Please see above for NDEP-specific authority to acquire and implement federal funding.

W1.3 - Support research on and development of the circular economy by providing funding and technical assistance to local governments to conduct studies and pilot projects, as well as outreach education programs for residents, business owners, and manufacturing industry members. Highlight concepts such as sharing, leasing, reusing, repairing, refurbishing, and recycling existing materials in our production systems.

Authority to Implement: Key agencies for waste reduction measures would include state, local, and Tribal governments; waste management authorities; environmental protection agencies; sustainability entities; or planning agencies, all of which have the authority to provide funding to incentivize these types of programs. Please see above for NDEP-specific authority to acquire and implement federal funding.

2. Reduce Emissions Through Reduction and Waste Diversion Programs: *These measures support the development of programs for local businesses to divert waste from landfills and create a closed-loop system for materials and products.*

W2.1 - Encourage local governments to pilot waste diversion and sustainable materials management by providing them with funding and technical assistance and by helping them develop local composting facilities and food recovery and donation programs.

Authority to Implement: Key agencies for waste reduction measures would include state, local, and Tribal governments; waste management authorities; environmental protection agencies; sustainability entities; and planning agencies, all of which have the authority to provide funding to incentivize these types of programs. Please see above for NDEP-specific authority to acquire and implement federal funding.

W2.2 - Encourage residents and businesses to reduce waste and replace single-use plastics. Incentivization could include, but is not limited to, participating in the Green Business Certification Program (W2.3).

Authority to Implement: Key agencies for waste reduction measures would include state, local, and Tribal governments; waste management authorities; environmental protection agencies; sustainability entities; and planning agencies, all of which have the authority to provide funding to incentivize these types of programs. Please see above for NDEP-specific authority to acquire and implement federal funding.

W2.3 - Incentivize food diversion and recovery programs for businesses of all sizes. Particular emphasis should be placed on food-serving businesses and grocery retailers. This can additionally include incentivizing food recovery at the farm and pre-retail level.

Authority to Implement: Key agencies for waste reduction measures would include state, local, and Tribal governments; waste management authorities; environmental protection agencies; sustainability entities; and planning agencies, all of which have the authority to provide funding to incentivize these types of programs. Please see above for NDEP-specific authority to acquire and implement federal funding.

W2.4 - Develop a statewide green business certification program to encourage small businesses to participate. Outreach for the green business certification program can include, but is not limited to, onboarding local government liaisons for the program and establishing marketing incentives for local businesses (W2.2 and W2.3).

Authority to Implement: Key agencies for waste reduction measures would include state, local, and Tribal governments; waste management authorities; environmental protection agencies; sustainability entities; and planning agencies, all of which have the authority to provide funding to incentivize these types of programs. Please see above for NDEP-specific authority to acquire and implement federal funding.

W2.5 - Create a sustainable building materials management toolkit for businesses to learn how to reduce waste from construction, renovation, demolition, and retrofit projects. Outreach for the toolkit can include, but is not limited to, a builder's lunch and learn and local business network presentations.

Authority to Implement: Key agencies for waste reduction measures would include state, local, and Tribal governments; waste management authorities; environmental protection agencies; sustainability entities; and planning agencies, all of which have the authority to provide funding to incentivize these types of programs. Please see above for NDEP-specific authority to acquire and implement federal funding.

W2.6 - Incentivize methane capture and use in waste management facilities and provide funding to conduct studies on the prioritization of specific waste facilities and their capacity for Landfill Gas Capture.

Authority to Implement: Key agencies for waste reduction measures would include state, local, and Tribal governments; waste management authorities; environmental protection agencies; sustainability entities; and planning agencies, all of which have the authority to provide funding to incentivize these types of programs. Please see above for NDEP-specific authority to acquire and implement federal funding.

3.3.6.6 GHG Emission Reductions

The quantification of these measures leverage a tailored spreadsheet tool, conceived specifically for the PCAP, to estimate emission reductions. This tool integrates comprehensive data sets, including a state greenhouse gas inventory, to calculate emissions reductions from 2025 to 2050. This methodological approach ensures accurate, detailed assessments of the measure's impact on reducing emissions, which supports Nevada's sustainability goals. Table 29 presents the emission reductions. In the case of the Waste Focus Area, 2025 will be a year for building the program's capacity, and therefore, no reduction will be observed. Emissions reductions efforts are scheduled to start in 2026.

Table 29. Projected GHG emission reductions for priority measures in the Waste Focus Area.

Priority Measure	Yearly Emissions Reductions (MtCO ₂ e)		Cumulative Emissions Reductions (MtCO ₂ e)	
	by 2025	by 2030	2025–2030	2025–2050
1. Build Capacity	This measure facilitates the emissions reductions.			
2. Reduce Emissions Through Reduction and Waste Diversion Programs	This measure will start reducing emissions in 2026.	607,951	1,417,645	23,908,057
Total	0	607,951	1,417,645	23,908,057

The following assumptions were used in calculating the above emission reduction estimates. It should be noted that these assumptions were made to depict a potential pathway for Nevada to achieve its 2025 and 2030 emission reduction goals. Implementing the waste priority measures is a means of working towards this scenario and helping Nevada meet its emission reduction goals. The following assumptions were used in calculating the above emission reduction estimates:

- In 2021, Nevada had a recycling rate of 24%.¹⁵⁷ It is assumed that this will increase to a 35% recycling rate by 2030, focusing on LIDAC census tracts.
- The emissions reductions quantified are mostly related to the decrease in methane emissions due to the increase in the composting rate.
- Other significant benefits of this policy were not quantified. These include air pollution benefits due to the decrease in the direct emissions of particulate matter and volatile organic compounds and the indirect effect on ozone concentrations due to the direct emissions of methane.

3.3.6.7 Transformative Impact and Co-Benefits in LIDACs

Waste diversion yields both direct and indirect benefits for the community. Primarily, it plays a role in reducing methane production in landfills, consequently lowering GHG emissions in the atmosphere. Additionally, waste diversion contributes to prolonging the life of landfills and mitigating undesirable aspects like odor in the region. Communities benefit from programs such as curbside organic and recycling collection by gaining a deeper understanding of their waste generation. In addition, embracing a shift towards a circular economy fosters sustainable practices, reducing GHG emissions and heightening awareness around product life cycles. This transition not only promotes environmental consciousness but also translates it into cost savings for consumers. It incentivizes businesses to innovate and adopt environmentally friendly methods.

Waste diversion programs can provide a number of indirect benefits to LIDACs. These initiatives can create economic opportunities by generating jobs and fostering resource conservation, which is especially beneficial in communities with limited access to resources. By addressing environmental justice concerns, waste diversion programs contribute to healthier surrounding environments and empower residents through education programs and skill building. Additionally, cost savings and revenue generation from recycling initiatives alleviate the financial burdens on individuals and the community. Waste diversion can ensure that all communities, regardless of their socio-economic status, have access to and benefit from sustainable waste practices. Food recovery programs are additionally a co-benefit as they help tackle the inaccessibility some have to food, creating a social lens to food reduction measure programs. Overall, these programs enhance community resilience, elevate environmental health, and create more sustainable practices. Figure 31 shows that LIDACs located in Central and East Las Vegas, as well as in the eastern portions of Reno, may benefit the most from the implementation of these measures.

¹⁵⁷ Nevada Division of Environmental Protection "2023 Recycling and Waste Reduction Report". 2023. https://www.leg.state.nv.us/Division/Research/Documents/RTTL_NRS444A.070_2023.pdf.

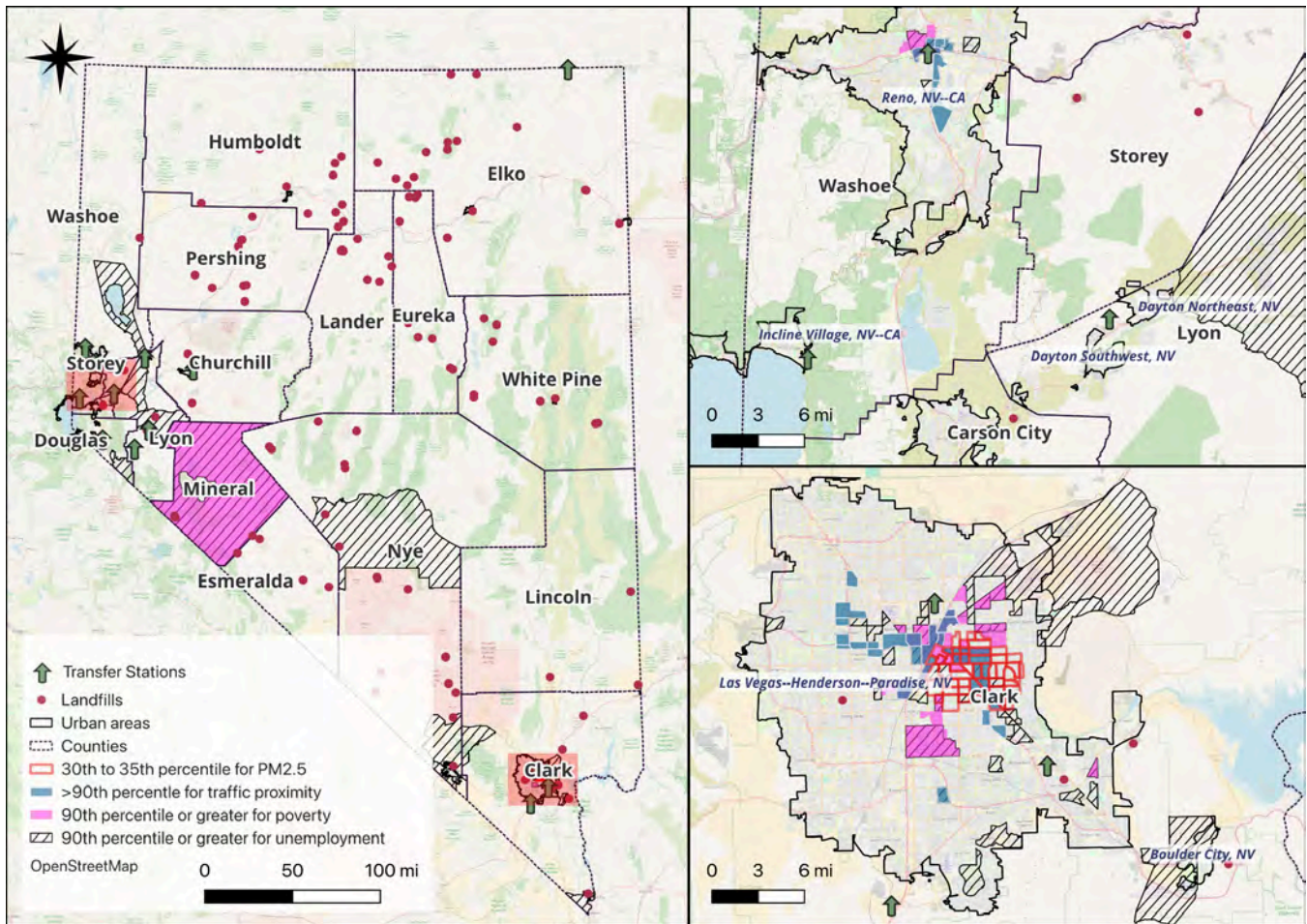


Figure 31. LIDAC census tracts that will most benefit from measures within the Waste Focus Area.

LIDACs in census tracts that rank in the 90th percentile or higher for unemployment, diesel particulate matter, traffic proximity, and poverty, and the location of transfer stations and landfills within Nevada. Source: Council on Environmental Quality 2022; NDEP.

3.3.6.8 Example Programs or Initiatives

This section offers examples of how various measures within the Waste Focus Area can be combined to develop comprehensive and transformative programs across the state. Actual implementation may vary.

Table 30. Potential programs or initiatives within Measure 5: Waste.

Description	Actions
Organic Waste Diversion Programs	
<p>Incentivize waste diversion and composting, including piloting and evaluating the feasibility of scaling-up curbside green waste collection and composting. (Precedents include Washoe County and Clarke County).</p>	<ul style="list-style-type: none"> ● W1.1 Develop an education and outreach campaign to help residents understand how to reduce organic waste and compost and to teach them about waste’s connection to greenhouse gas emissions. ● W1.2 Develop a plan for piloting or scaling-up green waste curbside collection and composting at the local government level. ● W2.1 Encourage local governments to pilot waste diversion and sustainable materials management. ● W2.2 Encourage residents and businesses to reduce waste and replace single-use plastics. ● W2.3 Incentivize food diversion and recovery programs for businesses of all sizes.



3.3.7 Focus Area 6:

Restore Landscapes and Sequester Carbon

Measures in this focus area promote restoration of and carbon sequestration in degraded landscapes. Related to these sectors are also emissions from wildfires, which is a major issue in the state, as discussed in Section 2.2.3.1. Priority measures include tree planting, ecological restoration, and adaptive reuse of brownfields and former mining sites, as well as capacity building. Measures support ongoing research on how land use, land-use change, and the agricultural sector contribute to and potentially reduce GHG emissions. Measures are also included to support work being done in this focus area by Tribes in Nevada. Restored natural lands and urban greenspaces will create additional green spaces and recreational opportunities, increase biodiversity, and improve air and water quality.

3.3.7.1 Emissions Context

Apart from wildland fire emissions, the land use, land-use change, and forestry sector was a net GHG emissions sink of 8.2 MMtCO₂e in 2021. Sequestered emissions in 2021 were 1.1 MMtCO₂e less than in 2005, when the sector was a net GHG emissions sink of 9.3 MMtCO₂e. While it is difficult to project exactly how emissions from this sector will shift in the coming years, it is expected that more severe droughts and a less consistent snowpack to provide water during the growing season will impact the state's forests. The frequency and intensity of wildland fires is expected to influence this sector as well. Additionally, a 2023 study conducted by the Desert Research Institute to examine the carbon flux potential for natural and working lands in the state found that non-forest ecosystems in Nevada have the potential to sequester a significant amount of carbon, although the impact of the sequestration may be reduced, or even altered, due to fluxes in precipitation, temperature, and wildfires. A 2022 study by the Nature Conservancy that sought to understand sequestration potential in rangeland soils emphasized the potential of rangeland restoration to increase below-ground carbon sequestration. It is estimated that emissions sinks will stay at 8.2 MMtCO₂e by 2025 and 2030.¹⁵⁸ The following table presents GHG historical emissions and sinks in Nevada for the sector.

¹⁵⁸ Nevada Division of Environmental Protection. "Nevada Statewide Greenhouse Gas Emissions Inventory and Projections, 1990-2043," 2023. <https://ndep.nv.gov/air/air-pollutants/greenhouse-gas-emissions>

Table 31. Land use, land-se change, and forestry GHG emissions and sinks by source, select years (MMtCO₂e).¹⁵⁹

Sub-Sector	1990	1995	2000	2005	2010	2015	2019	2020	2021
Forest Carbon Flux	-8.82	-8.86	-6.68	-6.68	-6.13	-6.13	-6.13	-6.13	-6.13
Urban Trees	-0.05	-0.06	-0.08	-0.09	-0.11	-0.12	-0.14	-0.14	-0.13
Landfilled Yard Trimmings and Food Scraps	-0.13	-0.10	-0.10	-0.10	-0.11	-0.10	-0.11	-0.11	-0.10
Agricultural Soil Carbon Flux	0.37	-0.45	-0.73	-2.46	-1.97	-0.97	-1.87	-1.94	-1.85
Settlement Soils	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total	-8.63	-9.46	-7.59	-9.33	-8.31	-7.33	-8.24	-8.32	-8.22

3.3.7.2 Status of Programs in Nevada

Several ongoing efforts in Nevada prioritize carbon sequestration and green infrastructure development, brownfield redevelopment, and climate-smart agricultural practices. NDEP's existing Brownfields Program includes a revolving loan fund designed to help owners or developers of a previously contaminated site with remediation. Additionally, the program supports municipalities and non-profits who are interested in assessing existing brownfields sites.¹⁶⁰ Given that many of the brownfields in the state are sited within or in close proximity to LIDACs, the Brownfields Program particularly benefits these communities. At the municipal level, several efforts are already underway with regards to green infrastructure and carbon sequestration. For example, Reno, which has the oldest urban forestry program in the state, is prioritizing low-impact development (LID), green infrastructure, and sustainable site development as means to better manage storm events. The city has targeted doubling its urban forest canopy to 10% by 2036 and ensuring that 85% of residents live within a reasonable distance from a heat island mitigation feature such as localized cooling through tree canopy cover.¹⁶¹ Finally, two rural businesses in the state have taken advantage of the USDA's Rural Energy for

¹⁵⁹ Nevada Division of Environmental Protection. "Nevada Statewide Greenhouse Gas Emissions Inventory and Projections, 1990-2043," 2023. <https://ndep.nv.gov/air/air-pollutants/greenhouse-gas-emissions>

¹⁶⁰ Nevada Division of Environmental Protection. "Brownfields." Accessed February 2, 2024. <https://ndep.nv.gov/environmental-cleanup/brownfields>.

¹⁶¹ City of Reno. "Sustainability & Climate Action Plan," 2019. <https://www.reno.gov/home/showpublisheddocument/82214/637050147692830000>.

America Program to help agricultural producers and rural small businesses purchase and install renewable energy systems and make energy efficiency improvements.¹⁶²

3.3.7.3 Federal Funding

A range of federal funding opportunities support the priority measures listed in this focus area (see Appendix B for a complete list). For example, the US Forest Service has an Urban and Community Forest Grants Program that funds projects intended to increase equitable access to trees and open space.¹⁶³ Additionally, through the US EPA, 48 different federal funding packages can be leveraged to support brownfields revitalization,¹⁶⁴ including the Brownfields Grants Program, the Brownfields Job Training Grant Program, and Mine Reclamation Funding.¹⁶⁵ Through the Green Infrastructure Federal Collaborative,¹⁶⁶ several federal departments offer funding for green infrastructure projects, from EPA's Green Streets, Green Jobs, Green Towns (G3) Grant Program to FEMA's Building Resilient Infrastructure and Communities Program.¹⁶⁷

3.3.7.4 Review Authority

The priority measures will be implemented as incentive-based programs, which would not require additional authority to implement. NDEP has existing legal authority to apply for and receive grant funding pursuant to NRS 445B.230(2) and the ability to cooperate and contract with other governmental entities is also addressed under NRS 445B.230(3) (authority) and NRS 277.180 (provides authority for contracts between one or more public agencies). Many entities have the authority to and have expressed an interest in applying for funding to implement a portion of this work within specific state departments and divisions, cities, counties, Tribes, or corporate settings. NDEP intends to seek funding for measures and will subgrant to other agencies where applicable.

3.3.7.5 Community Engagement Feedback

Community workshops, technical focus groups, and a questionnaire revealed that sequestering carbon is a secondary priority for participants compared to measures related to efficiency and renewable energy. Many recognized that carbon sequestration does not necessarily yield the types of transformative and immediate results that the CPRG grant opportunity could provide, particularly within the short time frame before 2030. However, they did feel it was an important visible measure that could

¹⁶² US Department of Agriculture. "USDA Invests in Climate-Smart Infrastructure for Two Rural Nevada Businesses." Rural Development, December 9, 2021. <https://www.rd.usda.gov/newsroom/news-release/usda-invests-climate-smart-infrastructure-two-rural-nevada-businesses>.

