

# Advancing Nevada's Climate Goals

## SB 254 (June 2019)

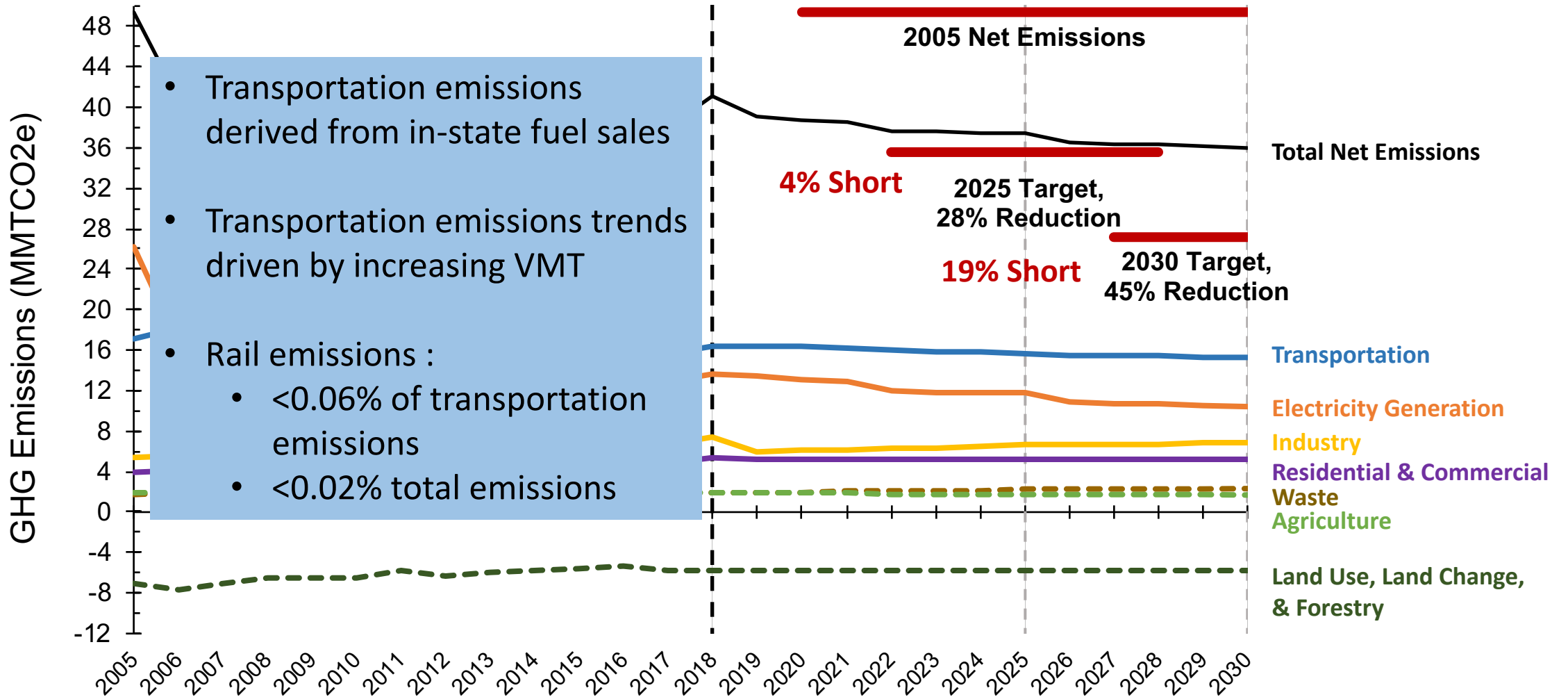
- Sets Economy-wide GHG Emissions Reduction Targets
  - 28% below 2005 by 2025
  - 45% below 2005 by 2030
  - Net-zero by 2050
- Requires NDEP develop Annual GHG Inventory, Project Future Emissions & Catalog of Climate Policy Options



