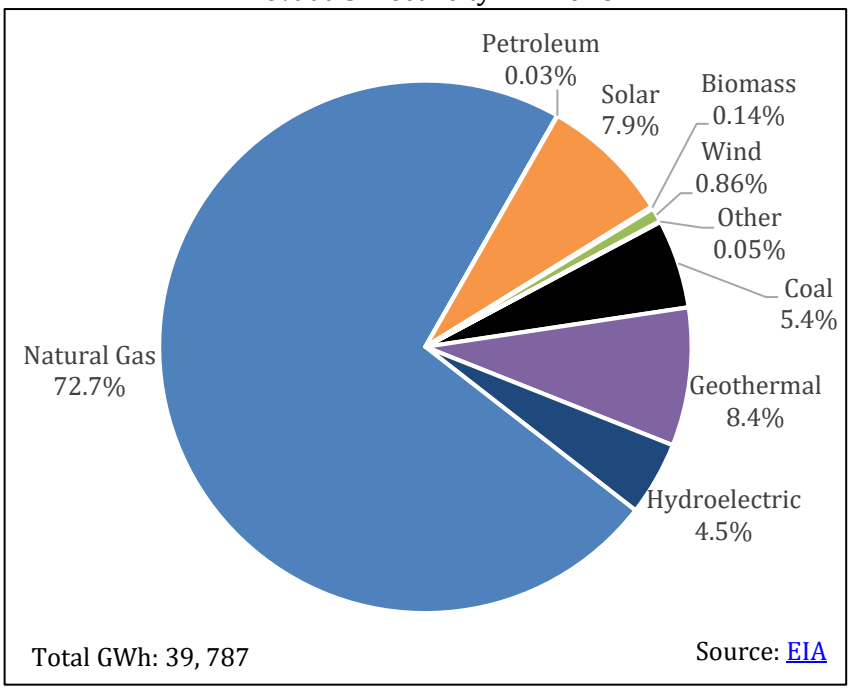
State Brief: Nevada

BACKGROUND

Nevada currently receives nearly 90% of its energy from out-of-state, much of which is natural gas. The state is a national leader in solar and geothermal energy: In 2016, Nevada ranked 2nd in the U.S. for utility-scale net electricity generation from geothermal sources and 4th for solar energy. Nevada gets almost half of its renewable power from geothermal resources.

Nevada's current renewable portfolio standard (RPS) calls for 25% renewable energy by 2025. NV Energy reported in early 2018 that it is on track to exceed this target; the company achieved a 25.5% renewable energy and related credits level in northern Nevada and 23.1% in southern Nevada, for a combined weighted average of 23.8%.

Nevada's Electricity Mix 2016



During the 2017 Legislative session, Governor Brian Sandoval vetoed Assembly Bill 206, which would have increased the state's RPS to 40% by 2030. After the veto, he explained his decision in a statement, saying that "although the increase in the RPS proposed at this time in AB 206 is one that I would otherwise support, the consequences of approving this bill must be considered through the lens of recent changes to Nevada energy policy and those likely to be adopted in the near future. These changes can only be characterized as massive shifts in energy policy that have already dramatically altered the energy landscape in Nevada. They are occurring in real time, with energy policy evolving in real time." Additionally, Governor Sandoval pledged: "To achieve the goals set forth in AB 206, and to respond to the concerns raised in this veto message, I will amend my executive order regarding the Committee on Energy Choice to direct it to study, review and discuss an increased RPS in the face of energy choice and make recommendations to me and the 2019 Legislature." During June 2018, the group 'Nevadans for a Clean Energy Future' submitted over 230,000 signatures, more than double the number needed, in order to get its initiative for a 50% by 2030 RPS on November's ballot.

In the Fall of 2016, voters approved Question 3, which would establish and open electric energy market in the state. While the measure passed by a substantial margin, voters must also approve it on the 2018 ballot and the measure will require additional legislative action before becoming law. Governor Sandoval announced the members of the Committee on Energy Choice in April 2017. The Committee will be tasked with developing policy proposals if voters approve the Energy Choice initiative in 2018.