¹⁶³ US Department of Agriculture Forest Service. "Announcing Urban and Community Forestry Funding." April 12, 2023. <https://www.fs.usda.gov/inside-fs/leadership/announcing-urban-and-community-forestry-funding>.

¹⁶⁴ Environmental Protection Agency. "Bipartisan Infrastructure Law: A Historic Investment in Brownfields." Announcements and Schedules, February 22, 2022. <https://www.epa.gov/brownfields/bipartisan-infrastructure-law-historic-investment-brownfields>.

¹⁶⁵ Environmental Protection Agency. "Bipartisan Infrastructure Law: A Historic Investment in Brownfields." Announcements and Schedules, February 22, 2022. <https://www.epa.gov/brownfields/bipartisan-infrastructure-law-historic-investment-brownfields>.

¹⁶⁶ Environmental Protection Agency, OW. "Green Infrastructure Federal Collaborative." Collections and Lists, October 6, 2015. <https://www.epa.gov/green-infrastructure/green-infrastructure-federal-collaborative>.

¹⁶⁷ Federal Emergency Management Agency. "Building Resilient Infrastructure and Communities," January 31, 2024. <https://www.fema.gov/grants/mitigation/building-resilient-infrastructure-communities>.

help increase community support for the entire program. Suggestions included improving urban forestry measures and revitalizing brownfields. Additionally, some participants also suggested that there needs to be a greater understanding of the market's role in this sector.

Table 32. Restore and Sequester priority measures.

1. **Build Capacity:** *This includes supporting community-based organizations, local governments, and non-profit sectors with building capacity to address ecological restoration and carbon sequestration challenges, from the planning to the implementation phases.*

S1.1 - Support community organizations in LIDACs and Tribes with restoration planning and implementation. This can include, but is not limited to, support and funding for tree and vegetation planting programs, site identification for maximum carbon sequestration, and program development to get community members involved.

Authority to Implement: Key agencies for restoration and sequestration measures would include state, local, and Tribal governments; conservation agencies; forestry divisions; land-use agencies; environmental protection agencies; sustainability entities; and planning agencies, all of which have the authority to provide funding to incentivize these types of programs. Please see above for NDEP-specific authority to acquire and implement federal funding.

S1.2 - Develop a program for ecological restoration and carbon sequestration. This can include, but is not limited to, providing funding and technical assistance to local governments, as well as providing support in mapping and prioritizing sites for different-sized projects.

Authority to Implement: Key agencies for restoration and sequestration measures would include state, local, and Tribal governments; conservation agencies; forestry divisions; land--use agencies, environmental protection agencies; sustainability entities;; and planning agencies, all of which have the authority to provide funding to incentivize these types of programs. Please see above for NDEP- specific authority to acquire and implement federal funding.

S1.3 Support research and development in carbon sequestration and restoration projects. This can include, but is not limited to, providing funding and technical assistance to local governments, aiding with mapping, increasing GHG reduction capacity, sharing knowledge on various technical projects (e.g., green infrastructure and stormwater management), and explaining the community co-benefits associated with carbon sequestration (e.g., urban heat- island effect mitigation, better water quality).

Authority to Implement: Key agencies for restoration and sequestration measures would include state, local, and Tribal governments; conservation agencies; forestry divisions; land-use agencies; environmental protection agencies; sustainability entities, and planning agencies, all of which have the authority to provide funding to incentivize these types of programs. Please see above for NDEP- specific authority to acquire and implement federal funding.

2. Restore and Sequester: *This includes programs, projects, new technologies, and initiatives that promote ecological restoration and carbon sequestration.*

S2.1 Expand NDEP’s Brownfields Program to incentivize carbon sequestration on brownfield sites. This can include, but is not limited to, providing funding and technical assistance to local governments, aiding them in the prioritization of brownfields, and identifying potential carbon sequestration techniques.

Authority to Implement: Key agencies for restoration and sequestration measures would include state, local, and Tribal governments; conservation agencies; forestry divisions; land-use agencies; environmental protection agencies; sustainability entities; and planning agencies, all of which have the authority to provide funding to incentivize these types of programs. Please see above for NDEP-specific authority to acquire and implement federal funding.

S2.2 Incentivize ecological restoration projects with enhanced community benefits. This can include, but is not limited to, providing funding and technical assistance to local governments and community groups, aiding with mapping, increasing GHG reduction capacity, sharing knowledge on various technical approaches (e.g., green infrastructure and stormwater management), and identifying co-benefits associated with carbon sequestration (e.g., urban-heat-island-effect mitigation, better water quality).

Authority to Implement: Key agencies for restoration and sequestration measures would include state, local, and Tribal governments; conservation agencies; forestry divisions; land-use agencies; environmental protection agencies; sustainability entities; and planning agencies, all of which have the authority to provide funding to incentivize these

types of programs. Please see above for NDEP- specific authority to acquire and implement federal funding.

S2.3 Increase the coverage and health of the tree canopy. This can include, but is not limited to, providing funding and technical assistance to local governments and community groups, aiding in developing canopy cover percentage goals, developing programs for tree planting, and increasing awareness about community co-benefits (e.g., reduction of urban-heat-island effect, better air quality, shade capacity).

Authority to Implement: Key agencies for restoration and sequestration measures would include state, local, and Tribal governments; conservation agencies; forestry divisions; land-use agencies; environmental protection agencies; sustainability entities; and planning agencies, all of which have the authority to provide funding to incentivize these types of programs. Please see above for NDEP- specific authority to acquire and implement federal funding.

S2.4 Develop climate-smart agricultural practices such as healthy soil practices, efficient water management strategies, integrated pest management, diversification of crop varieties, and adaptive management techniques. This can include, but is not limited to, aiding farmers with such practices by providing funding and outreach programs, including local workshops and presentations on the above adaptive management techniques.

Authority to Implement: Key agencies for restoration and sequestration measures would include state, local, and Tribal governments; conservation agencies; forestry divisions; land-use agencies; environmental protection agencies; sustainability entities; or planning agencies, all of which have the authority to provide funding to incentivize these types of programs. Please see above for NDEP-specific authority to acquire and implement federal funding.

S2.5 Support carbon sequestration via green infrastructure, active transportation, and renewable energy projects. This can include, but is not limited to, providing funding and technical assistance to local governments and community groups, which includes helping develop programs for green infrastructure, active transportation, and community renewable energy projects.

Authority to Implement: Key agencies for restoration and sequestration measures would include state, local, and Tribal governments; conservation agencies; forestry divisions; land-use agencies; environmental protection agencies; sustainability entities; and planning agencies, all of which have the authority to provide funding to incentivize these

types of programs. Please see above for NDEP- specific authority to acquire and implement federal funding.

3.3.7.6 GHG Emission Reductions

The quantification of this measure leverages a tailored spreadsheet tool, conceived specifically for the PCAP, to estimate emission reductions. This tool integrates comprehensive data sets, including a state greenhouse gas inventory, to calculate emissions reductions from 2025 to 2050. This methodological approach ensures accurate, detailed assessments of the measure's impact on reducing emissions, which supports Nevada's sustainability goals. Table 33 presents the emission reductions.

Table 33. Projected GHG emission reductions for priority measures in Restore Landscapes and Sequester Carbon Focus Area.

Priority Measure	Yearly Emissions Reductions (MtCO ₂ e)		Cumulative Emissions Reductions (MtCO ₂ e)	
	by 2025	by 2030	2025–2030	2025–2050
1. Build Capacity	This measure facilitates the emissions reductions.			
2. Restore and Sequester	This measure will start reducing emissions in 2030.	29	29	10,074
Total	0	29	29	10,074

The reductions above include the following assumptions:

- The measure will promote ecological restoration and carbon sequestration, achieving 395,000 trees planted by 2030.
- In the first five years, the new restored areas do not capture a significant amount of carbon, but after this time period, the carbon sequestration factor is (metric ton C/hectare/year).¹⁶⁸
- Other significant benefits of this policy, such as climate resiliency, ecosystem services, and air pollution benefits, were not quantified.

3.3.7.7 Transformative Impact and Co-benefits in LIDACs

Measures focused on restoring ecosystems and sequestering carbon have transformative impacts and co-benefits. These measures empower community-based organizations, local governments, and the non-profit sector to tackle ecological restoration and carbon sequestration and enhance their abilities to

¹⁶⁸ Environmental Protection Agency, OAR. "State Inventory Tools, Land-Use Land Use Change and Forestry Module." Data and Tools, August 10, 2017. <https://www.epa.gov/statelocalenergy/download-state-inventory-and-projection-tool>.

plan and implement. The co-benefits include ecosystem services improvement, air decontamination, and a cooling effect through increased greenery and healthier ecosystems. Specifically, expanding ecological restoration and carbon sequestration projects can lead to enhanced biodiversity, improved air and water quality, increased carbon capture, and the promotion of sustainable agricultural practices. Supporting green infrastructure and renewable energy projects contributes to reducing urban heat islands, fostering active transportation, and enhancing community well-being.

These measures benefit LIDACs and Tribes in Nevada by directly addressing environmental justice and sustainability challenges. By supporting community organizations in these areas with restoration and carbon sequestration projects, the initiatives aim to improve local environmental conditions, enhance access to cleaner air and water, and foster healthier living environments. These efforts contribute to mitigating climate change impacts and empower these communities through increased participation in environmental decision-making, leading to strengthened resilience and improved quality of life. LIDACs and Tribal lands that are close to brownfield sites and that rank in the 90th percentile or above for impervious surfaces and expected agricultural loss due to climate change stand to benefit from the implementation of these measures.

Figure 32 shows the location of LIDACs that rank at the 90th percentile or higher for potential agricultural loss due to climate change and high levels of impervious cover. These are mostly located in rural counties and urban counties, respectively. These LIDACs would most benefit from restore and sequester measures that improve agricultural production on degraded lands or improve landscapes and ecosystems within urban areas. Key landscapes such as agricultural lands, mesquite bosques, desert washes, and Sierra Nevada forests and woodlands are also shown, in addition to Indian Lands (according to the BIA).

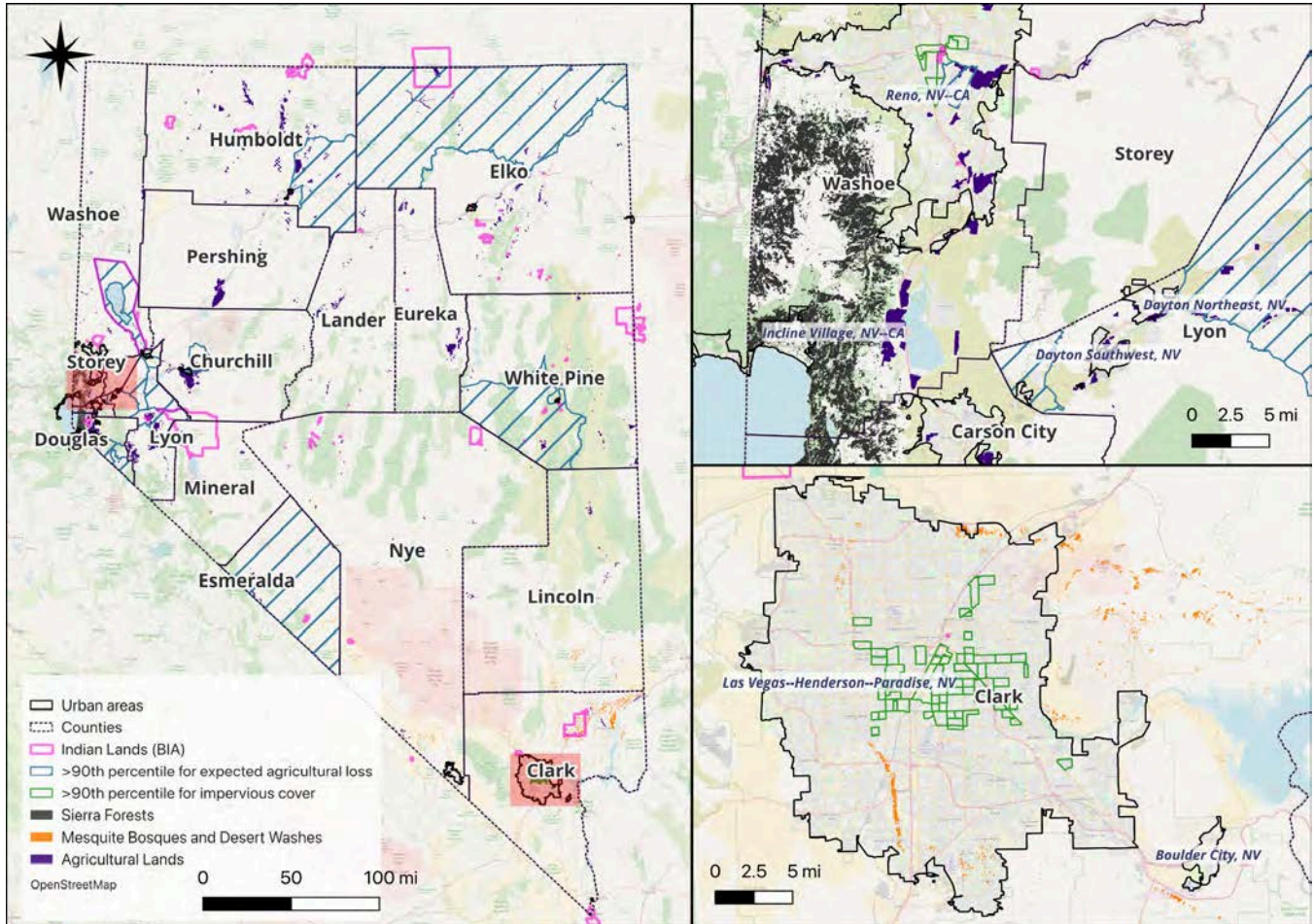


Figure 32. LIDACs benefitting from implementation of measures in the Restore and Sequester Focus Area.

Source: Council on Environmental Quality, 2022.

3.3.7.8 Potential Programs or Initiatives

This section offers examples of how various measures within the Restore and Sequester Focus Area can be implemented (Table 34). Actual implementation may vary.

Table 34. Potential programs or initiatives within Measure 6: Restore Landscapes and Sequester Carbon.

Description	Measures
Community-Centered Restoration and Carbon Sequestration Projects	
Support existing state land conservation goals and ecological restoration programs, and develop new programs on healthy soils, urban forestry, and green infrastructure/adaptive reuse, linking these efforts with active transportation and renewable energy projects, where possible.	<ul style="list-style-type: none"> ● S1.1 - Support community organizations in LIDACs and Tribes with restoration planning and implementation. ● S1.2 - Develop a program for ecological restoration and carbon sequestration. ● S1.3 - Support research and development in carbon sequestration and restoration projects. ● S2.4 - Develop climate-smart agricultural practices such as healthy soil practices, efficient water management strategies, integrated pest management, diversification of crop varieties, and adaptive management techniques. ● S2.5 - Support carbon sequestration via green infrastructure, active transportation, and renewable energy projects.
Repurpose Brownfields and Mines for Carbon Capture	
Build on NDEP’s existing Brownfields Program to incentivize the use of former mines and brownfield sites for CO ₂ storage and incentivize or require ecological restoration or green infrastructure/adaptive reuse of these sites wherever possible.	<ul style="list-style-type: none"> ● S1.2 - Develop a program for ecological restoration and carbon sequestration. ● S2.1 - Expand NDEP’s Brownfields Program to incentivize carbon sequestration on brownfield sites. ● S2.5 - Support carbon sequestration via green infrastructure, active transportation, and renewable energy projects.

3.4 PCAP GHG Emission Reductions

The full implementation of all measures within the six PCAP sectoral-level focus areas will reduce GHG emissions within the state over time. A summary of the total emission reductions is shown in Table 35.

Table 35. Summary of GHG emission reductions achieved by PCAP measures.

Focus Area	Yearly Reductions by 2025 (MtCO ₂ e)	Yearly Reductions by 2030 (MtCO ₂ e)	Yearly Reductions by 2050 (MtCO ₂ e)
Transportation	24,635	896,591	993,268
Buildings	62,788	602,495	851,576
Energy System	1,389,966	5,999,602	5,998,085
Industry	364	256,629	256,629
Waste	0	607,951	1,591,893
Restore and Sequester	0	29	2,261
Total	1,477,753	8,363,296	9,693,712

The execution of the PCAP measures will set Nevada on the path to meet the state's emission reduction targets by 2025 and 2030. These reduction targets were established in 2019 by SB 254.¹⁶⁹ The implementation rate of the PCAP measures will peak in 2030 after yearly emissions reductions will reach a steady state due to loss of CPRG funding. Additional efforts associated with the CCAP are expected to empower Nevada to achieve all of its emissions reduction objectives, as outlined in Figure 33.

¹⁶⁹ Nevada State Legislature. Bill SB254 Overview, Pub. L. No. 254. Accessed February 2, 2024. <https://www.leg.state.nv.us/App/NELIS/REL/80th2019/Bill/6431/Overview>.

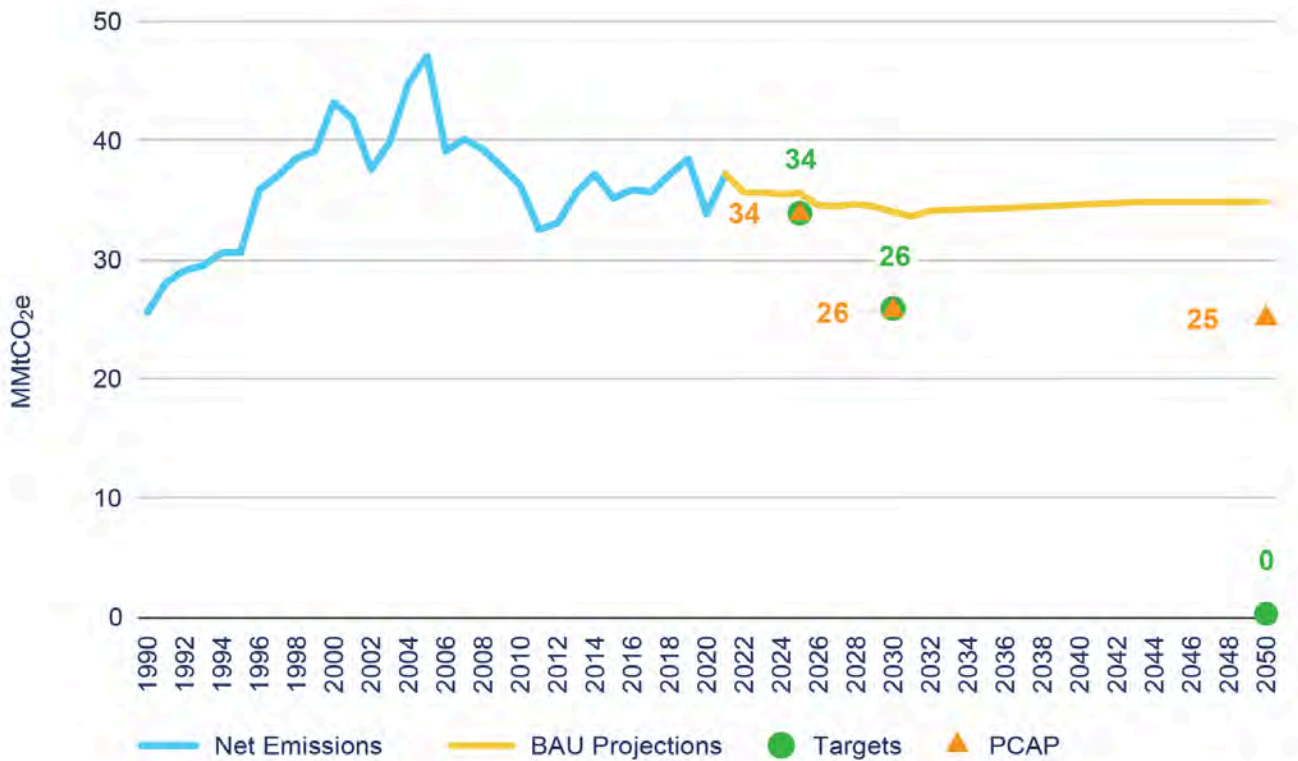


Figure 33. Illustration of historical emissions, projected emissions, Nevada’s GHG targets, and PCAP emissions.¹⁷⁰

Nevada’s actual GHG emissions from 1990 to 2021 (blue line), projected emissions through 2050, assuming business as usual (yellow line), State GHG emission reduction targets (green circles), and projected emissions resulting from the full implementation of PCAP measures (orange triangles).