# Nevada's Greenhouse Gas Emissions Inventory



## Nevada Greenhouse Gas Emissions



# Advancing Nevada's Climate Goals



## Gov. Sisolak Climate Change Executive Order 2019-22 (Nov 2019)

- Develop “State Climate Strategy” by Dec 1, 2020



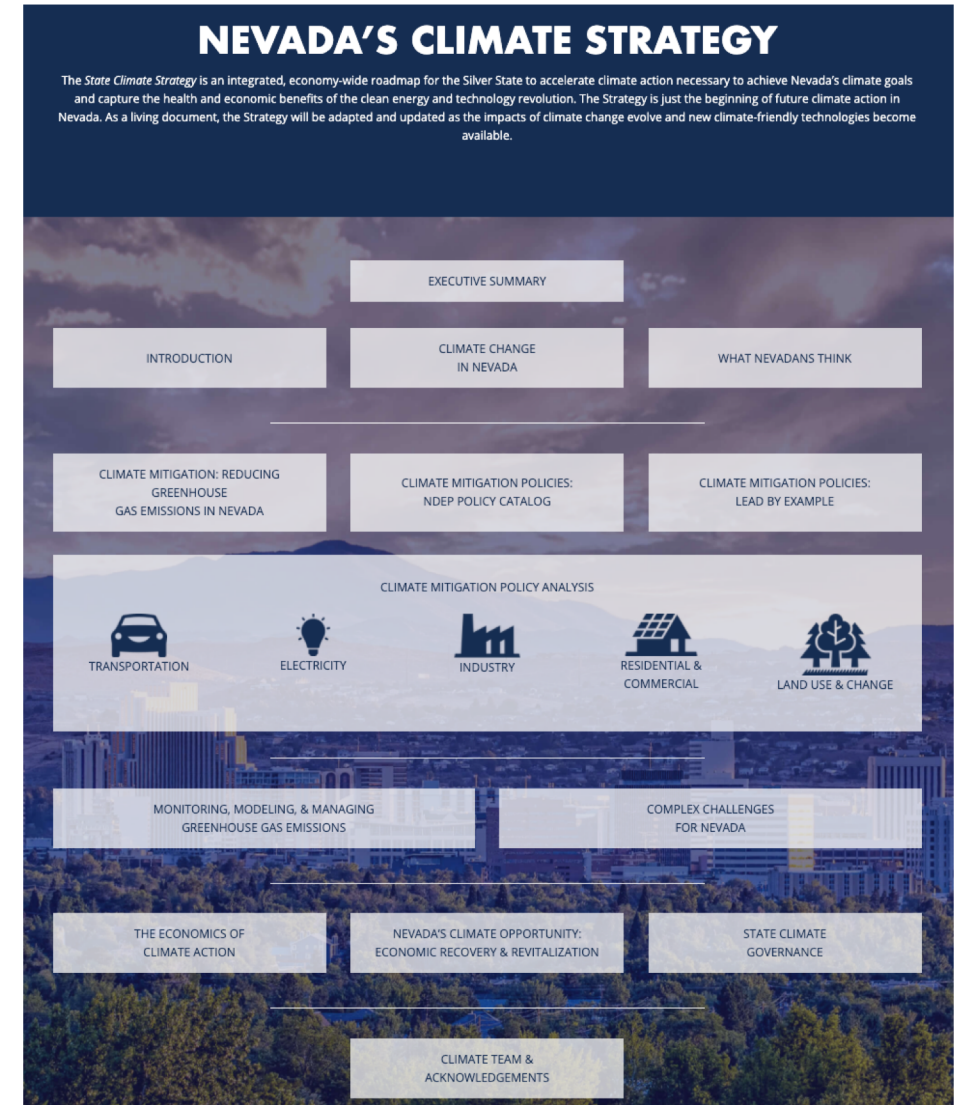
## State of Nevada Climate Initiative Launched (August 2020)

- Mission: To ensure a healthy, vibrant, climate-resilient future for all Nevadans

# Nevada's Climate Strategy: Key Takeaways

[climatestrategy.nv.gov](https://climatestrategy.nv.gov)

- ✓ Climate change is impacting Nevada and Nevadans today
- ✓ Nevadans are concerned and want climate action
- ✓ Nevada must move beyond the energy sector and adopt an economy-wide approach to reduce GHGs
- ✓ An integrated framework can shape state-specific climate mitigation policies that work for Nevada
- ✓ Climate change is complex, policy response must be coordinated across levels of governance
- ✓ Environmental justice must be integrated into all climate policies
- ✓ New investments to support climate action are essential, but inaction is far costlier
- ✓ Nevada is uniquely suited to leverage climate actions to spur Nevada's economic recovery and diversification goals
- ✓ A robust governance structure should be established to best position Nevada to respond to climate change



# Complex Climate Challenges for Nevada



**KEY TAKEAWAYS:** (1) Implementing a single policy, program, or plan without considering the connected issues has the potential for adverse consequences. (2) Investments in climate action will be optimized when climate action is harmonized within and across different levels of governance and economic sectors.