Joe Reynolds chairs Nevada's bi-partisan, three-member Public Utilities Commission (PUCN). The PUCN regulates the operations of NV Energy and the service territories of the state's municipally-owned and cooperative electric utilities. Democratic majorities control both chambers of the State Legislature. Governor Sandoval is a Republican.

POLICY STRENGTHS AND OPPORTUNITIES[1]

The National Renewable Energy Laboratory (NREL) developed the notion of "policy stacking,"[2] an important framework for policymakers to consider. The basic idea behind policy stacking is that there is an interdependency and sequencing of state policy that, when done effectively, can yield greater market certainty, private sector investment, and likelihood of achieving stated public policy objectives.

In theory, but not always in practice, clean energy policies can be categorized into one of three tiers of the policy stack. Tier 1, market preparation policies, remove technical, legal, regulatory, and infrastructure-related barriers to clean energy technology adoption. Tier 2, market creation policies, create a market and/or signal state support for clean energy technologies. Tier 3, market expansion policies, create incentives and other programs in order to expand an existing clean energy market by encouraging or facilitating technology uptake by additional market participants.

For example, before financial incentives for combined heat and power (CHP) will be successful, two key considerations for deployment are having clear interconnection standards and favorable stand-by rates for customers who opt to add CHP. In this example, states should adopt policies to address interconnection and stand-by rates before adopting financial incentive programs.

GRID MODERNIZATION

Policymakers can view grid modernization as creating a policy structure that supports and ties together many other initiatives, such as smart metering infrastructure, customer data management, energy storage, electric vehicle infrastructure, and utility business models.

In the last two decades, new digital technologies have enabled utilities to better manage the grid and provide opportunities for consumers to customize their services to fit their priorities. These technologies allow a two-way flow of information between the electric grid and grid operators and between utilities and their customers. Emerging technologies improve system reliability and resiliency by enabling better tracking and management of resources. These technologies allow grid operators to incorporate central and distributed energy resources, energy storage technologies, electric vehicles, and assist in addressing the challenges associated with planning, congestion, asset utilization, and energy and system efficiency. On the customer's side of the meter, advanced metering infrastructure, dynamic pricing, and other emerging technologies allow an exchange of information and electricity between a consumer and their electric provider.

Nevada has a solid foundation for advancing grid modernization efforts in the state. According to the 2017 Grid Modernization Index, Nevada ranks 9th in the country for overall grid modernization efforts, climbing five spots from the previous year. In February 2016, Governor Sandoval reconvened the New Energy Industry Task Force, a group of diverse stakeholders to advise Nevada's Office of Energy on approaches to promote renewable energy development. The group's work includes a focus on creating a modern, resilient, and cost-effective energy grid. In September 2016, the Task Force provided the Governor with a list of recommendations, several which were enacted by Senate Bill 145 in May 2017.

There are supportive policies that Nevada's policymakers could adopt to enhance in-state modernization efforts.

1. Require utilities to propose a ten-year grid modernization plan within a specified timeframe. Legislation could require plans to outline a clear set of grid modernization goals and describe methods to measure,

[1] For more information on policy opportunities, please visit the SPOT for Clean Energy. For more information on specific policy actions related to these opportunities, please review the *Clean Energy Policy Guide for State Legislatures*.

[2] V.A. Krasko and E. Doris, *National Renewable Energy Laboratory*, 2012. Strategic Sequencing for State Distributed PV Policies: A Quantitative Analysis of Policy Impacts and Interactions. http://www.nrel.gov/docs/fy13osti/56428.pdf.

report, verify, and enforce progress towards those goals. States might also provide incentives or cost recovery mechanisms for utilities to meet grid modernization goals.