¹⁷⁰ Nevada Division of Environmental Protection. “Nevada Statewide Greenhouse Gas Emissions Inventory and Projections, 1990-2043,” 2023. <https://ndep.nv.gov/air/air-pollutants/greenhouse-gas-emissions>

4 Next Steps

4.1 Developing the Comprehensive Climate Action Plan (CCAP)

The PCAP provides the foundation for a more comprehensive analysis in the CCAP. The CCAP will identify all GHG sources, sinks, and sectors in Nevada, and it includes mid- and long-term reduction strategies. A CCAP is due in 2025 and will cover a more comprehensive list of Focus Areas to empower Nevada in achieving its subsequent emissions reduction goals. The CCAP will continue to describe how measures can benefit LIDACs and the state, both directly and indirectly, and will include a workforce planning analysis.

The intent of the PCAP is to identify near-term and implementation-ready strategies, initiatives, and other projects that aim to reduce emissions of GHGs and other pollutants. The intent of the CCAP is to build upon the PCAP by identifying all GHG sources, sinks, and sectors present in the state and establishing near- and long-term reduction strategies. Engagement will include meaningful and targeted outreach events with all interested and affected parties. Comments or suggestions to improve outreach and engagement efforts are encouraged and always ongoing.

4.2 Engagement Next Steps

Interviewees from the pre-engagement process expressed a wide range of views and had many insights on how to proceed with engagement for climate action. This included recommendations for development and implementation of PCAP projects and for establishing near- and long-term reduction strategies during the CCAP process. A detailed engagement plan for the CCAP is being developed based on these inputs. The plan will align with the International Association for Public Participation (IAP2) engagement framework, which emphasizes the involvement of interested and affected parties in deciding how they will be engaged. The engagement process for the CCAP will begin later in 2024.

Many interviewees emphasized a thoughtful, pragmatic approach to reaching the public and engaging diverse communities. Interviewees conveyed uncertainty toward the technical capacity to mobilize climate action among diverse populations. Accordingly, there was a preference for engagement techniques that educate, inspire, and mobilize people to take tangible action.

Partnering with trusted organizations and individuals with strong networks to engage diverse interested and affected parties is also crucial. A mix of engagement and communication strategies will be used to engage interested and affected parties, including diverse segments of the public who may not usually be involved with climate action but who may be negatively affected by climate impacts. Trusted

community leaders and organizations will be essential partners in reaching populations who vary by characteristics such as age, social and climate vulnerability, culture, and language.

Based on feedback about the PCAP process, future engagement will be carefully designed to ensure high-functioning meeting technology and online tools and adequate time for detailed discussion, and it will continue to enable opportunities for conversation among diverse audiences.

Overall, the success of the PCAP project-specific engagement and the CCAP Engagement Plan will largely depend on the following factors:

- Working with a diverse group of trusted community leaders, organizations, and networks;
- Connecting the Plan with people's everyday experiences;
- Tailoring engagement and messaging to diverse populations; and ,
- Effectively managing divergent perspectives among interested and affected parties.

5 Appendices

5.1 Appendix A. Data, Methods, and Assumptions Manual

This appendix describes the data, methodologies, and assumptions used to calculate emissions reductions related with all measures.

Transportation

Assumptions

- 150,000 new EVs are registered annually in Nevada by 2030.
- Public fleets will incorporate 1,000 EVs by 2030. Also, 800 clean heavy-duty vehicles are in use by 2030.
- Bike use grows, replacing vehicle trips due to the development of bike infrastructure, and 200,000 e-bikes are in use by 2030 thanks to rebates.
- A modification in the mode share due to the increase in micro-mobility aimed at accelerating the development of bike and pedestrian network infrastructure.
- Two percent of the state's flights are powered by sustainable aviation fuels by 2030.

Methods

In quantifying emissions reductions for transportation focus areas, the methodology integrates data from multiple sources.

Table A1. Data sources and sets for the Transportation Focus Area.

Source	Data Set
Federal Highway Administration	Vehicle Miles Traveled (VMT) data by vehicle type ¹⁷¹
NREL's BC Transit Fuel Cell Bus Project	Alternative fuel vehicle consumption metrics ¹⁷²
Replica	Detailed mode-specific transportation data, including trip numbers, lengths, and occupancy rates by county ¹⁷³

¹⁷¹ Federal Highway Administration. "Highway Statistics 2020." <https://www.fhwa.dot.gov/policyinformation/statistics/2020/>.

¹⁷² National Renewable Energy Laboratory. "BC Transit Fuel Cell Bus Project: Evaluation Results." <https://www.nrel.gov/docs/fy14osti/60603.pdf>

¹⁷³ Replica. "Detailed Mode-Specific Transportation Datasets, Including Trip Numbers, Lengths, and Occupancy Rates by County." Retrieved December 2023.

Source	Data Set
US Department of Energy's resources, Alternative Fuel Data Center, and 2023 Fuel Economy Guide	Vehicle mileage and fuel consumption rates ¹⁷⁴
American Council for an Energy-Efficient Economy and average vehicle emissions rates from the US Department of Transportation	Heavy-duty vehicle fuel consumption ¹⁷⁵
Nevada's Statewide GHG Inventory	Consumption and emissions of aviation fuel ¹⁷⁶
NREL's Annual Technology Baseline	Aviation fuel consumption, fuel cost, and CO ₂ emissions ¹⁷⁷
United States Department of Transportation, National Transportation Statistics	Estimated national average vehicle emissions rates per vehicle by vehicle type using gasoline and diesel ¹⁷⁸
EPA Conversion Factors for Hydrocarbon Emission Components	Conversion factors for hydrocarbon exhaust emission results to VOCs ¹⁷⁹

Calculations for Electric Vehicles

The calculation for electric vehicle adoption and its impact on emissions reductions involves several steps, each leveraging specific data points to quantify the net emissions reductions achieved by transitioning from conventional vehicles to EVs. A detailed explanation of the process, including the relevant equations, is provided below.

VMT to Shift

This step calculates the total miles that will be transitioned by type of vehicle from gasoline or diesel to electric vehicles:

$$VMT\ to\ shift\ (mile) = Number\ of\ Vehicles\ to\ shift \times Annual\ VMT\ per\ vehicle\ (mile)$$

This equation multiplies the number of vehicles by type being transitioned to EVs by the annual VMT per vehicle, giving the total miles that will now be covered by EVs instead of conventional vehicles.

¹⁷⁴ U.S. Department of Energy. "2023 Fuel Economy Guide." Published January 2024. <https://fuelconomy.gov/feg/pdfs/guides/FEG2023.pdf>.

¹⁷⁵ Nadel, Steven, and Eric Junga. "Electrifying Trucks: From Delivery Vans to Buses to 18-Wheelers." An ACEEE White Paper, January 2020. https://www.aceee.org/sites/default/files/pdfs/electric_trucks_1.pdf

¹⁷⁶ Nevada Division of Environmental Protection. "Nevada Statewide Greenhouse Gas Emissions Inventory and Projections, 1990-2043" 2023 Report. <https://ndep.nv.gov/air/air-pollutants/greenhouse-gas-emissions>

¹⁷⁷ National Renewable Energy Laboratory. "Aviation - Fuel Consumption, Fuel Cost, and CO₂ Emissions." Annual Technology Baseline. <https://atb.nrel.gov/transportation/2022/aviation>

¹⁷⁸ United States Department of Transportation. "Estimated U.S. Average Vehicle Emissions Rates per Vehicle by Vehicle Type using Gasoline and Diesel." National Transportation Statistics. <https://www.bts.gov/content/estimated-national-average-vehicle-emissions-rates-vehicle-type-using-gasoline-and-diesel>

¹⁷⁹ Environmental Protection Agency. "Conversion Factors for Hydrocarbon Emission Components." December 2005. <https://19january2017snapshot.epa.gov/www3/otaq/models/nonrdmdl/nonrdmdl2005/420r05015.pdf>

Gross Emissions Reduction

Gross emissions reduction quantifies the total potential reduction in emissions if the shifted VMT were no longer contributing to greenhouse gas (GHG) emissions from conventional vehicle tailpipes.

$$\text{Gross Emissions Reduction (MtCO}_2\text{e)} = \text{VMT to shift (mile)} \times \text{Emission Factor (MtCO}_2\text{e/mile)}$$

The emission factor (MtCO₂e/mile) represents the amount of CO₂e emissions produced per mile by conventional vehicles. Multiplying this factor by the VMT to shift gives the total emissions that could be avoided by switching to EVs.

Emissions from EVs

Emissions attributed to the electricity consumed by EVs for the shifted VMT, considering the average electricity consumption by type of EV and the emission factor for electricity generation is calculated by:

$$\text{Emissions EVs (MtCO}_2\text{e)} = \text{VMT to shift by type of EV (mile)} \times \text{Average Electricity consumption by Type of EV (GWh/mile)} \times \text{Emission Factor Electricity (MtCO}_2\text{e/GWh)}$$

This equation takes into account the average electricity consumption (GWh/mile) by the type of EV for the shifted VMT and multiplies it by the emission factor for electricity (MtCO₂e/GWh), reflecting the emissions associated with generating the electricity consumed by EVs.

Net Emissions Reduction

The net emissions reduction is the difference between the gross emissions reduction (potential emissions savings from not using conventional vehicles) and the emissions attributable to the electricity used by EVs.

$$\text{Net Emission Reduction (MT CO}_2\text{e)} = \text{Gross Emissions Reduction (MT CO}_2\text{e)} - \text{Emissions EVs (MT CO}_2\text{e)}$$

This final step provides the overall emissions reduction benefit of transitioning to EVs, taking into account the emissions from electricity generation for EV charging.

Mode Shift

The calculation for mode shift involves estimating the reduction in VMT as a result of shifting transportation modes from personal gasoline-powered vehicles to alternative modes such as public transit, biking, walking, or electric vehicles. The formula provided calculates the reduction in VMT attributable to such a mode shift, expressed in million VMT:

VMT Reduction Calculation

$$\text{VMT reduction (Million VMT)} = \text{Total VMT with Gasoline (Million VMT)} - (\text{Total VMT with Gasoline (Million VMT)}) \times \frac{\text{Share of VMT by auto Baseline (\%)}}{\text{Share of VMT by auto After action (\%)}}$$

Total VMT with Gasoline (Million VMT): This represents the total miles traveled by gasoline-powered vehicles before any action is taken to encourage a mode shift. It serves as the baseline against which the reduction in VMT is measured.

- Share of VMT by auto After action (%): This percentage reflects the projected share of total VMT that is covered by gasoline-powered vehicles after specific actions have been implemented to promote the use of alternative transportation modes.
- Share of VMT by auto Baseline (%): This is the baseline share of total VMT covered by gasoline-powered vehicles before any interventions to encourage a mode shift.

The equation subtracts the adjusted VMT (considering the action-induced change in the share of VMT by auto) from the baseline total VMT with gasoline to calculate the reduction in VMT due to the mode shift, quantifying how much vehicle travel has been avoided by shifting away from gasoline-powered vehicles toward more sustainable modes of transportation.

Emissions Reductions

The emissions reductions from a transportation mode shift are calculated by multiplying the reduction in VMT by the emission factor, yielding the total emissions avoided in MtCO₂e. The formula is as follows:

$$\text{Emissions Reductions (MtCO}_2\text{e)} = \text{VMT reduction (Million VMT)} \times \text{Emission factor (MtCO}_2\text{e/ Million VMT)}$$

This equation translates VMT reduction into greenhouse gas emissions savings, providing a clear measure of the environmental benefits of shifting away from gasoline-powered vehicles towards more sustainable transportation modes.

Calculations for E-Bikes

For calculating the impact of e-bikes on emissions reductions, the RMI E-Bike Environment and Economics Impact Assessment Calculator was used to determine the reduction in VMT attributable to e-bike adoption.

Emission Reductions

Emissions reductions were quantified using the established formula that multiplies the VMT reduction by an emission factor, resulting in the total emissions avoided, expressed in MtCO₂e. The formula used is:

$$\text{Emission Reduction (MtCO}_2\text{e)} = \text{VMT reduction (Million VMT)} \times \text{Emission factor (MtCO}_2\text{e/Million VMT)}$$

Aviation Fuel

To calculate the reduction in aviation fuel consumption and associated emissions, the analysis begins with current jet fuel consumption and its corresponding emissions based on state inventory data. The estimation of new emissions from the use of jet biofuel relies on comparisons between emissions from conventional jet fuel combustion and jet biofuel emissions, using data from the NREL.

Emissions Calculations

The calculation for new emissions is structured as follows:

$$\begin{aligned} \text{Emissions After Jet Biofuel (MtCO}_2\text{e)} = & \\ & (\text{Conventional Jet Fuel Consumption (Billion Btu)} \times \\ & \text{Emission Factor for Jet Fuel (MtCO}_2\text{e/Billion Btu)}) + \\ & (\text{Jet Biofuel Consumption (Billion Btu)} \times \\ & \text{Emission Factor for Jet Biofuel (MtCO}_2\text{e/Billion Btu)}) \end{aligned}$$

Emissions Reduction

The emissions reduction is then calculated by subtracting the emissions after integrating jet biofuel from the baseline emissions:

$$\text{Emissions Reduction (MtCO}_2\text{e)} = \text{Baseline Emissions (MtCO}_2\text{e)} - \text{Emissions after Jet Biofuel (MtCO}_2\text{e)}$$

Co-Pollutants Reduction Calculations

For the transportation sector, the calculation of emissions reductions for co-pollutants entails analyzing the decrease in VMT and applying designated emissions rates for various vehicle types. The co-pollutants in focus—Volatile Organic Compounds (VOCs), Carbon Monoxide (CO), Nitrogen Oxides (NOx), and Particulate Matter (PM_{2.5})—are evaluated for their emissions impact. The formula to calculate the emissions reductions for each co-pollutant is given by:

$$\text{Emissions Reductions per co - pollutant (metric ton)} = \text{VMT reduction (miles)} \times \text{Emissions Rates per Vehicle Type (metric ton/mile)}$$

In this context:

- VMT reduction (miles) denotes the decrease in vehicle miles traveled, achieved through increased adoption of EVs, greater use of public transit, and encouragement of biking or walking.

- Emissions Rates per Vehicle Type (metric ton/mile) specifies the rate at which each vehicle type emits VOCs, CO, NO_x, and PM_{2.5} per mile. These rates vary by vehicle type and fuel used, reflecting the different contributions to air pollution.

Limitations

The methodology for estimating emissions reductions in Nevada's transportation sector faces technical limitations. Key among these is the assumption of uniform adoption rates for EVs and e-bikes, which may not align with real-world market dynamics, consumer behavior, or policy shifts. The projected expansion of EV charging infrastructure also simplifies the logistical and technical challenges involved in its deployment, such as spatial planning and electrical grid impacts. Additionally, the analysis of sustainable aviation fuel adoption does not fully address potential supply chain constraints or cost implications. Furthermore, the methodology might not accurately capture the intermodal effects on emissions, overlooking how increased use of one mode (e.g., biking) affects others (e.g., public transit). These technical limitations underscore the need for cautious interpretation of projected emissions reductions, highlighting the complexity of transportation sector decarbonization.

Buildings

Assumptions

- Residential buildings achieve the following goals by 2030: 10% of single-family and multi-family buildings are retrofitted to 30% energy efficiency, 10% of existing mobile homes will be retrofitted and 50% of new mobile homes are energy efficient, 50% of new single-family and multi-family buildings are well insulated, solar rooftops are added to about 60,000 homes, and there is 300 MW of installed capacity by 2030 (~5% of homes in the state).
- Non-residential buildings achieve the following goals by 2030: 50% of school and government buildings are retrofitted and have rooftop solar installed (35 MW by 2030) and 7% of commercial and industrial buildings are retrofitted to 30% energy efficiency.

Methods

In quantifying emissions reductions for the Buildings Focus Area, the methodology integrates data from multiple sources.

Table A2. Data sources and sets for Buildings Focus Area.

Source	Data Set
Energy Information Administration (EIA) forms 861 and 176	Electricity and natural gas consumption data for residential and non-residential buildings ¹⁸⁰¹⁸¹
US Census Bureau	Dwelling units by building type ¹⁸²
Replica	Non-residential building floor space ¹⁸³
National Renewable Energy Laboratory's (NREL) ResStock and ComStock databases	Residential and commercial buildings' energy use by type and end use ¹⁸⁴¹⁸⁵
Environmental Protection Agency's (EPA) inventory tool	eGRID electricity and fossil fuel emission factors ¹⁸⁶
NREL PVWatts Calculator	Energy production potential of solar rooftop installations ¹⁸⁷

¹⁸⁰ U.S. Energy Information Administration. "Electricity, Sales and Revenue." <https://www.eia.gov/electricity/data/eia861m/>.

¹⁸¹ U.S. Energy Information Administration. "Natural Gas, Consumption." <https://www.eia.gov/naturalgas/data.php>.

¹⁸² U.S. Census Bureau. "Population and Housing Unit Estimates Datasets." <https://www.census.gov/programs-surveys/popest/data/data-sets.html>.

¹⁸³ Replica. "Non-residential Building Floorspace Dataset by County and Type of Buildings." Retrieved December 2023.

¹⁸⁴ National Renewable Energy Laboratory. "ResStock Public Datasets." <https://resstock.nrel.gov/datasets>.

¹⁸⁵ National Renewable Energy Laboratory (NREL). "ComStock Data." <https://nrel.github.io/ComStock.github.io/docs/data.html>.

¹⁸⁶ Environmental Protection Agency. "Emissions & Generation Resource Integrated Database (eGRID)." <https://www.epa.gov/egrid>.

¹⁸⁷ National Renewable Energy Laboratory. "PVWatts Calculator." <https://pvwatts.nrel.gov/pvwatts.php>.

Source	Data Set
Rocky Mountain Institute's Energy Policy Simulator	Grid electricity emission projections ¹⁸⁸
EIA's Annual Energy Outlook 2023	Housing growth projections ¹⁸⁹
Nevada's Statewide GHG Inventory	Consumption and emissions of natural gas in the buildings sector ¹⁹⁰
EPA National Emissions Inventory (NEI)	Co-pollutants emissions by natural gas combustion in residential and commercial/institutional buildings ¹⁹¹
EPA AVOIDed Emissions and geneRation Tool (AVERT)	Co-pollutants emissions rates for integration of solar rooftop ¹⁹²

Building Retrofits

To accurately quantify the emissions reductions from residential and non-residential building retrofits, the methodology uses equations to recalculate the consumption of electricity and natural gas post-retrofit, alongside the subsequent reductions. Targeting a percentage of reduction in both energy and thermal energy consumption, these calculations enable the assessment of emissions mitigation across electricity and natural gas sectors, measured in MtCO₂e. These estimations incorporate emission factors specific to each type of energy consumption.