## Transportation Transformation

## Transmission Planning & Grid Modernization

## Urban Planning & Green Buildings

## Land Use and Natural & Working Lands

### LAND USE AND NATURAL & WORKING LANDS

Natural and working lands represent both challenges and opportunities for addressing climate change in Nevada. They can function to sequester carbon emissions or serve as GHG emitters depending on landscape type and land management practices. To fully understand these dynamics and design appropriate land use policies that will also reduce GHG emissions, it is important to first accurately quantify the emissions and sequestration impacts of different changes to natural and working lands.

However, most contemporary tools for quantifying carbon sequestration in rangeland ecosystems prevalent across Nevada are not accurate enough to account for the carbon balance associated with the Nevada landscape.

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Along the same lines, Nevada is also home to more water source and are a net emitter of GHGs (e.g., [Moomaw](#)), ability to accurately calculate carbon flux. Changes in

### URBAN PLANNING

Urban planning is a broad and complex category that is critically important to meet 50% of all energy and account for 70% of GHG emissions. Embedded in urban planning is an environmental, financial, and social perspective, resilience needs to be decisions related to urban planning occur at the local level. Simply, decisions made GHG emissions-reduction targets and ensure the resilience of Nevada's communities.

For example, a net-zero-emissions commercial building may actually have a large carbon footprint in the generation of the materials used in its construction reduces the carbon sequestration potential of the land it is built on. In addition, depending on the proximity of the residence to actual costs for fuel and maintenance of vehicles has the potential to be higher when the person must travel further.

**Decisions made at the local level can have tremendous impact on the state's ability to meet GHG emission reduction targets and ensure the resilience of Nevada's communities.**

Balancing numerous needs is challenging to say the least, but an increased effort to understand the impacts and tradeoffs of urban planning and decisions is critical not just to meet the state's climate goals, but also to support economic development, equity, access, and quality of life goals. There are multiple issues that will require discussion, collaboration, and collective decision-making across state and local planning organizations.

One challenge requiring a coordinated effort is addressing extreme heat. Reno and Las Vegas are among the fastest-warming cities in the entire United States ([Climate Central 2019](#)). Climate change has increased temperatures across NV by about 2°F and the urban heat island effect (UHII) warmed the city by an additional 3-5°F. One unique aspect of the UHI is that the temperature in one part of Las Vegas, for example, can be over 10°F warmer than town. Las Vegas has also been identified as the city with the most extreme UHI during both the daytime and the nighttime. The National Oceanic and Atmospheric Administration (NOAA) has a useful [interactive tool](#) that shows the areas of the United States that have heightened vulnerability to extreme heat multiple socioeconomic indicators, including Southern Nevada. Indeed, a recent analysis shows that low-income households tend to live in hotter Las Vegas and Reno than wealthier families ([NPR 2019](#)).

**Extreme heat in urban areas is clearly a social justice issue.**

Extreme heat causes more fatalities each year than any other weather-related event, including hurricanes, floods, and wildfires ([NOAA 2020](#)). With more people in exposure to extreme heat in urban areas, this is clearly a social justice issue. The mortality risk during a heat wave is amplified by exposure to poor air quality ([NCA 2018](#)), which also maps to where lower-income communities are located in the urban areas of Nevada ([Exposed Energy 2020](#), Figure 3.) Poor HVAC and inadequate construction of schools in historically marginalized communities is also resulting in underperformance of Black and Hispanic students on standardized tests on days where temperatures exceed 80°F ([Dark et al., 2020](#)).

Figure 3. Clark (Left) and Washoe (Right) Counties Census Tracts Ranked by Socioeconomic Vulnerability and Environmental Pollution (Source: [Exposed Energy 2020](#))



### TRANSPORTATION TRANSFORMATION

The transportation sector is currently Nevada's greatest source of GHG emissions. A two-pronged approach to reduce transportation demand, particularly in urban areas, while significantly increasing the percentage of low- and zero-emissions vehicles on Nevada roads can dramatically reduce transportation-related GHG emissions while advancing the state's economic recovery and rebuilding post-COVID. There are also tangible benefits to the health and safety of Nevadans as air quality would be improved as tailpipe emissions are reduced.