2. The technologies associated with grid modernization generate a wealth of information about the grid itself and about customer behavior. Policy should include measures to protect this data, but also to encourage the use of this information to facilitate additional improvements to grid management and customer services. Nevada does not have clear state policies governing customer data access and privacy protections. To address this, policymakers should develop legislation or rules that, at minimum, do the following: clarify who owns the energy data associated with consumer energy usage; protect customer privacy; outline the process for allowing direct access to data by third parties; and promote access to the highest resolution of data by third parties. The state could establish customer access to energy data through the Green Button Connect program, for example.

3. Require that utilities' integrated resource plans (IRPs) include plans to enhance cybersecurity, integrate distributed energy resources (including electric vehicles and energy storage), increase smart meter deployment and demand response and/or demand-side management (DSM) programs, and measure and report on the results of grid modernization efforts.

The adoption of incentives for or a requirement to integrate a certain amount of energy storage on the grid alongside enhancing renewable energy and electric vehicle policies would support modernization efforts and improve the chances of successful grid modernization.

ENERGY STORAGE

Energy storage offers a unique opportunity to dynamically manage supply and demand while maximizing the value of grid resources. By deploying storage in strategic locations, utilities can more effectively manage their energy portfolios. First, storage provides management of intermittent demand – helping to flatten peak demand requirements for the utility. Second, the responsiveness of energy storage can allow the utility to implement voltage regulation and other ancillary services, which are useful for improving system efficiency. Third, storage can dispatch power to better integrate intermittent resources like renewable energy. Finally, energy storage can help the commercial sector avoid costly demand charges. As utilities around the country consider extending demand charges to the residential sector, this will become an even more important issue.

The flexibility of battery storage, combined with advanced metering infrastructure, allows customers to control how and when they use energy from the grid or from solar panels installed on their home or business. In most cases, this can provide greater cost savings than standalone solar systems. Combined with time-varying rates or real-time pricing programs, state policy can further support customer choice and open a new market for energy services. Prices that better reflect the time-varying and location-dependent costs of producing and delivering electricity can lead to several economic and environmental gains.

Storage provides multiple benefits to both the customer and the utility. State planning and regulatory policies can help maximize these benefits by 1) establishing a framework for easy integration of energy storage into the grid and 2) establishing a marketplace that monetizes the benefits of energy storage for cost effective investment.

During 2017, Governor Sandoval signed SB 204, a measure that requires the PUCN "to investigate and determine, on or before October 1, 2018, whether it is in the public interest to establish … targets for the procurement of energy storage systems by an electric utility." Procurement targets can jump-start market creation, spur fast learning, and guide the development of a regulatory framework. Five states currently have energy storage goals that range from five megawatt hours (MWh) to two gigawatts (GW).

Nevada is the home to the Tesla Gigafactory and has a unique opportunity to work with the battery manufacturer to support storage as a distributed energy technology. Combined with smart meters, distributed battery storage offers benefits for both the customer and the utility.

There are several opportunities for developing supportive state policies:

1. The state could establish best practices for interconnecting storage in statute, or legislation could provide an instruction to the PUCN to update existing policy.

2. Instruct utilities to evaluate the value of energy storage in multiple strategic locations across the utility system and consider a requirement to deploy storage where it will be cost effective, or identify the price point at which it will become cost effective.

3. Require the inclusion of energy storage as a critical piece of the energy system as both a demand and supply management resource. Some states have required that utilities evaluate the cost effectiveness of non-wires alternatives (NWAs) to large transmission and generation investments. Alternatively, states might want to require utilities to develop a distribution investment plan that identifies the locations on the distribution system where energy storage or other distributed resources would offer the greatest value.

4. Finance and incentivize energy storage for customers and utilities. Incentives could enable customers to use storage to manage their electric load and store locally produced renewable energy. Incentives in the form of rebates, grants, and tax credits can provide a bridge to scalable deployment for storage. Incentives can be designed to decline as storage values become more readily monetized. Policymakers could allow utilities that provide incentives to customers to recover the costs of installing smart meters. This would enable dynamic and time-varying energy management from multiple distributed battery systems. This should signal to customers the value of leveraging storage while better aligning customer costs with system costs. Financing energy storage installations for commercial customers would help reduce their demand charges. Policymakers might want to start first with a policy to incentivize solar system owners.