This analysis integrates comprehensive data, including retrofitting a specific number of units of residential and non-residential buildings by type and by county. The baseline energy consumption of natural gas and electricity by the end use and type of building.

Calculation of Emissions Reductions:

Electricity emissions (MtCO₂e) are calculated by multiplying the energy use of electricity (in MMBTU) by the emission factor of the grid (in MtCO₂e/MMBTU). The equation below shows the formula:

$$\text{Electricity Emissions (MtCO}_2\text{e)} = \text{Energy Use of Electricity (MMBTU)} \times \text{Emission Factor of the Grid (MtCO}_2\text{e/MMBTU)}$$

¹⁸⁸ Rocky Mountain Institute. "Energy Policy Simulator." <https://energypolicy.solutions/simulator/nevada/en>.

¹⁸⁹ U.S. Energy Information Administration. "Annual Energy Outlook 2023." <https://www.eia.gov/outlooks/aeo/>.

¹⁹⁰ Nevada Division of Environmental Protection. "Nevada Statewide Greenhouse Gas Emissions Inventory and Projections, 1990-2043" 2023 Report. <https://ndep.nv.gov/air/air-pollutants/greenhouse-gas-emissions>.

¹⁹¹ Environmental Protection Agency. "2020 National Emissions Inventory (NEI) Data." <https://www.epa.gov/air-emissions-inventories/2020-national-emissions-inventory-nei-data>.

¹⁹² Environmental Protection Agency. "Avoided Emissions and geneRation Tool (AVERT)." <https://www.epa.gov/avert>.

Natural gas emissions (MtCO₂e) for a given year are determined by the energy use of natural gas (MMBTU) multiplied by the emission factor for natural gas (in MtCO₂e/MMBTU). The equation below shows the formula:

$$\text{Natural Gas Emissions (MtCO}_2\text{e)} = \text{Energy Use of Natural Gas (MMBTU)} \times \text{Emission Factor of Natural Gas (MtCO}_2\text{e/MMBTU)}$$

Total emission reduction (MtCO₂e) is the sum of electricity and natural gas emissions for a given year.

$$\text{Total Emission Reduction (MtCO}_2\text{e)} = \text{Electricity Emissions (MtCO}_2\text{e)} + \text{Natural Gas Emissions (MtCO}_2\text{e)}$$

To quantify the overall impact, the difference between baseline emissions and post-retrofit emissions is calculated, providing the net emissions reduction achieved through the retrofitting efforts:

$$\text{Net Emissions Reduction (MtCO}_2\text{e)} = \text{Total Emission Reduction from Baseline} - \text{Total Emission Reduction after Retrofit}$$

Calculation of Energy Use for Electricity

Electricity use (MMBTU) is determined by applying the energy reduction percentage to the baseline electricity consumption of buildings:

$$\text{Electricity (MMBTU)} = (1 - \text{Energy Reduction \%}) \times \text{Electricity of Baseline Buildings (MMBTU)}$$

In the case of heating with heat pumps, electricity use is calculated by adjusting for thermal energy reduction and the coefficient of performance (COP) of the heat pump, alongside the electricity reduction for baseline consumption. The following equation shows the formula:

$$\text{Electricity for Heating (MMBTU)} = (1 - \text{Thermal Energy Reduction \%}) \times \text{Natural Gas of Baseline Buildings (MMBTU)} / \text{COP} + (1 - \text{Energy Reduction \%}) \times \text{Electricity of Baseline Buildings (MMBTU)}$$

Calculation of Energy Use for Natural Gas

The new use of natural gas (MMBTU) is determined by applying the energy reduction percentage to the baseline natural gas consumption:

$$\text{Natural Gas Energy (MMBTU)} = (1 - \text{Energy Reduction \%}) \times \text{Natural Gas Energy of Baseline Buildings (MMBTU)}$$

For heating, the calculation adjusts for thermal energy reduction in natural gas consumption based on baseline figures. The following equation shows the formula:

$$\text{Natural Gas for Heating (MMBTU)} = (1 - \text{Thermal Energy Reduction \%}) \times \text{Natural Gas Energy of Baseline Buildings (MMBTU)}$$

Solar Rooftop

To accurately assess the emissions reductions attributed to solar rooftop installations on buildings, the methodology incorporates capacity factors for each county as provided by the NREL PVWatts Calculator. These factors are critical in estimating the energy generation potential of solar installations, taking into account geographical and climatic variations that affect solar irradiance and, consequently, energy production.

The emissions reduction potential of these solar installations is calculated by considering the grid's emission factor, which is obtained from the EPA eGRID database. This factor represents the average emissions intensity of electricity generation and distribution on the grid, providing a baseline against which the impact of solar-generated electricity can be measured. Additionally, projections of emission factors from the RMI Energy Policy Simulator are used to anticipate future changes in the grid's carbon intensity.

Calculation of Annual Generation

The annual electricity generation from installed solar rooftop systems is calculated using the formula:

$$\text{Annual Generation (GWh)} = \text{Installed Capacity (GWh)} \times 8760 \times \text{Capacity Factor}$$

This equation multiplies the installed capacity (in gigawatt-hours, GWh) by the total number of hours in a year (8760) and the capacity factor, providing an estimate of the total energy produced by solar installations annually.

Calculation of Emissions Reductions

The reduction in emissions resulting from the generated solar electricity is quantified as follows:

$$\text{Emissions Reduction (MtCO}_2\text{e)} = \text{Emission Factor (MtCO}_2\text{e/GWh)} \times \text{Annual Generation (GWh)}$$

This calculation applies the emission factor (in metric tons of CO₂ equivalent per gigawatt-hour, MTCO₂e/GWh) to the annual generation from solar installations, estimating the total emissions avoided by displacing grid electricity with solar energy.

Co-Pollutants Reduction Calculations

Natural Gas

Reducing co-pollutants like CO, NO_x, SO₂, PM_{2.5}, and VOCs from decreased natural gas consumption. These co-pollutants, generated from natural gas combustion, are quantified using emissions data from the EPA NEI. The co-pollutants emission rate per MMBtu of natural gas consumed is calculated by dividing the total emissions of each co-pollutant by the total natural gas consumption, as shown in the formula:

$$\text{Co-pollutants Emission Rate by Type (metric tons/MMBtu)} = \frac{\text{Total Emissions of Co-pollutant (metric tons)}}{\text{Total Natural Gas Consumption (MMBtu)}}$$

Subsequently, the reduction of co-pollutants in metric tons can be determined by applying the natural gas consumption reduction to the co-pollutants emission rate by type:

$$\text{Co-pollutants Reduction (metric tons)} = \text{Natural Gas Consumption Reduction (MMBtu)} \times \text{Co-pollutants Emission Rate by Type (metric tons/MMBtu)}$$

In this formula:

- Natural Gas Consumption Reduction (MMBtu) represents the amount of natural gas usage reduction for retrofit, measured in million British thermal units (MMBtu) and
- Co-pollutants Emission Rate by Type (metric tons/MMBtu) specifies the amount of each co-pollutant emitted per unit of natural gas consumed. This rate varies by pollutant type and reflects the average emissions associated with the combustion of natural gas.

Solar Rooftop

For calculating the reduction of co-pollutants resulting from the implementation of solar rooftops, the AVERT (AVoided Emissions and Generation Tool) provided by the EPA is used to obtain emissions rates by type of co-pollutant. This tool helps estimate the emissions avoided by displacing conventional electricity generation with solar power, thereby reducing the release of co-pollutants such as NO_x, SO₂, PM_{2.5}, and VOCs.

The formula to calculate the reduction of emissions by co-pollutants through solar rooftop electricity generation is as follows:

$$\text{Co-pollutants Reduction (metric tons)} = \text{Electricity Generation (GWh)} \times \text{Co-pollutants Emission Rate by Type (metric tons/GWh)}$$

In this equation:

- Electricity Generation (GWh) represents the amount of electricity generated by solar rooftops, measured in gigawatt-hours (GWh) and

- Co-pollutants Emission Rate by Type (metric tons/GWh) refers to the average amount of a specific co-pollutant emitted per gigawatt-hour of conventional electricity generation that is avoided by using solar energy.

Limitations

The methodology for estimating emissions reductions in the building sector faces limitations, including the assumption of a constant emissions factor for natural gas, which overlooks potential changes in technology and fuel sourcing. Additionally, projections for electricity emissions factors are highly uncertain, affected by shifts in the energy mix and technological advancements. The calculation of rooftop solar generation also assumes uniform capacity factors across counties, not accounting for local variations in rooftop orientations.

Energy Systems

Assumptions

- By 2030, the measure will achieve an additional 800 MW of renewable energy generation with enhanced community benefits and 140 MW in Nevada Tribal Renewable Energy projects.
- The implementation rate of renewable and energy storage projects starts in 2025 with small deployments, considering the time required to build capacity and construct the projects. Therefore, projects are assumed to scale over time, achieving the targets outlined above. About 90% of the energy installed capacity will be solar and approximately 10% wind, with enhanced community benefits.
- The average size of community renewable empowerment projects will be 10 MW.
- Nevada Tribal renewable energy projects will have an average size of 20 MW, and at least seven will start operations by 2030.

Methods

In quantifying emissions reductions for the Energy System Focus Area, the methodology integrates data from multiple sources.

Table A3. Data sources and sets for Energy Systems Focus Area.

Source	Data Set
NREL System Advisory Model (SAM)	Capacity factor for photovoltaic plants and wind farms ¹⁹³
Nevada's Statewide GHG Inventory	Grid generation and Emissions by source ¹⁹⁴
EPA AVOIDed Emissions and geneRation Tool (AVERT)	Co-pollutants emissions rates for integration of renewable energy ¹⁹⁵

Calculation of Annual Generation

The annual electricity generation from solar and wind capacity is calculated using the following formula:

$$\text{Annual Generation (GWh)} = \text{Installed Capacity (GWh)} \times 8760 \times \text{Capacity Factor}$$

This equation multiplies the installed capacity (in gigawatt-hours, GWh) by the total number of hours in

¹⁹³ National Renewable Energy Laboratory. "System Advisory Model (SAM) 2023.12.17, SSC 288." <https://sam.nrel.gov>.

¹⁹⁴ Nevada Division of Environmental Protection. "Nevada Statewide Greenhouse Gas Emissions Inventory and Projections, 1990-2043" 2023 Report. <https://ndep.nv.gov/air/air-pollutants/greenhouse-gas-emissions>.

¹⁹⁵ Environmental Protection Agency. "AVOIDed Emissions and geneRation Tool (AVERT)." <https://www.epa.gov/avert>.

a year (8760) and the capacity factor, providing an estimate of the total energy produced by solar and wind, annually.

Calculation of Emissions Reductions

To quantify the emissions reductions resulting from the shift towards renewable energy sources like solar and wind, a specific formula is applied that leverages the emission factors of traditional fossil fuels—coal, natural gas, and petroleum. This approach ensures that the calculation accurately reflects the decrease in GHG emissions achieved by substituting fossil-fuel-generated electricity with renewable energy. The fundamental principle is that the total annual generation from new renewable energy sources displaces an equivalent amount of electricity generation from fossil fuels, thus avoiding their associated emissions.

Given this framework, the formula for calculating emissions reduction is as follows:

$$\text{Emissions Reduction (MtCO}_2\text{e)} = \sum (\text{Emission Factor of Fuel (MtCO}_2\text{e/GWh)} \times \text{Annual Generation Reduced by Fuel (GWh)})$$

Here, the "Annual Generation Reduced by Fuel" for coal, natural gas, and petroleum is conceptually equal to the portion of the total annual generation from new renewable energy sources that replaces each specific type of fossil fuel generation. This replacement is based on the premise that the introduction of renewable energy effectively reduces the need for an equivalent amount of energy production from each fossil fuel source.

Co-pollutants Reduction Calculations

For estimating the reduction of co-pollutants through renewable energy generation at the utility level, the EPA's AVERT is used. AVERT facilitates the calculation of emissions reductions by providing co-pollutant emission rates, which reflect the emissions avoided when conventional electricity generation from fossil fuels is displaced by renewable sources like wind or solar power. This displacement results in lower emissions of harmful co-pollutants, including NO_x, SO₂, PM_{2.5}, and VOCs. The general formula to calculate the reduction in emissions by co-pollutants through utility-scale renewable energy generation is:

$$\text{Co - pollutants Reduction (metric tons)} = \text{Electricity Generation Reduced from Fossil Fuels (GWh)} \times \text{Co - pollutants Emission Rate by Type (metric tons/GWh)}$$

Here, the components are defined as:

- Electricity Generation Reduced from Fossil Fuels (GWh) represents the decrease in electricity generated from fossil fuels, measured in gigawatt-hours (GWh), attributable to the addition of

renewable energy sources. This reduction directly correlates to the amount of conventional generation displaced by renewables and

- Co-pollutants Emission Rate by Type (metric tons/GWh) indicates the average emissions of specific co-pollutants per gigawatt-hour of electricity generation from fossil fuels that are avoided due to the use of renewable energy.

Limitations

The methodology for estimating emissions reductions from renewable energy deployment has notable limitations. Using static emissions factors fails to account for changes in fossil fuel power generation efficiencies, potentially skewing emissions savings calculations. The approach simplifies the complex dynamics between renewable integration and fossil fuel displacement, not fully considering grid demand variability and renewable intermittency. Moreover, it assumes a straightforward displacement of fossil fuels without addressing the specific impacts of the existing energy mix and the market dynamics on the emissions outcomes. A more detailed analysis is required to accurately assess the effects of renewable energy on the broader energy system and its greenhouse gas emissions.

Industry

Assumptions

- The measure will replace 804,011 MWh of fossil fuels in energy-intensive industries by 2030: 100 MW solar and 100 MW wind dedicated to producing electricity to feed electrolyzers and heat batteries, 27 MW electrolyzers, and 1,000 MWh heat batteries.
- The implementation rate of projects to decarbonize energy-intensive industries through the electrification of thermal and motor uses currently fueled by fossil fuels starts in 2029 and achieves the above goals by 2030.
- The replacement of traditional 100 vehicle fleets with electric vehicles by 2030.
- A 15% reduction in greenhouse gas emissions by 2030 is anticipated for both the cement manufacturing sector and the air conditioning and refrigeration sector, based on the National Emissions Inventory of the EPA for Nevada.

Methods

In quantifying emissions reductions for the Industry Focus Area, the methodology incorporates data from different sources.

Table A4. Data sources and sets for the Industry Focus Area.

Source	Data Set
Nevada's Statewide GHG Inventory	Consumption and emissions of petroleum in the industry sector ¹⁹⁶
EPA National Emissions Inventory (NEI)	Co-pollutants emissions by petroleum combustion in the industrial sector and in cement manufacturing and the air conditioning and refrigeration sectors ¹⁹⁷

This approach is augmented by leveraging solar and wind generation, not for direct electricity consumption, but to power electrolyzers and heat batteries, facilitating the electrification of industrial processes traditionally reliant on fossil fuels.

¹⁹⁶ Nevada Division of Environmental Protection. "Nevada Statewide Greenhouse Gas Emissions Inventory and Projections, 1990-2043" 2023 Report. <https://ndep.nv.gov/air/air-pollutants/greenhouse-gas-emissions>.

¹⁹⁷ Environmental Protection Agency. "2020 National Emissions Inventory (NEI) Data." <https://www.epa.gov/air-emissions-inventories/2020-national-emissions-inventory-nei-data>

Emissions Reductions Fossil Fuel

The calculation for emissions reductions in the industry sector is designed to quantify the impact of transitioning from fossil fuel consumption to more sustainable energy sources. The formula provided is a straightforward method to estimate the reduction in GHG emissions resulting from this transition, expressed in MMtCO₂e. This is how the calculation is structured:

$$\text{Emissions Reduction (MT CO}_2\text{e)} = (\text{Fossil Fuel Consumption Baseline (Billion Btu)} - \text{Fossil Fuel Consumption After (Billion Btu)}) \times \text{Emission Factor of Type of Fossil Fuel (MT CO}_2\text{e/Billion Btu)}$$

- Fossil Fuel Consumption Baseline (Billion Btu): This represents the initial consumption of fossil fuels in the industry sector before any interventions or transitions to renewable energy sources are implemented.
- Fossil Fuel Consumption After (Billion Btu): This is the projected consumption of fossil fuels after the adoption of measures such as the integration of renewable energy, electrification of processes, or implementation of efficiency improvements.
- Emission Factor of Type of Fossil Fuel (MT CO₂e/Billion Btu): Each type of fossil fuel (different types of petroleum) has a specific emission factor.

Cement Manufacturing and Air Conditioning and Refrigeration

To quantify emissions reductions for the cement manufacturing and air conditioning and refrigeration sectors by 2030, the methodology leverages baseline emissions data from the National Emissions Inventory of the EPA for Nevada, specifically targeting these sectors. The aim is a reduction percentage from baseline emissions by the year 2030. The revised equation to calculate the emissions savings, using the percentage of reduction, is as follows:

$$\text{Emissions Reduction (MT CO}_2\text{e)} = \text{Baseline Emissions (MT CO}_2\text{e)} \times \text{Percentage of Reduction}/100$$

Co-pollutants Reduction Calculations

Fossil Fuels

The formula for calculating the co-pollutants emission rate by type of fossil fuel is as follows:

$$\text{Co - pollutant Emission Rate by Type (metric tons/MMBtu)} = \frac{\text{Total Emissions of Co-pollutant (metric tons)}}{\text{Total Fossil Fuel Consumption (MMBtu)}}$$

The reduction of co-pollutants in metric tons is then calculated by applying the reduction in fossil fuel consumption to the co-pollutants emission rate by type. This step quantifies the decrease in emissions of co-pollutants. The formula is:

$$\text{Co - pollutant Reduction (metric tons)} = \text{Fossil Fuel Consumption Reduction (MMBtu)} \times \text{Co - pollutant Emission Rate by Type (metric tons/MMBtu)}$$

In this formula:

- Fossil Fuel Consumption Reduction (MMBtu) reflects the decrease in consumption of fossil fuels, such as petroleum, based on initiatives of reducing fossil fuel consumption from energy-intensive industries.
- Co-pollutants Emission Rate by Type (metric tons/MMBtu) indicates the emissions of each co-pollutant per unit of fossil fuel consumed. This rate varies by co-pollutant type and captures the emissions associated with the combustion of fossil fuels in the industry sector.

Limitations

In the industry sector, the methodology for estimating emissions reductions has limitations, notably that emissions reduction may be lower than anticipated because it relies on a predetermined percentage reduction rather than considering other factors associated with industrial processes. Additionally, the analysis focuses on general emissions without associating them with specific technologies. This approach might not fully capture the nuanced impacts of technological advancements or process improvements on emissions reductions, underscoring the need for a more detailed and technology-specific analysis to accurately assess potential emissions savings in the industrial sector.

Waste Reduction

Assumptions

- In 2021, Nevada had a recycling rate of 24%. It is assumed that this will increase to a 35% recycling rate by 2030.

Methods

The methodology for quantifying waste reduction uses data from the following sources.

Table A5. Data sources and sets for the Waste Reduction Focus Area.