Achieving Nevada's net-zero GHG emissions by 2050 goal will require major changes to the state's transportation systems, as well as shifts in travel patterns and personal transportation choices. This in turn will require various degrees of buy-in across Nevada's urban and rural communities. Ameliorating GHG emissions will also necessitate a more-strategic approach to Nevada's investment in transportation infrastructure that includes consideration of the multiple cascading impacts of climate change. Other states are already navigating these issues and succeeding in building modern, low-emissions, climate-resilient transportation systems while accelerating consumer adoption of clean vehicles and alternative transportation options.

During the climate strategy [listening sessions](#), participants broadly supported shift considered in shifting toward new and expanded transportation alternatives.

The majority of GHG emissions from the transportation sector come from highway through time, the fuel mix used by vehicles registered in the state has expanded (Table 1; Figure 1).

Table 1. Nevada DMV Registrations by Fuel Type

Fuel Type	FY2009	FY2010	FY2011	FY2012	FY2013
DIESEL	87,896	85,032	85,693	87,840	99,000
GASOLINE	2,031,726	1,985,469	1,954,411	1,981,939	2,200,000
GASOLINE/ELECTRIC (HYBRID)	12,116	13,650	15,359	17,957	24,000
GASOLINE - CONVERTIBLE	1,478	1,455	1,393	1,145	1,100
ELECTRIC	155	175	168	231	480

### TRANSMISSION PLANNING & GRID MODERNIZATION

Power-sector issues extend beyond Nevada's borders. In Nevada, the majority of the power supply is generated and used in state. Modest amounts are imported from Arizona (19%), Idaho (4%), Utah (2%), and California (1%) ([EWECON 2.0](#)). Nevada does export power to California (14%) and Arizona (14%) ([EWECON 2.0](#)). As Nevada is also geographically located between large urban and economic centers across the West, it serves as a transmission "hub" and plays a critical role in the delivery of electricity for the region. Consequently, transmission and distribution grid planning and modernization are a West-wide effort and the influence of climate change across all these states must be considered in managing both current and future supply and demand.

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Existing power supplies are threatened by the impacts of climate change. Diminishing freshwater availability may compromise hydropower and thermolectric power plants that use surface water in Arizona. Declines in the water supply from the Colorado River that feeds Lake Mead has already impacted hydropower generation at Hoover Dam. Hoover Dam supplies power for three Western states (Nevada, Arizona, and California), and has a capacity of 2,080 MW. However, for every foot that Lake Mead drops, 5.2 MW of capacity is lost. Today, with water elevations at the lake hovering around 1,080 during the summer months, the dam generates in the range 25% of its original capacity. If the lake drops below 1,050, Hoover Dam can no longer generate electricity.

Wildfire is a threat to power-sector infrastructure, particularly to the transmission lines that transect the Sierras and the Rocky Mountains. Aging energy infrastructure can also spark wildfires, as was the case with some of the 2017 northern California wildfires that were started by PG&E power lines. In the aftermath, electricity utility companies across the West, including NV Energy, have either shutdown electricity delivery to customers, or prepared to, on days where the National Weather Service has issued a red flag warning and there is a high fire risk. Given that these tend to occur during the hottest days, curtailing power can pose heat-related health risks as no air conditioning is available. Further, seniors and other vulnerable populations may not be able to refrigerate important medication or power medical equipment.

The combination of a growing population and increasing temperatures is expected to increase total energy demands across the United States ([NCA 2018](#)). Cooling degree days are already increasing in the West, as are the duration of heat waves, particularly in Southern Nevada. Extreme heat and associated spikes in air conditioning demand are already taxing power systems, highlighting the urgency of modernizing power systems (See Box 1).

# Can Rail Help Meet Nevada's GHG Emissions Reduction Targets?

- Rail is a small portion of total GHG emissions
- Greater GHG efficiency per unit moved by rail than by medium or heavy-duty diesel trucks
- Freight-related emissions would be accounted for by California & Nevada-- but overall benefit unclear because of different accounting methods
- Idling of medium and heavy-duty trucks at loading and unloading points:
  - GHG emissions
  - Air quality

- California advanced clean truck standards & market shift toward zero-emission vehicles
- Greater GHG efficiency per unit moved by ZEV trucks than by traditional rail
- Rail investments that move people to reduce VMT of residents could help Nevada reach its emissions reduction targets
- Electric train technology & other innovative technologies