Source	Data Set
NDEP 2023 Recycling and Waste Reduction Report	Waste produced, total amounts recycled, and the breakdown by type of waste and county ¹⁹⁸
EPA Waste Reduction Model (WARM)	Calculation of GHG emissions reductions by type of waste ¹⁹⁹
Nevada Department of Taxation	Nevada County population projections 2022 to 2041 ²⁰⁰
2006 IPCC Guidelines for National Greenhouse Gas Inventories	Half-life values by type of waste ²⁰¹

The methodology for quantifying waste reduction and recycling improvements in Nevada employs the 2023 Recycling and Waste Reduction Report from the Nevada Division of Environmental Protection as a baseline. This report provides crucial data on the tons of waste produced, the total amounts recycled, and the breakdown by type of waste, focusing solely on in-state municipal solid waste (MSW) disposal. Projections maintain the same proportion by type of waste, ensuring consistency in the analysis.

In the methodology for assessing waste reduction and recycling in Nevada, detailed data on waste production and recycling for six counties serve as the core foundation of the analysis. For these counties, accurate and comprehensive statistics enable a precise evaluation of current waste management practices and their potential for emissions reduction through increased recycling.

¹⁹⁸ Nevada Division of Environmental Protection. "2023 Recycling and Waste Reduction Report." https://www.leg.state.nv.us/Division/Research/Documents/RTTL_NRS444A_070_2023.pdf

¹⁹⁹ Environmental Protection Agency. "Versions of the Waste Reduction Model (WARM)." <https://www.epa.gov/warm/versions-waste-reduction-model>

²⁰⁰ Nevada Department of Taxation. "Nevada County Population Projections, 2022 to 2041." Nevada Department of Taxation, October 1, 2022. <https://tax.nv.gov/uploadedFiles/taxnv.gov/Content/TaxLibrary/Nevada%20County%20Population%20Projections%202022%20to%202041.pdf>

²⁰¹ Intergovernmental Panel on Climate Change (IPCC). "2006 IPCC Guidelines for National Greenhouse Gas Inventories." <https://nswmc.emb.gov.ph/wp-content/uploads/2022/08/2006-IPCC-Guidelines-for-National-Greenhouse-Gas-Inventories.pdf>

For counties lacking specific waste production and recycling data, the approach involves extrapolating estimates based on demographic information. This extrapolation uses current population figures from census data to establish a baseline. To project future waste generation and recycling rates, the Nevada County Population Projections 2022 to 2041 report is employed, allowing for an informed estimation of how population growth will influence waste dynamics in these areas.

To estimate the total emissions reductions achieved through increased recycling rates, the WARM tool is employed. This tool facilitates the assessment of GHG emissions savings from various waste management practices, including recycling, composting, etc. Further, a life-cycle analysis by type of waste is conducted based on the 2006 IPCC Guidelines for National Greenhouse Gas Inventories, allowing for a detailed understanding of the emissions impact across different waste streams.

Emissions Reduction Calculation

Before calculating emissions reductions, it is essential to estimate the additional recycling in tons that results from enhancing recycling rates beyond current levels. This estimation is a crucial step towards understanding the potential volume of waste diverted from landfills and into recycling processes, which directly impacts emissions savings. The formula for estimating this additional recycling volume is as follows:

$$\text{Additional Recycling by type of waste (tons)} = \text{Total Waste Generated by Type (tons)} \times \text{Additional Percentage Increase(\%)}$$

In this formula:

- Total Waste Generated by Type (tons) refers to the quantity of waste produced for each specific type of waste.
- Additional Percentage Increase signifies the proposed increase in the recycling rate over the current state goal, expressed as a decimal.

After estimating the additional recycling volumes by waste type, these figures serve as inputs into the WARM tool developed by the EPA to calculate the total emissions reductions associated with each type of waste. The WARM tool evaluates the greenhouse gas savings from managing waste more sustainably (recycling and composting).

The process unfolds as follows:

- Input Additional Recycling Volumes: The additional recycling amounts, calculated for each type of waste, are inputted into the WARM tool. This step applies the specific emissions factors and management practices relevant to each waste type to ascertain the GHG emissions reductions.
- Calculate Total Emissions Reductions: The WARM tool processes the input data to output the total emissions reductions by waste type, providing a detailed breakdown of the environmental benefits achieved through the proposed increase in recycling and composting rates.

- **Distribute Emissions Reductions Over Life Cycle:** The emissions reductions for each type of waste are then divided by the life cycle of the product. This division spreads the total emissions savings over the number of years corresponding to the life cycle of each waste type, allowing for a yearly distribution of emissions reductions.
- **Yearly Emissions Reductions Allocation:** Finally, the emissions reductions are allocated across the following years according to the life-cycle distribution. This approach provides a timeline of emissions savings, highlighting the ongoing environmental impact of increased recycling and composting over time.

Limitations

The methodology for estimating emissions reductions in the waste sector does not account for changes in the composition of waste produced, limiting its ability to reflect shifts in waste generation patterns over time. Additionally, it primarily focuses on recycling and composting as waste management alternatives, omitting other significant options, such as waste-to-energy processes or advanced material recovery. Moreover, assumptions regarding the life cycle of waste may lack precision and do not necessarily adhere to a linear progression, which could affect the accuracy of emissions reductions calculations.

Restore Landscapes and Sequester Carbon

Assumptions

- The measure will promote ecological restoration and carbon sequestration, achieving 395,000 trees planted by 2030.

Methods

In quantifying emissions reductions for the Restore Landscapes and Sequester Carbon Focus Area, the methodology includes using the sources outlined in Table A6.

Table A6. Data sources and sets for Restore Landscapes and Sequester Carbon Focus Area.

Source	Data Set
EPA's State Inventory Tools	Carbon sequestration Factor ²⁰²
Town of Oakville Development Application Guidelines: Canopy Cover Plan and Canopy Calculation Chart	Crown area spread estimation ²⁰³

The methodology for calculating carbon sequestration from landscape restoration and tree planting initiatives incorporates the EPA's State Inventory Tools for the Carbon Sequestration Factor and canopy cover planning tools from Oakville, California. Additionally, it assumes the planting of small-stature trees with a crown spread of 3–9 meters. This assumption is critical for estimating the potential canopy coverage and, consequently, the carbon sequestration capacity of the initiative. This approach enhances the carbon sequestration estimates by aligning with the physical characteristics of the trees being planted.

Emissions Reduction

The emissions reduction from tree planting initiatives is quantified by calculating the carbon sequestration potential of the tree canopy at maturity. This calculation takes into account the area covered by the tree canopy once the trees have reached their full growth potential, as well as the carbon sequestration factor, which represents the amount of CO₂ that can be absorbed per unit area of tree canopy. The formula to estimate the emissions reduction in MtCO₂e is as follows:

$$\text{Emissions Reduction (MT CO}_2\text{e)} = \text{Canopy at Maturity (hectare)} \times \text{Carbon Sequestration Factor (MT CO}_2\text{e/hectare)}$$

²⁰² Environmental Protection Agency. "State Inventory and Projection Tool." <https://www.epa.gov/statelocalenergy/state-inventory-and-projection-tool>

²⁰³ Town of Oakville. "Development Application Guidelines: Canopy Cover Plan and Canopy Calculation Chart." <https://www.oakville.ca/getmedia/91ca5835-f9e5-46d5-88f8-d6c57359b1ee/planning-dag-ud-canopy-cover-plan.pdf>

In this formula:

- Tree Canopy at Maturity (hectare) refers to the total area covered by the tree canopy when the trees have grown to their full size, measured in hectares. This takes into consideration the average crown area of small-stature trees (3–9m spread) being planted and their density.
- Carbon Sequestration Factor (MtCO₂e/hectare) indicates the amount of CO₂ that can be sequestered per hectare of tree canopy per year, reflecting the capacity of the trees to absorb CO₂ from the atmosphere.

Limitations

The methodology for estimating emissions reductions through landscape restoration and carbon sequestration faces several limitations. It may not fully account for the variability in tree species' survival rates and carbon sequestration capacities, the availability and suitability of land for reforestation, or the long-term maintenance of and potential risks to planted trees. Additionally, assumptions of linear growth and sequestration rates do not accurately reflect the dynamic growth patterns of trees. The potential indirect effects on local ecosystems and the lack of a robust framework for verification and ongoing monitoring of sequestration outcomes also pose challenges.

5.2 Appendix B. Federal Funding Crosswalk

This appendix presents applicable funding sources available to implement measures across the different Focus Areas.

Transportation

T1. Decarbonize Fuels	Applicable Funding Sources
<p>T1.1 - Reduce carbon intensity of transportation fuels by incentivizing the manufacturing and sale of alternative technologies such as EVs, e-bikes, hydrogen, and alternative fuel vehicles that rely on renewable energy generation and/or battery storage. Incentives may include, but are not limited to, technical or financial support for developing manufacturing facilities, supply chain coordination or development, tax abatement, siting assistance, and bulk or cooperative purchasing.</p>	<ul style="list-style-type: none"> ● Clean Vehicle Tax Credit (Treasury) ● Commercial Clean Vehicles Tax Credit (Treasury) ● Environmental and Climate Justice Block Grants (EPA) ● Tax Credit For Alternative Refueling Property (Treasury) ● Tax Credit for Previously Owned Clean Vehicles (Treasury)
<p>T1.2 - Support low-carbon sustainable aviation fuel development by developing an incentive program for the production and delivery of renewable fuels to supply airports and aircraft. This could include, but is not limited to, support for siting, financing, and tax abatements. Low-carbon sustainable aviation fuel is typically biofuel made from renewable biomass and waste resources (i.e., agricultural residues, forestry and wood mill waste, municipal and solid waste streams, wastewater treatment sludge, and other fats, oils, and greases), which can reduce life cycle GHG emissions dramatically compared to conventional jet fuel.</p>	<ul style="list-style-type: none"> ● Commercial Clean Vehicles Tax Credit (Treasury) ● Clean Electricity Investment Tax Credit (Treasury) ● Tax Credit For Alternative Refueling Property (Treasury) ● Sustainable Aviation Fuel Tax Credit (Treasury) ● Clean Heavy-Duty Vehicles Grants and Rebates (EPA)

T2. Build Capacity	Applicable Funding Sources
<p>T2.1 - Build technical capacity at public agencies to plan for, procure, and implement ZEVs and charging infrastructure, enhanced public transit, and active transportation infrastructure. This includes training staff, coordinating with other levels of government, supporting workforce development, and developing communication and outreach campaigns.</p>	<ul style="list-style-type: none"> ● Clean Heavy-Duty Vehicles Grants and Rebates (EPA) ● Clean Vehicle Tax Credit (Treasury) ● Commercial Clean Vehicles Tax Credit (Treasury) ● Environmental and Climate Justice Block Grants (EPA) ● Tax Credit for Previously Owned Clean Vehicles (Treasury) ● Tax Credit For Alternative Refueling Property (Treasury)
<p>T2.2 - Create public databases containing data such as the number/type of ZEVs registered in Nevada and the status of infrastructure development to enhance transparency and coordination among public agencies, the public, and interested and affected parties. Publicly available data access can ensure all actors are aware of the status of transportation actions in the state and are operating with the same shared understanding.</p>	<ul style="list-style-type: none"> ● Environmental and Climate Justice Block Grants (EPA) ● Neighborhood Access and Equity Grant Program (DOT)
<p>T2.3 - Enhance workforce, maintenance, and repair capacity to support planning, implementation, and repair of new and used ZEVs and infrastructure, including EV chargers and alternative fueling stations. Workforce development activities could include enhancing old or creating new training programs, particularly among trades such as construction and electricians, and implementing job placement programs and apprenticeships.</p>	<ul style="list-style-type: none"> ● Environmental and Climate Justice Block Grants (EPA) ● Neighborhood Access and Equity Grant Program (DOT) ● Career Skills Training Program (DOE)

T2.4 - Implement a public outreach and education campaign to encourage individuals and businesses to adopt ZEVs. Outreach can be, but is not limited to, online and in-person events, promotions, marketing, and geographic-specific partnerships with community-based organizations targeting diverse and historically underserved populations.

- Environmental and Climate Justice Block Grants (EPA)
- Neighborhood Access and Equity Grant Program (DOT)

T2.5 Support the development of existing and new consortiums, coalitions, and other collaborative frameworks throughout Nevada's different regions. These organizations can aid in creating a network of advisors on transportation initiatives for fleet transition to reduce fuel consumption and GHG pollution emissions.

- Not Applicable

T3. Transition to Zero Emissions Vehicles

Applicable Funding Sources

T3.1 - Incentivize public fleet electrification (e.g., among state agencies, counties, cities, schools, public transit authorities) by providing technical and financial support for planning, procuring, and implementing ZEVs in fleets.

- Clean Heavy-Duty Vehicles Grants and Rebates (EPA)
- Clean Vehicle Tax Credit (Treasury)
- Commercial Clean Vehicles Tax Credit (Treasury)
- Environmental and Climate Justice Block Grants (EPA)
- Tax Credit For Alternative Refueling Property (Treasury)
- Tax Credit for Previously Owned Clean Vehicles (Treasury)

T3.2 - Incentivize large commercial fleet electrification (medium- and heavy-duty vehicles) by developing a comprehensive set of programs and incentives to encourage ZEV adoption and vehicle fuel switching. This could include developing an incentive program for clean trucks, planning and implementing battery swapping stations and/or hydrogen fueling stations along the state's freight corridors, and incentivizing higher sales of new medium- and heavy-duty trucks.

- Clean Heavy-Duty Vehicles Grants and Rebates (EPA)
- Clean Vehicle Tax Credit (Treasury)
- Commercial Clean Vehicles Tax Credit (Treasury)
- Environmental and Climate Justice Block Grants (EPA)
- Tax Credit For Alternative Refueling Property (Treasury)
- Tax Credit for Previously Owned Clean Vehicles (Treasury)

T3.3 - Incentivize the adoption of ZEVs by providing rebates for purchases and infrastructure installations. Ensure that ZEV adoption is accessible to LIDACs by partnering with trusted community organizations to promote the incentives and prioritizing applicants from both individuals and businesses in those communities. Rebates should be provided as close to the point of sale as possible, for both used and new ZEVs.

- Tax Credit for Previously Owned Clean Vehicles (Treasury)
- Tax Credit For Alternative Refueling Property (Treasury)
- Clean Vehicle Tax Credit (Treasury)

T3.4 - Provide rebates for e-bikes, e-cargo bikes, e-motorcycles, and e-scooters to individuals and businesses. Provide incentives, particularly for LIDACs and businesses operating in low-income areas, to replace old polluting vehicles with these technologies.

- Environmental and Climate Justice Block Grants (EPA)
- Neighborhood Access and Equity Grant Program (DOT)

T3.5 - Support ZEV carsharing initiatives by developing a comprehensive strategy, including program development, grant and technical assistance, and educational programming, to promote carsharing.

- Environmental and Climate Justice Block Grants (EPA)
 - Neighborhood Access and Equity Grant Program (DOT)
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T4. Develop Infrastructure	Applicable Funding Sources
<p>T4.1 - Develop public fleet electric vehicle supportive equipment (EVSE) by providing grants and technical assistance for counties and municipalities that wish to develop and implement.</p>	<ul style="list-style-type: none"> ● Clean Heavy-Duty Vehicles Grants and Rebates (EPA) ● Clean Vehicle Tax Credit (Treasury) ● Commercial Clean Vehicles Tax Credit (Treasury) ● Environmental and Climate Justice Block Grants (EPA) ● Tax Credit for Previously Owned Clean Vehicles (Treasury) ● Tax Credit For Alternative Refueling Property (Treasury)
<p>T4.2 - Update and expand the NEVI Deployment Plan, targeting network improvements in LIDACs. Align the NEVI plan update with technical assistance and incentive measures to ensure consistency and efficacy of the plan.</p>	<ul style="list-style-type: none"> ● Environmental and Climate Justice Block Grants (EPA) ● Neighborhood Access and Equity Grant Program (DOT) ● NEVI Formula Program ● Carbon Reduction Program (DOT)
<p>T4.3 - Repair existing EVSE and expand the EV charging network with a focus on LIDACs and key tourist destinations, based on updates to the NEVI. Provide technical assistance and funding to support local governments and community organizations with implementation.</p>	<ul style="list-style-type: none"> ● Environmental and Climate Justice Block Grants (EPA) ● Neighborhood Access and Equity Grant Program (DOT) ● NEVI Formula Program ● Carbon Reduction Program (DOT)
<p>T4.4 - Develop infrastructure to support ZEV medium- and heavy-duty vehicles. Provide technical assistance and funding to support local governments and businesses with implementation. Infrastructure could include development of charging stations, battery swapping stations, and hydrogen fueling stations on both public and private right of way. Technical assistance could include webinars, training, partnerships, inter-agency coordination, and bulk or cooperative purchasing support.</p>	<ul style="list-style-type: none"> ● Carbon Reduction Program (DOT) ● Promoting Resilient Operations for Transformative, Efficient, and Cost-Saving Transportation (PROTECT) Formula Program (DOT) ● Tax Credit For Alternative Refueling Property (Treasury)

T4.5 - Incentivize EV chargers in new construction by providing funding and technical assistance to local governments.

- Clean Heavy-Duty Vehicles Grants and Rebates (EPA)
- Clean Vehicle Tax Credit (Treasury)
- Commercial Clean Vehicles Tax Credit (Treasury)
- Environmental and Climate Justice Block Grants (EPA)
- Tax Credit for Previously Owned Clean Vehicles (Treasury)
- Tax Credit For Alternative Refueling Property (Treasury)

T4.6 - Fast track bike and pedestrian network infrastructure by providing funding and technical assistance to state agencies and local governments. Expand on and address gaps in bicycle, micro-mobility, and pedestrian networks by funding existing city and county plans and initiatives that support network improvement and development of infrastructure for all ages and abilities; develop a network of public charging for e-micro mobility; and incentivize micro-mobility facilities and infrastructure for e-bikes that promotes connectivity and longer-distance trips.

- Environmental and Climate Justice Block Grants (EPA)
- Neighborhood Access and Equity Grant Program (DOT)
- Active Transportation Infrastructure Investment Program (DOT)
- Safe Streets and Roads for All (DOT)
- Transportation Alternatives Set-Aside (FHWA)

T4.7 - Expand public transit in urban and rural areas, with a focus on LIDACs. Expand on and address gaps in existing public transit networks by funding existing city and county plans and initiatives that support network improvement and development of transit projects that promote connectivity, mode shift, and longer-distance trips.

- Environmental and Climate Justice Block Grants (EPA)
 - Neighborhood Access and Equity Grant Program (DOT)
 - Carbon Reduction Program (DOT)
-

The State can develop and/or support programs and initiatives that facilitate outreach, education, and technical assistance programs that connect vehicle consumers and stakeholder entities to IRA tax credits and grants aimed at increasing the affordability and accessibility of clean vehicles.

Stakeholder Engagement and Planning

Through the *Inflation Reduction Act*, the EPA offers a number of Environmental and Climate Justice Block Grants aimed at reducing pollution in neighborhoods, accelerating environmental justice efforts in

communities disproportionately impacted by pollution and climate change, increasing community and nationwide resilience to climate impacts, and developing workforces and creating jobs in clean industries.

The State can either apply directly to or support local governments, local Tribal governments, and non-profits to partner and apply to the Environmental Justice Government-to-Government (EJG2G) Program. The EJG2G Program provides funding at the state, local, territorial, and Tribal levels to support activities that lead to measurable environmental or public health impacts in communities disproportionately burdened by environmental harms. EJG2G funding may be used for research, planning, outreach and engagement, public education, coalition-building, and small construction projects.

In addition to EJG2G grants, the EPA's Environmental and Climate Justice Community Change Grants Program (Community Change Grants) can also support community-led planning and resilience and mitigation projects. Community Change Grants may support engagement of disadvantaged communities as well as investments in low- and zero-emissions and resilient technologies and related infrastructure.

EJG2G- and Community-Change-Grant-funded activities could be paired with the IRA clean vehicle incentives below to inform consumers about available tax credits, help individuals and households (especially in low-income and underserved communities) access those credits, and potentially support community-led zero emissions vehicle infrastructure projects.

Clean Vehicle Accessibility and Affordability

The Clean Vehicle Tax Credit and Tax Credit for Previously Owned Vehicles made individuals and households who buy new electric vehicles eligible for a tax credit of up to \$7,500 and those who buy used electric vehicles eligible for up to \$4,000 in tax breaks. In 2023, the Department of Treasury and the IRS added a provision to the CVTC that allows consumers to choose between claiming a non-refundable credit on their tax returns or transferring the credit to a car dealer to lower the price of the car at the point of sale, giving taxpayers more flexibility in how to apply the benefit. The provision went into effect January 1, 2024. Additional household and vehicle eligibility information can be found at [energy.gov](https://www.energy.gov).

The Commercial Clean Vehicles Tax Credit allows businesses and tax-exempt organizations that purchase a qualified commercial clean vehicle to qualify for a tax credit of up to \$40,000. Additional buyer and vehicle eligibility can be found on the IRS CCVTC website. The Clean Heavy-Duty Vehicles Program provides grants and rebates for the incremental cost of purchasing zero emissions heavy-duty vehicles and installing the infrastructure to charge/fuel the vehicles. State, municipal, and Tribal governments, school transportation associations, and contractors providing transportation services to these entities are eligible. Funding can also support workforce development and training for the maintenance, charging, fueling, and operation of zero emission vehicles. Eligible uses also include up to 100% of the cost of acquiring, installing, maintaining, and operating fueling/charging infrastructure. The State can convene and explore partnerships with school districts and public agencies to increase

the number of electric vehicles available for businesses, schools, and municipalities. The State can apply for funding directly or in partnership, or support the development of partner applications. The US EPA anticipates this new funding opportunity will become available for application through a notice of funding opportunity (NOFO) released in early spring 2024.

Expanding Clean Vehicle Infrastructure

The Tax Credit For Alternative Refueling Property is available to households, businesses, and non-tax-paying entities (including local governments) that install alternative fuel infrastructure in low-income or rural census tracts. The credit is equal to 30% of the cost of qualified alternative fuel vehicle refueling property, which includes electric vehicle charging stations, ethanol or biodiesel refueling stations, etc. The State can leverage the alternative refueling property tax credit to expand clean vehicle refueling infrastructure by publicizing and helping households, businesses, and local governments located in eligible low-income or rural areas.

Buildings

B1. Build Capacity	Applicable Funding Sources
<p>B1.1 - Develop an education and outreach campaign that informs residents of existing and upcoming weatherization and residential retrofit programs. Outreach can be, but is not limited to, online and in-person events, promotions, marketing, and geographic-specific partnerships with community-based organizations, targeting diverse and historically underserved populations.</p>	<ul style="list-style-type: none"> ● Environmental and Climate Justice Block Grants (EPA) ● High-Efficiency Electric Home Rebate Program (DOE) ● Homeowner Managing Energy Savings Program (DOE) ● Residential Energy Efficiency Tax Credit (Treasury) ● Residential Clean Energy Tax Credit (Treasury)
<p>B1.2 - Work with local secondary and post-secondary schools and clean energy companies to train and develop a skilled workforce to respond to increasing demands in the retrofit and clean energy sector. Workforce development activities could include enhancing or creating new training programs, particularly among trades such as construction and electricians, and implementing job placement programs and apprenticeships.</p>	<ul style="list-style-type: none"> ● Home Energy Efficiency Contractor Training (DOE) ● Career Skills Training Program (DOE)

B1.3 - Develop training programs to enable public agencies to understand the suite of energy-efficiency and retrofit opportunities available for their communities. This could include, but is not limited to, staff training, coordination with other levels of government, grant writing support, supporting workforce development activities, and communication and outreach campaigns.

- Home Energy Efficiency Contractor Training (DOE)
- Career Skills Training Program (DOE)

B1.4 - Create a public database containing data such as the number of retrofits performed, the number of new energy-efficient buildings, or the number of people employed in jobs related to energy efficiency. The database will enhance transparency and coordination among public agencies, the public, and interested and affected parties. Publicly available data access can ensure all actors are aware of the status of building energy-efficiency actions in the state and are operating with the same shared understanding.

- Environmental and Climate Justice Block Grants (EPA)

B2. Expand Financing

Applicable Funding Sources

B2.1 - Expand Nevada Clean Energy Fund by continuing to increase its budget, staffing, and scope of services, with an emphasis on service to LIDACs. Ensure that data from use of the fund is available in publicly accessible formats. Coordinate partnerships between the NCEF and state agencies, local governments, businesses, and community organizations.

- Nevada Clean Energy Fund

B2.2 - Explore the potential of R-PACE to help residents finance pre-weatherization and retrofits. Research and evaluate the success of R-PACE programs in other states. Develop program guidelines for the implementation of R-PACE within the state. Coordinate with workforce development and public agency capacity building.

- Residential Property Assessed Clean Energy (R-PACE) (DOE)

B2.3 - Explore the potential of alternative financing mechanisms to support lower-emissions buildings, such as community land trusts, on-bill financing, and a CPRG Revolving Loan Fund. Coordinate state agencies, local governments, businesses, and community organizations and develop a framework for implementation of funding mechanisms appropriate to different community needs. Identify federal funding sources and potential local supplements. Promote the funding opportunities to residents and businesses via public outreach and education campaigns.

- Nevada American Recovery and Reinvestment Act State Energy Program Revolving Loan Fund
- Nevada Office of Energy Direct Energy Assistance Loan Program

B2.4 Explore the potential of C-PACE programs to support commercial businesses to finance energy-efficiency and renewable energy projects. Research and evaluate the success of C-PACE programs in other states. Develop program guidelines for the implementation of C-PACE programs at the local government level. Coordinate with workforce development and public agency capacity building.

- Commercial Property Assessed Clean Energy (C-PACE) (DOE)

B3. Retrofit Buildings

Applicable Funding Sources

B3.1 - Develop a public building deep energy retrofit program. This program could prioritize schools located in LIDACs. The program should be holistic and support improvements to basic infrastructure that may be needed prior to energy efficiency upgrades or electrification. Support public agencies, local governments, and school districts with technical capacity building, such as guidebooks or training, and bulk or cooperative purchasing. Report on progress in publicly accessible databases.

- Assistance for Latest and Zero Building Energy Code Adoption Grants (DOE)
- Energy Efficient Commercial Buildings Deduction (Treasury)
- Home Energy Efficiency Contractor Training (DOE)
- Solar for All Grant Program (EPA)

B3.2 - Develop a residential deep energy retrofit program, prioritizing LIDACs, individually or through a coalition. The program should be holistic and support improvements to basic infrastructure that may be needed prior to energy efficiency upgrades or electrification. Coordinate state agencies, local governments, businesses, and community organizations in planning and executing the program. Promote the program via public outreach and education campaigns, coordinate workforce development efforts, and monitor the program's progress and share data in publicly accessible databases.

- Assistance for Latest and Zero Building Energy Code Adoption Grants (DOE)
- Environmental and Climate Justice Block Grants (EPA)
- High-Efficiency Electric Home Rebate Program (DOE)
- Home Energy Efficiency Contractor Training (DOE)
- Homeowner Managing Energy Savings Program (DOE)
- Green and Resilient Retrofit Program (HUD)
- New Energy Efficient Home Tax Credit (Treasury)
- Residential Energy Efficiency Tax Credit (Treasury)
- Residential Clean Energy Tax Credit (Treasury)
- Green and Resilient Retrofit Program Grants and Loans (HUD)

B3.3 - Develop a commercial deep energy retrofit program, prioritizing and supporting businesses located in LIDACs. The program should be holistic and support improvements to basic infrastructure that may be needed prior to energy efficiency upgrades or electrification. Coordinate state agencies, local governments, businesses, and community organizations in planning and executing the program. Promote the program via public outreach and education campaigns, coordinate workforce development efforts, and monitor the program's progress and share data in publicly accessible databases.

- Assistance for Latest and Zero Building Energy Code Adoption Grants (DOE)
- Energy Efficient Commercial Buildings Deduction (Treasury)
- Home Energy Efficiency Contractor Training (DOE)
- Solar for All Grant Program (EPA)

B3.4 - Convert mobile home power from gas to electric. Work with local governments and mobile home park operators to promote electric equipment that can replace gas space and water heating equipment at the end of its useful life. Provide incentives and rebates for equipment replacement. Coordinate with workforce development training.

- High-Efficiency Electric Home Rebate Program (DOE)
- Homeowner Managing Energy Savings Program (DOE)
- New Energy Efficient Home Tax Credit (Treasury)
- Residential Energy Efficiency Tax Credit (Treasury)
- Residential Clean Energy Tax Credit (Treasury)

B3.5 - Incentivize high-efficiency, all-electric new buildings. Work with local governments and the construction industry to identify and support incentives for reducing energy use in new buildings. Consider different incentives for residential, commercial, and industrial buildings. Align incentives across jurisdictions whenever possible. Incentives could include density bonuses, expedited or streamlined permitting, tax abatements, or similar mechanisms. Coordinate with workforce development.

- Assistance for Latest and Zero Building Energy Code Adoption Grants (DOE)
- Energy Efficient Commercial Buildings Deduction (Treasury)

B3.6 - Pair retrofits with on-site renewable energy (rooftop solar). Incorporate the installation of renewable energy at the time of energy efficiency upgrades to maximize the benefits and reduce the number of interventions per building. Provide rebates, tax incentives, or similar benefits to residents and businesses that incorporate renewable energy into retrofits. Coordinate with workforce development and public outreach and education campaigns.

- Solar for All Grant Program (EPA)
- Energy Efficient Commercial Buildings Deduction (Treasury)
- Environmental and Climate Justice Block Grants (EPA)

B4. Transform Communities

Applicable Funding Sources

B4.1 - Empower community retrofit organizations (i.e., non-profits, co-ops) to participate in the clean energy sector effectively and competitively while building community capacity. Provide technical assistance in the form of training, webinars, and guidebooks, as well as funding to support operations or expansion of services. Coordinate local governments, community-based organizations, businesses, and workforce development efforts for support.

- Energy Efficient Commercial Buildings Deduction (Treasury)
- Environmental and Climate Justice Block Grants (EPA)
- High-Efficiency Electric Home Rebate Program (DOE)
- Home Energy Efficiency Contractor Training (DOE)
- Homeowner Managing Energy Savings Program (DOE)
- New Energy Efficient Home Tax Credit (Treasury)
- Residential Clean Energy Tax Credit (Treasury)
- Residential Energy Efficiency Tax Credit (Treasury)
- Solar for All Grant Program (EPA)

B4.2 - Fund and support a Tribal climate action that can help advance climate projects, set priorities, and identify direct impact of projects on Tribal communities within and outside of Tribal lands. Support the expansion of solar projects on Tribal lands, capitalizing on existing and ongoing projects. Provide coordination and capacity building support as requested.

- Energy Efficient Commercial Buildings Deduction (Treasury)
- Environmental and Climate Justice Block Grants (EPA)
- High-Efficiency Electric Home Rebate Program (DOE)
- Home Energy Efficiency Contractor Training (DOE)
- Homeowner Managing Energy Savings Program (DOE)
- New Energy Efficient Home Tax Credit (Treasury)
- Residential Clean Energy Tax Credit (Treasury)
- Residential Energy Efficiency Tax Credit (Treasury)
- Solar for All Grant Program (EPA)

B4.3 - Target 1—3 LIDACs for complete and holistic low-carbon transformation projects. Identify LIDACs that have both the capacity and the desire to undertake community-scale building retrofits and renewable energy development. Coordinate local governments, community organizations, businesses, and residents to build on existing efforts by providing funding, training, and technical support. Ensure that basic infrastructure upgrades are included so energy efficiency and electrification benefits are maximized.

- Energy Efficient Commercial Buildings Deduction (Treasury)
- Environmental and Climate Justice Block Grants (EPA)
- High-Efficiency Electric Home Rebate Program (DOE)
- Home Energy Efficiency Contractor Training (DOE)
- Homeowner Managing Energy Savings Program (DOE)
- New Energy Efficient Home Tax Credit (Treasury)
- Residential Clean Energy Tax Credit (Treasury)
- Residential Energy Efficiency Tax Credit (Treasury)
- Solar for All Grant Program (EPA)

B4.4 - Incentivize EV chargers in multi-family housing. Work with local governments and the construction industry to identify and support incentives for EV chargers in new construction. Consider different incentives for residential, commercial, and industrial buildings. Align incentives across jurisdictions whenever possible. Incentives could include density bonuses, expedited or streamlined permitting, tax abatements, or similar mechanisms. Coordinate with workforce development.

- Environmental and Climate Justice Block Grants (EPA)
- Tax Credit For Alternative Refueling Property (Treasury)

B4.5 - Incentivize rooftop solar installations in multi-family housing. Work with local governments and the construction industry to identify and support incentives for installing rooftop solar in new construction. Consider different incentives for residential, commercial, and industrial buildings. Align incentives across jurisdictions whenever possible. Incentives could include density bonuses, expedited or streamlined permitting, tax abatements, or similar mechanisms. Coordinate with workforce development.

- Green and Resilient Retrofit Program Grants and Loans (HUD)
- Assistance for Latest and Zero Building Energy Code Adoption Grants (DOE)
- Solar for All Grant Program (EPA)

The State can leverage federal funding sources to implement or strengthen statewide residential and commercial building efficiency programs, support the development of a holistic emissions-free and energy-affordable community, and advance environmental justice and equity goals in low-income and historically underserved communities.

Stakeholder Engagement and Planning

Through the *Inflation Reduction Act*, the EPA offers a number of Environmental and Climate Justice Block Grants aimed at reducing pollution in neighborhoods, accelerating environmental justice efforts in communities disproportionately impacted by pollution and climate change, increasing community and nationwide resilience to climate impacts, and facilitating workforce development and job creation in clean industries.

The State can either apply directly to the Environmental Justice Government-to-Government Program or support local governments, local Tribal governments, and non-profits partnering and applying.. The EJG2G Program provides funding at the state, local, territorial, and Tribal levels to support activities that lead to measurable environmental or public health impacts in communities disproportionately burdened by environmental harms. EJG2G funding may be used for research, planning, outreach and engagement, public education, coalition-building, and small construction projects.

In addition to EJG2G grants, the EPA's Environmental and Climate Justice Community Change Grants Program can also support community-led planning and resilience and mitigation projects. Community Change Grants may support engagement of disadvantaged communities as well as investments in low- and zero-emissions and resilient technologies and related infrastructure. The State may pursue EJG2G funding to support state-run programs and/or encourage local governments, coalitions, and organizations to apply for EJG2G and/or Community Change Grants to support outreach, public education, and technical assistance efforts to connect homeowners, business owners, and communities to the suite of IRA programs and incentives aimed at increasing the energy efficiency of homes, businesses, and communities.

Residential Buildings

The IRA provides a suite of rebates and tax credits to homeowners and residential property owners who retrofit buildings for energy efficiency and renewable energy production, and to contractors who carry out those retrofits and installations, including the Homeowner Managing Energy Savings Program (HOMES), the High-Efficiency Electric Home Rebate Program (HEEHRA), the Residential Energy Efficiency Tax Credit, and the New Energy Efficient Home Tax Credit.

The HOMES Program is administered at the federal level by the DOE, which awards formula-based grants to state energy offices to develop energy savings rebate programs available to individuals who own single-family or multi-family residential properties and to contractors who reduce residential energy consumption through whole-house retrofits. The HOMES Program offers rebates up to \$4,000 for single-family retrofits and \$4,000 per dwelling unit (with a maximum of \$400,000 per building) for multi-family properties. The Program doubles those rebate levels for buildings occupied by low- or moderate-income households. The HEEHRA Program is also administered via formula-based grants to state energy offices and offers rebates for energy-efficient appliance and non-appliance upgrades, including the purchase and/or installation of heat pumps, heat pump water heaters and clothes dryers, electric stoves and ovens, upgraded electric panels, wiring, and insulation. HEEHRA Program eligibility is limited to low- and moderate-income homeowners, owners of multi-family properties containing at least 50% affordable units, and contractors who carry out upgrades for these properties.

In addition to the HOMES and HEEHRA programs, the IRA includes three extensions of existing tax credits to support energy-efficient upgrades and on-site renewable energy generation for residential properties:

- The Residential Energy Efficiency Tax Credit extends and deepens an existing tax credit available to individuals who install energy upgrades in their primary residence, including insulation, air sealing, heat pumps, and efficient windows and water heaters.
- The Residential Clean Energy Tax Credit increases and expands tax credits for homeowners who install on-site energy production and storage mechanisms and extends the credit through 2034.
- The New Energy Efficient Home Tax Credit applies to single-family and multi-family properties, and offers specific benefits to residential buildings constructed using the Low-Income Housing Tax Credit (LIHTC), which provides extra support to some government-subsidized affordable housing reserved for low-income residents. This IRA initiative extends and increases tax credits for new construction or major renovations of single-family and multi-family homes that meet better-than-minimum-code energy standards through 2032. Buildings that qualify for the LIHTC can claim this credit without a basis adjustment (i.e., without reducing the amount of their investment eligible for the LIHTC), and multi-family properties are eligible for five times the credit if the project meets prevailing wage and apprenticeship requirements.

The Green and Resilient Retrofit Program (GRRP) is a new program administered by the Department of Housing and Urban Development (HUD) that provides grants and loans to owners of public or

affordable housing properties to improve energy or water efficiency and indoor air quality, address climate resilience, or install low- and zero-emissions energy technologies, including on-site energy storage. HUD will determine the award and allocation process and will distribute \$1 billion over six years via direct loans, grants, and subsidies.

The Solar for All Program provides grants to states, territories, Tribal governments, municipalities, and non-profits to prepare low-income and disadvantaged communities for residential solar by creating and expanding programs that provide financing and technical assistance to enable low-income and disadvantaged communities to deploy residential solar. The Notice of Intent to Apply was released in 2023, and two Nevada entities responded: the Clark County Department of Environment and Sustainability and the Nevada Clean Energy Fund. The EPA intends to begin awarding funds in July of 2024 and does not anticipate additional rounds of funding.

The IRA offers a revamped version of an existing program that allows jurisdictions to simultaneously implement building energy code standards and building performance standards to decarbonize new and existing residential and commercial buildings. Through the DOE's Assistance for Latest and Zero Building Energy Code Adoption Grants, the IRA provides up to \$1 billion for states and units of local government with the authority to adopt and implement the latest building energy codes, which help contribute to the overall health, safety, efficiency, and long-term resilience of buildings. Adoption and implementation of such codes supports the decarbonization of new and existing residential and commercial buildings. While energy code adoption grants have been available to states for some time, the IRA version of this funding opportunity does not have a cost-share requirement, which makes adoption significantly more affordable for state governments. The Funding Opportunity Announcement for these grants opened in December 2023 and will remain open until April 30, 2024, with review cycles occurring every six months, or until funding is expended.

Commercial and Government Buildings

The Energy Efficient Commercial Buildings Deduction provides tax credits to commercial buildings (including municipally-owned) that reduce energy use intensity by at least 25%, with five times the credit if the project meets prevailing wage and/or apprenticeship requirements. In government-owned buildings, the government may allocate this deduction to the individual or entity primarily responsible for designing the improvements. The deduction will reduce costs associated with green building design, and ideally encourage business/commercial building owners and governments to integrate energy efficiency components into new construction, reconstruction, and renovation of existing buildings.

Workforce Development

The IRA's massive investment in homeowner and property owner incentives for energy-efficient retrofits cannot proceed efficiently without a workforce trained in energy-efficient and renewable energy building technology and appliances. To meet this need, the DOE launched the Home Energy Efficiency Contractor Training (HEECT) Program to complement and support the suite of IRA building retrofit and renewable energy tax incentives rolling out over 2023 and 2023. Through the HEECT program, the DOE will award \$200 million to state energy offices over 10 years to expand and train local workforces

to install, repair, and monitor energy-efficient retrofits and appliances in residential, commercial, and institutional buildings that are eligible for HOMES and HEEHRA rebates. The State can leverage HEECT funds to reduce the costs of training, testing, and certifying contractors to carry out energy efficiency and electrification improvements through state-run programs or partnerships with local organizations and municipalities.

The State can optimize the benefits of these incentives, grants, and programs in a variety of ways:

- Supporting the State energy office in applying for DOE funding and providing input and guidance on program design.
- Supporting eligible frontline organizations to apply for funding where applicable and encouraging community-based organizations to engage in program design and implementation planning.
- Assessing existing and planned government buildings for retrofit/energy efficiency potential and applying tax credits to eligible properties.
- Educating building owners, developers, and contractors about the availability and increased value of IRA tax credits.
- Partnering with local organizations to assist eligible property owners and contractors to access rebates and credits.
- Partnering with local organizations to assist contractors to meet prevailing wage and apprenticeship requirements to maximize the impact of the tax credits.
- Partnering with non-profit organizations to develop inclusive workforce development programs for contractor education and training.
- Providing directly or partnering with organizations to offer energy-efficient retrofit and appliance training to minority-business enterprise (MBE) and disadvantaged business enterprise (DBE) contractors.
- Connecting existing contractor networks and workforce training programs to new energy efficiency training opportunities.
- Supporting apprenticeship programs and pipelines and working with contractors to receive the increased incentives by meeting prevailing wage and apprenticeship requirements.

Energy System

E1. Build Capacity	Applicable Funding Sources
<p>E1.1 - Build technical capacity at public agencies to plan for, procure, and implement renewable energy, energy storage, grid enhancement, green hydrogen, and biofuels projects. This includes training staff, coordinating with other levels of government, supporting workforce development, and developing communication and outreach campaigns.</p>	<ul style="list-style-type: none"> ● Home Energy Efficiency Contractor Training (DOE) ● Environmental and Climate Justice Block Grants (EPA) ● Solar for All Grant Program (EPA) ● Assistance for Latest and Zero Building Energy Code Adoption Grants (DOE) ● Career Skills Training Program (DOE)
<p>E1.2 - Create public databases of renewable energy, energy storage, grid enhancement, green hydrogen, and biofuels installations to enhance transparency and coordination among public agencies, the public, and interested and affected parties. Publicly available data access can ensure all actors are aware of the status of clean energy actions in the State and are operating with the same shared understanding.</p>	<ul style="list-style-type: none"> ● Environmental and Climate Justice Block Grants (EPA)
<p>E1.3 - Support planning and implementation of new renewable energy, energy storage, grid enhancement, green hydrogen, and biofuel systems. Enhance workforce training, particularly in the maintenance and repair of renewable energy systems including solar panels and batteries. Workforce development activities could include enhancing old or creating new training programs, particularly among trades such as construction and electricians and implementing job placement programs and apprenticeships.</p>	<ul style="list-style-type: none"> ● Solar for All Grant Program (EPA) ● Advanced Energy Manufacturing and Recycling Grants (DOE) ● Clean Electricity Investment Tax Credit (Treasury) ● Clean Electricity Production Tax Credit (Treasury) ● Clean Hydrogen Production Credit (Treasury) ● Energy Infrastructure Reinvestment Financing Loans (DOE)
<p>E1.4 - Facilitate public outreach and education to encourage communities and businesses to deploy renewable energy, energy storage, grid enhancement, green hydrogen, and biofuels projects. Outreach can be, but is not limited to, online and in-person events, promotions, marketing, and geographic-specific partnerships with community-based organizations targeting diverse and historically underserved populations that could benefit from these projects.</p>	<ul style="list-style-type: none"> ● Environmental and Climate Justice Block Grants (EPA) ● Solar for All Grant Program (EPA)

E2. Accelerate Renewable Energy Generation	Applicable Funding Sources
<p>E2.1 - Fund distributed generation, community renewable projects and renewable cooperatives. Support the development of community energy plans, especially in rural and disadvantaged areas. Provide state, local, and/or Tribal-backed loans and grants for community-scale renewable projects (monthly fee to subscribe to the service without living close by or needing the capacity to install solar panels on their homes or businesses). Support creation of “Solar Gardens” and/or solar cooperatives to help generate electricity for rural and smaller communities.</p>	<ul style="list-style-type: none"> ● Environmental and Climate Justice Block Grants (EPA) ● Solar for All Grant Program (EPA) ● Rural Energy for America Program (USDA)
<p>E2.2 - Incentivize renewable energy and energy storage projects with enhanced community benefits such as lower-cost energy, job creation, economic development, public parks, public buildings, job training programs, and/or measures to protect the environment. This could be achieved by developing project agreements that guarantee economic benefits, ensure accountability, and address environmental justice concerns.</p>	<ul style="list-style-type: none"> ● Environmental and Climate Justice Block Grants (EPA) ● Solar for All Grant Program (EPA) ● Rural Energy for America Program (USDA)
<p>E2.3 - Expand Transmission Facilitation Program by adding grants and revolving funds to develop new transmission lines, upgrade existing transmission lines, and connect microgrids.</p>	<ul style="list-style-type: none"> ● Transmission Facilitation Program Loans (DOE) ● Transmission Facility Financing Program Loans (DOE) ● Transmission Siting and Economic Development Grants Program (DOE)
<p>E2.4 - Work with utilities to develop and implement comprehensive grid modernization plans, with a focus on LIDACs. Include resources to assess how much the existing grid can be enhanced using the best available technologies and design new transmission lines.</p>	<ul style="list-style-type: none"> ● Grid Resilience and Innovative Partnerships (DOE) ● Transmission Facilitation Program Loans (DOE) ● Transmission Facility Financing Program Loans (DOE) ● Transmission Siting and Economic Development Grants Program (DOE)

<p>E2.5 - Incentivize behind-the-meter and smart-grid technologies, including grants, revolving funds, and community awareness activities to deploy these technologies with a focus on LIDACs that are electrifying their energy consumption with smart technologies, allowing them to become prosumers.</p>	<ul style="list-style-type: none"> • Grid Resilience and Innovative Partnerships (DOE) • Transmission Facilitation Program Loans (DOE) • Transmission Facility Financing Program Loans (DOE) • Transmission Siting and Economic Development Grants Program (DOE)
<p>E2.6 - Incentivize and support green fuel production projects, such as green hydrogen and biofuels. This includes offering grants and revolving funds, investing in research and development to improve green fuel technologies and their efficiency, developing networks of collaboration with industries to connect production with demand for green fuels, and working with LIDACs and other communities to develop projects with enhanced community benefits, such as lower-cost energy, job creation, economic development, public parks, job training programs, and/or measures to protect the environment.</p>	<ul style="list-style-type: none"> • Clean Hydrogen Production Credit (Treasury) • Energy Infrastructure Reinvestment Financing Loans (DOE) • Advanced Energy Manufacturing and Recycling Grants (DOE)
<p>E2.7 - Incentivize enhanced geothermal. This includes offering grants and revolving funds, investing in research and development to improve enhanced geothermal technologies and their flexibility, and working with LIDACs and other communities to develop projects with enhanced community benefits, such as lower-cost energy, job creation, economic development, public parks, job training programs, and/or measures to protect the environment.</p>	<ul style="list-style-type: none"> • Energy Infrastructure Reinvestment Financing Loans (DOE) • Advanced Energy Manufacturing and Recycling Grants (DOE) • Enhanced Geothermal Shot (DOE)
<p>E3. Clean the Grid</p>	<p>Applicable Funding Sources</p>
<p>E3.1 - Incentivize retrofitting fossil-fuel-powered thermal power plants to use green -hydrogen-based fuels. This includes offering grants and revolving funds and investing in research and development to deploy technologies that could retrofit existing fossil fuel power plants to run with green-hydrogen-based fuels, enabling companies to keep existing jobs and reduce negative impacts to communities around the power plants.</p>	<ul style="list-style-type: none"> • Clean Hydrogen Production Credit (Treasury) • Energy Infrastructure Reinvestment Financing Loans (DOE) • Advanced Energy Manufacturing and Recycling Grants (DOE)

E3.2 - Incentivize adoption of Carnot or gravity batteries for storing surplus green electricity. This includes offering grants and revolving funds and investing in research and development to deploy these technologies, for example, technologies that could retrofit existing fossil fuel power plants to become Carnot batteries.

- Clean Electricity Investment Tax Credit (Treasury)
- Clean Electricity Production Tax Credit (Treasury)
- Energy Infrastructure Reinvestment Financing Loans (DOE)
- Advanced Energy Manufacturing and Recycling Grants (DOE)

E4. Clean Energy Hubs Program

Applicable Funding Sources

E4.1 - Identify former mine lands and brownfields and characterize their potential to produce renewable energy, existing transmission capacity available nearby each site and communities potentially affected.

- Clean Electricity Investment Tax Credit (Treasury)
- Clean Electricity Production Tax Credit (Treasury)
- Clean Energy Demonstration Program On Current And Former Mine Land (DOE)
- Clean Hydrogen Production Credit (Treasury)
- Energy Infrastructure Reinvestment Financing Loans (DOE)

E4.2 - Design suitable business models for each potential clean energy hub, and for each potential clean energy hub, engage with interested and affected parties to explore and co-design a suitable business model that enhances community benefits, such as lower- cost energy, job creation, economic development, public parks, job training programs, and/or measures to protect the environment.

- Clean Electricity Investment Tax Credit (Treasury)
- Clean Electricity Production Tax Credit (Treasury)
- Clean Hydrogen Production Credit (Treasury)
- Energy Infrastructure Reinvestment Financing Loans (DOE)

E4.3 - Incentivize the implementation of clean energy hubs in former mine lands and brownfields. This includes offering grants and revolving funds to deploy renewable energy and address environmental justice concerns around the site. This could be reached by developing project agreements that guarantee economic benefits, ensure accountability, and address environmental justice concerns.

- Clean Electricity Investment Tax Credit (Treasury)
- Clean Electricity Production Tax Credit (Treasury)
- Clean Energy Demonstration Program On Current And Former Mine Land (DOE)
- Clean Hydrogen Production Credit (Treasury)
- Energy Infrastructure Reinvestment Financing Loans (DOE)

The State can accelerate its transition to a renewable energy future by developing incentives and measures to increase renewable energy project developments like solar farms and solar gardens. The

Solar for All Program provides grants to states, territories, Tribal governments, municipalities, and non-profits to prepare low-income and disadvantaged communities for residential solar by creating and expanding programs that provide financing and technical assistance to enable low-income and disadvantaged communities to deploy residential solar. The Notice of Intent to Apply was released in 2023, and two Nevada entities responded: the Clark County Department of Environment and Sustainability and the Nevada Clean Energy Fund. The EPA intends to begin awarding funds in July of 2024 and does not anticipate additional rounds of funding.

Communities can access federal IRA funding to reduce emissions and increase equitable development projects that connect communities. The Environmental and Climate Justice Block Grants program provides grants to communities to advance environmental justice and support efforts like pollution monitoring, mitigation of climate and health risks, and climate resilience and adaptation. CBOs or partnerships between CBOs and local or Tribal governments or universities are eligible to apply. The Green and Resilient Retrofit Program provides loans and grants to fund projects that improve energy or water efficiency, implement zero emission electricity generation, use low-emissions building materials or processes, implement energy storage or building electrification, or address climate resilience of eligible HUD-assisted multi-family properties.

The Neighborhood Access and Equity Grant Program (NAE) will provide up to \$3.155 billion in grant awards to connect communities by supporting neighborhood equity, safety, and affordable transportation access as well as by mitigating negative environmental impacts. The Urban and Community Forestry Grant Program aims to increase equitable access to trees and green space. Local governments, universities, and community organizations in Nevada, including the City of Las Vegas, the City of Reno, and the University of Nevada Las Vegas, have received funding.,

The IRA provided \$550 million in grants, contracts, or financial assistance agreements for the planning, design, or construction of water projects to increase reliable access to domestic water supplies through the Reclamation Domestic Water Supply Projects Program. The IRA also appropriated funding for public entities to conduct drought mitigation activities, including conservation, habitat restoration, and resilience projects. In 2023, the Southern Nevada Water Authority received funding to expand its septic system conversion program to connect residents to public sewer.

Industry

I1. Build Capacity	Applicable Funding Sources
<p>I1.1 - Build technical capacity at public agencies to plan for, procure, and implement clean industrial initiatives (e.g., green hydrogen, energy storage, electrification of industrial processes, low-emissions cement, refrigerant substitution, etc.). This includes training staff, coordinating with other levels of government, supporting workforce development, communicating, and developing an outreach campaign.</p>	<ul style="list-style-type: none"> • Energy Efficiency and Conservation Block Grants (DOE)
<p>I1.2 - Create public databases of clean industrial initiatives, such as green hydrogen, energy storage, electrification of industrial processes, low-emission cement, and refrigerant substitution, etc.</p>	<ul style="list-style-type: none"> • Energy Efficiency and Conservation Block Grants (DOE)
<p>I1.3 - Enhance workforce, maintenance, and repair capacity to support planning, implementation of green hydrogen, energy storage, electrification of industrial processes, low-emission cement, and refrigerant substitution initiatives, etc. Workforce development activities could include enhancing old or creating new training programs, particularly among trades such as construction, engineering, manufacturing, mechanics, drivers, and electricians, and offering job placement programs and apprenticeships.</p>	<ul style="list-style-type: none"> • Energy Efficiency and Conservation Block Grants (DOE) • Brownfields Job Training Grant Program (EPA)
<p>I1.4 - Facilitate public outreach and education to encourage industries to deploy green hydrogen, energy storage, electrification of industrial processes, low-emission cement, and refrigerant substitution initiatives, etc. Outreach can be, but is not limited to, online and in-person events, promotions, marketing, and geographic-specific partnerships among businesses and communities and engaging with interested and affected parties to explore suitable business models that could enhance community benefits.</p>	<ul style="list-style-type: none"> • Brownfields Program - Assessments (EPA) • Energy Efficiency and Conservation Block Grants (DOE)

I2. Decarbonize Energy-Intensive Industries	Applicable Funding Sources
<p>I.2.1 - Incentivize repurposing former industrial sites and brownfields into clean energy hubs, this includes offering grants and revolving funds to deploy renewable energy, green hydrogen, and energy storage and address environmental justice concerns around the site. This could be reached by developing project agreements that guarantee economic benefits, ensure accountability, and address environmental justice concerns.</p>	<ul style="list-style-type: none"> ● Advanced Energy Manufacturing and Recycling Grants (DOE) ● Brownfields Program - Assessments (EPA) ● Clean Electricity Investment Tax Credit (Treasury) ● Clean Electricity Production Tax Credit (Treasury) ● Clean Hydrogen Production Credit (Treasury) ● Energy Efficiency and Conservation Block Grants (DOE) ● Grid Resilience and Innovative Partnerships: Smart Grid Grants (DOE) ● WaterSMART Large-Scale Water Recycling Program (BOR)
<p>I.2.2 - Incentivize the production of renewable energy and green hydrogen near energy-intensive industrial facilities. This includes identifying potential industrial areas with the highest potential to transform their energy consumption and supporting the implementation of the projects with grants and revolving funds.</p>	<ul style="list-style-type: none"> ● Advanced Energy Manufacturing and Recycling Grants (DOE) ● Clean Electricity Investment Tax Credit (Treasury) ● Clean Electricity Production Tax Credit (Treasury) ● Clean Energy Demonstration Program On Current And Former Mine Land (DOE) ● Clean Hydrogen Production Credit (Treasury) ● Clean Vehicle Tax Credit (Treasury) ● Energy Infrastructure Reinvestment Financing (DOE)
<p>I.2.3 - Incentivize the implementation of clean technologies, including energy efficiency and electrification of industrial processes and heat batteries. The support includes offering financial incentives and investing in research and development to deploy these technologies.</p>	<ul style="list-style-type: none"> ● Advanced Energy Manufacturing and Recycling Grants (DOE) ● Clean Electricity Investment Tax Credit (Treasury) ● Clean Electricity Production Tax Credit (Treasury) ● Clean Hydrogen Production Credit (Treasury) ● Energy Infrastructure Reinvestment Financing (DOE)

I2.4 - Incentivize hydrogen-fueled or electric mining trucks and vehicles by developing a comprehensive set of programs and incentives to encourage ZEV adoption and vehicle fuel switching. This could include developing an incentive program for clean trucks and hydrogen fueling stations.

- Clean Energy Demonstration Program On Current And Former Mine Land (DOE)
- Clean Vehicle Tax Credit (Treasury)

I3. Reduce Industrial Emissions

Applicable Funding Sources

I3.1 - Incentivize innovative projects related to hard-to-electrify sectors (e.g., cement manufacturing) and difficult-to-reduce GHGs beyond carbon dioxide (e.g., nitrous oxide, hydrofluorocarbons, and perfluorinated compounds) by developing grants that encourage research and the implementation of demonstrative projects. This can include programs that incentivize the manufacturing and market penetration of new refrigerants that have lower global warming potential; reduce emissions of SF₆ on electricity transmission; produce low-carbon concrete by using alternative materials and recycling concrete, producing low-carbon cement by electrolysis; and reduce emissions of N₂O related to the use of anesthetic gasses.

- Advanced Energy Manufacturing and Recycling Grants (DOE)
- Energy Efficiency and Conservation Block Grant (DOE)

I3.2 - Reduce methane emissions from industrial activities by implementing leak detection, repair, and utilization systems and developing comprehensive programs and incentives to identify methane leaks in Nevada and control methane emissions from abandoned and operational sites.

- Advanced Energy Manufacturing and Recycling Grants (DOE)
- Energy Efficiency and Conservation Block Grant (DOE)

13.3 - Incentivize programs and initiatives that take a holistic approach to transforming industrial sites by developing grants that encourage research and the implementation of demonstrative projects. The holistic transformation of industrial sites can include creating a smart grid to manage energy use, generation, and storage; replacing vehicle fleets with EVs that offer bi-directional energy supplies; using waste and wastewater to produce renewable natural gas; leveraging wastewater heat or industrial heat for space and domestic water heating; implementing initiatives that enhance CO₂ use for plant growth; improving high-energy process efficiency; and employing thermal energy storage powered by renewables for industrial heat and power.

- Advanced Energy Manufacturing and Recycling Grants (DOE)
- Brownfields Program - Assessments (EPA)
- Clean Electricity Investment Tax Credit (Treasury)
- Clean Electricity Production Tax Credit (Treasury)
- Clean Hydrogen Production Credit (Treasury)
- Energy Efficiency and Conservation Block Grants (DOE)
- Grid Resilience and Innovative Partnerships: Smart Grid Grants (DOE)
- WaterSMART Large-Scale Water Recycling Program (BOR)

Federal funding can be used to accelerate the transformation of industrial areas to implement clean technologies and transition to practices that reduce industry emissions. The Advanced Energy Manufacturing and Recycling Grants Program provides grants to small- and medium-sized manufacturers to build new or retrofit existing facilities to produce or recycle advanced energy products.

Grid enhancements in Nevada are underway. In 2023, the DOE awarded over \$10 million to the State of Nevada via the Grid Resilience State and Tribal Formula Grants Program. The State will deploy projects to reduce the frequency and duration of outages, increase hardening to adapt to climate-related hazards, and ensure an equitable energy future.²⁰⁴

The State of Nevada also received an allocation under the Energy Efficiency and Conservation Block Grant Program Formula Grant, for which entities can use funding for projects that cut carbon emissions, improve energy efficiency, and reduce energy use.²⁰⁵

Further, the Energy Infrastructure Reinvestment Program can support projects that reinvest in energy infrastructure to support the energy transformation. Projects can include repurposing or replacing retired power plants with renewable energy or storage, upgrading or retrofitting refineries, or repurposing energy infrastructure for decarbonization.²⁰⁶ The Clean Energy Demonstration Program On Current and Former Mine Land received \$500 million to demonstrate innovative mine land conversion to clean energy projects with a goal of replication across the country. This program requires up to five clean energy projects carried out in diverse geographical regions.²⁰⁷

²⁰⁴ U.S. Department of Energy, Grid Deployment Office. Grid Resilience State and Tribal Formula Grants: Nevada.

https://www.energy.gov/sites/default/files/2023-06/061623_Grid-Resilience-State-and-Tribal-Formula-Grants-Fact-Sheet_Nevada.pdf

²⁰⁵ U.S. Department of Energy. EECBG Program Formula Grant Application Hub.

<https://www.energy.gov/scep/eeecbg-program-formula-grant-application-hub>

²⁰⁶ U.S. Department of Energy. Energy Infrastructure Reinvestment. <https://www.energy.gov/lpo/energy-infrastructure-reinvestment>

²⁰⁷ U.S. Department of Energy. Clean Energy Demonstration Program On Current And Former Mine Land. <https://www.energy.gov/oced/CEML>

Waste

W1. Build Capacity	Applicable Funding Sources
<p>W1.1 - Develop an education and outreach campaign to help residents understand how to reduce organic waste and compost and to teach them about waste's connection to greenhouse gas emissions. Outreach can be, but is not limited to, marketing campaigns, at-home pamphlets, geographic-specific partnerships among communities and schools, and engagement with interested and affected parties.</p>	<ul style="list-style-type: none"> • Consumer Recycling Education and Outreach Grant Program (EPA) • Solid Waste Infrastructure for Recycling Grants (EPA)
<p>W1.2 - Develop a plan for piloting or scaling-up green waste curbside collection and composting at the local government level. Initiatives from Clark and Washoe counties could be used as precedents. Piloting could involve, but is not limited to, single-family homes and neighborhoods, while scaling-up would involve the inclusion of apartment buildings and local businesses, as well as enlarging the geographic area of existing waste collection.</p>	<ul style="list-style-type: none"> • Solid Waste Infrastructure for Recycling Grants (EPA)
<p>W1.3 - Support research and development on the circular economy by providing funding and technical assistance to local governments to conduct studies and pilot projects, as well as outreach education programs for residents, business owners, and manufacturing industry members. Highlight concepts such as sharing, leasing, reusing, repairing, refurbishing and recycling existing materials in our production systems.</p>	<ul style="list-style-type: none"> • Consumer Recycling Education and Outreach Grant Program (EPA) • Solid Waste Infrastructure for Recycling Grants (EPA)
W2. Reduce Emissions Through Reduction and Waste Diversion Programs	Applicable Funding Sources
<p>W2.1 - Encourage local governments to pilot waste diversion and sustainable materials management by providing funding and technical assistance to local governments and by helping them develop local composting facilities.</p>	<ul style="list-style-type: none"> • Solid Waste Infrastructure for Recycling Grants (EPA)

<p>W2.2 - Encourage residents and businesses to reduce waste and replace single-use plastics. Incentivization could include, but is not limited to, participating in the Green Business Certification Program (W2.3).</p>	<ul style="list-style-type: none"> • Consumer Recycling Education and Outreach Grant Program (EPA) • Solid Waste Infrastructure for Recycling Grants (EPA)
<p>W2.3 - Incentivize food diversion and recovery programs for businesses of all sizes. Particular emphasis should go toward food-serving businesses and grocery retailers.</p>	<ul style="list-style-type: none"> • Solid Waste Infrastructure for Recycling Grants (EPA)
<p>W2.4 - Develop a statewide green business certification program to incentivize small businesses to participate. Outreach of the green business certification program can include, but is not limited to, local government liaisons for the program and marketing incentives for local businesses (W2.2 and W2.3).</p>	<ul style="list-style-type: none"> • Consumer Recycling Education and Outreach Grant Program (EPA) • Solid Waste Infrastructure for Recycling Grants (EPA)
<p>W2.5 - Create a sustainable building materials management toolkit for businesses to understand how to reduce waste from construction, renovation, demolition, and retrofit projects. Outreach of the toolkit can include, but is not limited to, a builder's lunch and learn and local business network presentations.</p>	<ul style="list-style-type: none"> • Consumer Recycling Education and Outreach Grant Program (EPA) • Solid Waste Infrastructure for Recycling Grants (EPA)
<p>W2.6 - Incentivize methane capture and use in waste management facilities and provide funding to conduct studies on the prioritization of specific waste facilities and their capacity for landfill gas capture.</p>	<ul style="list-style-type: none"> • Advanced Energy Manufacturing and Recycling Grants (DOE) • Brownfields Grants Program (EPA) • Solid Waste Infrastructure for Recycling Grants (EPA)

The State can support local jurisdictions and community organizations to incentivize waste diversion and composting. This can involve scaling-up programs as well as increasing education and outreach on waste reduction.

The EPA's Consumer Recycling Education and Outreach Grant Program provides funding for projects that inform the public about residential or community recycling or composting programs and outreach materials that educate the public on the materials that are or are not accepted as part of residential community recycling or composting programs and/or that increase waste collection and decrease contamination in communities. Local governments, Tribal governments, non-profit organizations, and public-private partnerships are eligible for funding.²⁰⁸

²⁰⁸ U.S. EPA. Consumer Recycling Education and Outreach Grant Program. <https://www.epa.gov/infrastructure/consumer-recycling-education-and-outreach-grant-program>

The Solid Waste Infrastructure for Recycling program provides grants to states and territories, communities, and tribes and inter-Tribal consortia to improve post-consumer materials management and improve local waste management systems. In Nevada, the Shoshone-Paiute Tribes of the Duck Valley Indian Reservation received a recycling grant through the program.²⁰⁹

²⁰⁹ U.S. EPA. Recycling Grant Selectees and Recipients. <https://www.epa.gov/infrastructure/recycling-grant-selectees-and-recipients>

Restore Landscapes and Sequester Carbon

S1. Build Capacity	Applicable Funding Sources
<p>S1.1 - Support community organizations in LIDACs and Tribes with restoration planning and implementation. This can include, but is not limited to, support and funding for tree and vegetation planting programs, site identification for maximum carbon sequestration, and program development to get community members involved.</p>	<ul style="list-style-type: none"> ● Environmental and Climate Justice Block Grants (EPA) ● Urban And Community Forestry Grants (Forest Service) ● Drought Mitigation In The Reclamation States (Interior)
<p>S1.2 - Develop a plan for statewide ecological restoration and carbon sequestration. This can include, but is not limited to, providing funding and technical assistance to local governments, as well as support in mapping and prioritizing sites for different-sized projects.</p>	<ul style="list-style-type: none"> ● Environmental and Climate Justice Block Grants (EPA) ● Urban And Community Forestry Grants (Forest Service) ● Drought Mitigation In The Reclamation States (Interior)
<p>S1.3 - Support research and development in carbon sequestration and restoration projects. This can include, but is not limited to, providing funding and technical assistance to local governments, aiding with mapping, assessing GHG reduction capacity, sharing knowledge on various technical projects (e.g., green infrastructure and stormwater management) and explaining the community co-benefits associated with carbon sequestration (e.g., urban heat-island effect mitigation, better water quality).</p>	<ul style="list-style-type: none"> ● Environmental and Climate Justice Block Grants (EPA) ● Urban And Community Forestry Grants (Forest Service) ● Drought Mitigation In The Reclamation States (Interior)
S2. Restore and Sequester	Applicable Funding Sources
<p>S2.1 - Expand NDEP's Brownfields Program to incentivize carbon sequestration on brownfield sites. This can include, but is not limited to, providing funding and technical assistance to local governments and aiding them in the prioritization of brownfields and their different carbon sequestration capacities.</p>	<ul style="list-style-type: none"> ● Brownfields Grants Program (EPA) ● Brownfields Job Training Grants (EPA) ● Clean Electricity Investment Tax Credit (Treasury) ● Clean Electricity Production Tax Credit (Treasury) ● Drought Mitigation In The Reclamation States (Interior) ● Urban And Community Forestry Grants (Forest Service)

<p>S2.2 - Incentivize ecological restoration projects with enhanced community benefits. This can include, but is not limited to, providing funding and technical assistance to local governments and community groups, aiding with mapping, GHG reduction capacity, knowledge-sharing on various technical issues (e.g., green infrastructure and stormwater management) and the understanding of community co-benefits associated with carbon sequestration (e.g., urban-heat-island-effect mitigation, better water quality).</p>	<ul style="list-style-type: none"> ● Brownfields Grants Program (EPA) ● Brownfields Job Training Grants (EPA) ● Drought Mitigation In The Reclamation States (Interior) ● Urban And Community Forestry Grants (Forest Service)
<p>S2.3 - Increase the coverage and health of the tree canopy. This can include, but is not limited to, providing funding and technical assistance to local governments and community groups, aiding in developing canopy cover percentage goals, developing programs for tree planting and spreading awareness on community co-benefits (e.g., reduction of urban-heat-island effect, better air quality, shade capacity).</p>	<ul style="list-style-type: none"> ● Environmental and Climate Justice Block Grants (EPA) ● Urban And Community Forestry Grants (Forest Service) ● Drought Mitigation In The Reclamation States (Interior)
<p>S2.4 - Develop climate-smart agricultural practices such as healthy soil practices, efficient water management strategies, integrated pest management, diversification of crop varieties, and adaptive management techniques. This can include, but is not limited to, aiding farmers in such practices by providing funding and outreach programs, including local workshops and presentations on the above adaptive management techniques.</p>	<ul style="list-style-type: none"> ● Environmental and Climate Justice Block Grants (EPA) ● Urban And Community Forestry Grants (Forest Service) ● Drought Mitigation In The Reclamation States (Interior) ● WaterSMART Large-Scale Water Recycling Program (BOR)
<p>S2.5 - Support carbon sequestration via green infrastructure, active transportation, and renewable energy projects. This can include, but is not limited to, providing funding and technical assistance to local governments and community groups, including aiding in the program development for green infrastructure, active transportation, and community renewable energy projects.</p>	<ul style="list-style-type: none"> ● Environmental and Climate Justice Block Grants (EPA) ● Urban And Community Forestry Grants (Forest Service) ● Drought Mitigation In The Reclamation States (Interior) ● Reclamation Domestic Water Supply Projects (Interior) ● WaterSMART Large-Scale Water Recycling Program (BOR)

Funding for community-centered restoration and carbon sequestration projects including conservation, restoration, and green infrastructure projects is available through the IRA and communities and

organizations in Nevada have begun to receive funding. The Urban and Community Forestry Grant Program aims to increase equitable access to trees and green space. Local governments, universities, and community organizations in Nevada, including the City of Las Vegas, the City of Reno, and the University of Nevada Las Vegas, have received funding.²¹⁰

The IRA also appropriated funding for public entities to conduct drought mitigation activities, including conservation, habitat restoration, and resilience projects. In 2023, the Southern Nevada Water Authority received funding to expand its septic system conversion program to connect residents to public sewer.²¹¹

Under the EPA's Environmental and Climate Justice Program, the Environmental Justice Collaborative Problem-Solving (EJCPS) Cooperative Agreement Program provides assistance to organizations working to address local environmental or public health issues. In 2023, the Northern Nevada Institute for Public Health was awarded funding to conduct water quality assessments and develop an action plan that identifies strategies for water quality improvement.²¹²

Brownfields can be repurposed into high value sites to support clean energy initiatives and increase carbon capture. Drought Mitigation in the Reclamation States grant funding can be used for eco-restoration or a project on a former brownfield or mine that addresses drought mitigation.

²¹⁰ U.S. Forest Service. Urban and Community Forestry Grants - 2023 Grant Awards.

<https://www.fs.usda.gov/managing-land/urban-forests/ucf/2023-grant-funding>

²¹¹ Bureau of Reclamation. Previous Grant Selections, 2023. <https://www.usbr.gov/drought/prev.html>

²¹² U.S. EPA. The Environmental Justice Collaborative Problem-Solving Cooperative Agreement Program.

<https://www.epa.gov/environmentaljustice/environmental-justice-collaborative-problem-solving-cooperative-agreement-5#selectees>

5.3 Appendix C. Additional references for state/local authority

This appendix provides additional references for state and local authority to implement measures related to this PCAP.

Cooperative Agreements	
<u>NRS 277.180</u>	Interlocal contracts.
1.	Any one or more public agencies may contract with any one or more other public agencies to perform any governmental service, activity or undertaking which any of the public agencies entering into the contract is authorized by law to perform.
Nevada Division of Environmental Protection (Department of Conservation and Natural Resources)	
<u>NRS 445B.205</u>	Department designated as State Air Pollution Control Agency. The Department is:
1.	Designated as the Air Pollution Control Agency of the State for the purposes of the Federal Act insofar as it pertains to state programs.
2.	Authorized to take all action necessary or appropriate to secure to this state the benefits of the Federal Act.
<u>NRS 445B.230</u>	Powers and duties of the Department.
2.	The Department shall apply for and receive grants or other funds or gifts from public or private agencies.
3.	The Department shall cooperate and contract with other governmental agencies, including other states and the Federal Government.
11.	Take such action in accordance with the rules, regulations and orders promulgated by the Commission as may be necessary to prevent, abate and control air pollution.

Governor's Office of Energy	
<u>NRS 701.170</u>	Administration of gifts and grants; execution of research contracts and cooperative agreements; regulations; creation of nonprofit corporations; execution of other agreements.
1.	Administer any gifts or grants which the Office of Energy is authorized to accept for the purposes of this chapter.
2.	To the extent not inconsistent with the terms or conditions of a gift, grant or appropriation, expend money received from those gifts or grants or from legislative appropriations to contract with qualified persons or institutions for research in the production and efficient use of energy resources.
3.	Enter into any cooperative agreement with any federal or state agency or political subdivision.
5.	Within the limits of legislative appropriations and other money authorized for expenditure for such purposes, promote, participate in the operation of, and create or cause to be created, any nonprofit corporation, pursuant to chapter 82 of NRS, which the Director determines is necessary or convenient for the exercise of the powers and duties of the Office of Energy. The purposes, powers and operation of the corporation must be consistent with the purposes, powers and duties of the Office of Energy.
6.	Within the limits of legislative appropriations and other money authorized for expenditure for such purposes, negotiate and execute agreements with public or private entities which are necessary to the exercise of the powers and duties of the Director or the Office of Energy.
Nevada Clean Energy Fund	
<u>NRS 701B.930</u>	Legislative findings and declarations. The Legislature hereby finds and declares that it is in the interest of this State to establish and support in this State an independent corporation for public benefit, the Nevada Clean Energy Fund, for the purposes of:
1.	Promoting investments in qualified clean energy projects;
2.	Increasing significantly the pace and amount of investments in qualified clean energy projects at the state and local levels;

4.	Fostering the development and consistent application of transparent underwriting standards, standard contractual terms, and measurement and verification protocols for qualified clean energy projects;
6.	Achieving a level of financing support for qualified clean energy projects necessary to help abate climate change by increasing zero- or low-carbon electricity generation and transportation capabilities, realize energy efficiency potential in existing infrastructure, ease the economic effects of transitioning from a carbon-based economy to a clean-energy economy, achieve job creation through the construction and operation of qualified clean energy projects and complement and supplement other clean energy and energy efficiency programs and initiatives in this State.
NRS 701B.995	Duties of Board; availability of additional money; authority of Fund.
3.d	Prepare and enter into agreements with the Federal Government for the acceptance of grants of money for the purposes of NRS 701B.930 to 701B.995, inclusive.
3.e	Enter into agreements or cooperate with third parties to provide for enhanced leveraging of money of the Fund, additional financing mechanisms or any other program or combination of programs for the purpose of expanding the scope of financial assistance available from the Fund.
3.f	Bind the Fund and the Board to terms of any agreements entered into pursuant to NRS 701B.930 to 701B.995, inclusive.
3.g	Apply for and accept gifts, grants and donations from any source for the purpose of carrying out the provisions of NRS 701B.930 to 701B.995, inclusive.
Northern Nevada Public Health	
Washoe County Code 35.540	Adoption of air pollution control regulations.
	The air pollution control regulations, effective February 1, 1973, adopted by the district board of health, copies of which are placed on file in the office of the county clerk, are hereby adopted by reference, incorporated herein and made a part hereof as if set forth in full.

<p>Washoe County Regulations Chapter 020 – General Provisions</p>	<p>PART 020.000 - GENERAL PROVISIONS</p>
<p>Section A – Board of Health</p>	
<p>A.1</p>	<p>RESPONSIBILITY: The District Board of Health , acting through the District Health Officer and Health District, is hereby designated as the air pollution control agency of Washoe County, Nevada and shall exercise all the authority, jurisdiction, powers, (including the power to take all necessary action to secure to Washoe County the benefits of any federal or state legislation concerned with air pollution), and responsibilities that inure to the benefit, or are, or shall be conferred upon and binding upon, a local District Board of Health, pursuant to any of the provisions contained in Chapter 445B or any other Chapter of the Nevada Revised Statutes.</p>
<p>A.2</p>	<p>POWERS AND DUTIES: Pursuant to the powers and responsibilities that have inured to the benefit of the District Board of Health, said Board shall, without excluding any other powers, responsibilities, and authority conferred on</p> <p>said Board in the Nevada Revised Statutes, have the following powers and/or responsibilities:</p>
<p>A.2.f</p>	<p>To apply for and receive grants or other funds or gifts from public or private agencies.</p>
<p>A.2.g</p>	<p>To cooperate and contract with other governmental agencies including the State of Nevada, other states, and the federal government.</p>



NEVADA DIVISION OF
**ENVIRONMENTAL
PROTECTION**



Nevada Department of
**CONSERVATION &
NATURAL RESOURCES**



NEVADA GOVERNOR'S
OFFICE OF ENERGY