MAINSTREAMING RENEWABLES

As the renewable energy industry has matured, technology has improved, and global production of generating equipment has increased, renewable energy is increasingly seen as the least cost and lowest risk form of energy (excluding energy efficiency). A Bloomberg New Energy Finance report from this year predicts that at least 50% of total global electricity will be renewable by 2050. With increased deployment, utilities are learning more about how to integrate renewables effectively, investors are becoming more comfortable with the technologies, and building code officials are recognizing common standards and best practices. For these reasons, it is in the interests of policymakers to ensure that their states are well positioned to benefit from the transition to clean and sustainable energy resources.

To reduce barriers to customer and utility participation in the renewable energy market, Nevada might consider several policy options.

Customer-Oriented Policies

1. Interconnection, net metering, and streamlined permitting – In general, customers want a clear, streamlined, affordable, and predictable system for connecting renewable energy systems to the grid. To ensure this, Nebraska's policymakers could consider adopting IREC's model interconnection procedures, removing net metering system size limitations and the aggregate capacity limit, and crediting net excess generation at the customer's retail rate. Allowing aggregated net metering would be especially beneficial to the state's agricultural operations. Other applications for aggregated net metering include commercial properties and public entities like state and local governments, universities, and schools. The state might also consider establishing either statewide standards for streamlined permitting processes, or resources to support local governments that voluntarily implement a streamlined program, as Las Vegas has done. State incentives, such as tax credits, financial incentives, or loans can be tied to systems that are established within a designated streamlined permitting jurisdiction.

2. Shared Renewables – Due to building and property attributes and ownership issues, many customers are unable to install renewable energy technologies. Allowing shared, or community, renewable energy

projects addresses these barriers. These projects have multiple owners or subscribers who pay for a portion of the generation provided by the system. To support the development of shared renewables, the state might consider adopting a virtual net metering policy. Virtual net metering allows a customer to receive credits from a shared system as if the generation were on site. Virtual net metering is different from a power purchase agreement (PPA), which pays the customer for the proportion of power they produce. Because it is treated as a credit on the customer's bill, the customer can avoid the tax implications of a PPA payment - which can adversely affect the economics of the system (and may come as a surprise to the participant).

Low credit ratings often deter participation in renewable energy markets; this can affect low- and moderate-income (LMI) households' adoption of renewable energy solutions. Supportive policies for shared renewables can be designed to encourage participation by LMI households; this can increase adoption of renewable technologies and reduce energy costs. Low-income participation can be encouraged either through a percentage mandate for the overall annual contracted capacity, or by offering a higher rate of payment for the portion of shared solar capacity attributed to low-income customers. States that have a shared renewable program may want to coordinate this program with implementation of the federal Weatherization Assistance Program to provide recipients of assistance with participation in a shared renewable system.

There are several additional policy options that Nevada might consider to promote renewable energy uptake by low- and moderate-income consumers. Generally, successful state policies should be tailored to these customers, be cost-effective and financially sustainable, have measurable performance indicators, and be flexible enough to allow later changes in design.

3. Corporate Procurement – Many Fortune 100 and 500 companies have established either climate goals or commitments to purchase renewable energy. In just the last four years, over nine GW of renewable contracts have been announced by corporate entities. In the first quarter of 2018 alone, corporations signed 14 agreements for over 1700 MW of renewable energy. This is leading policymakers to provide additional avenues for businesses to procure renewable energy. NV Energy was one of the first utilities across the country to offer a renewable energy tariff, with its GreenEnergy Rider program in 2014. In 2016, NV Energy announced the expansion of the program to allow customers with 1 MW of demand or greater to source 50% or 100% of their electricity supply from solar energy. The generation will come from a new utility-scale solar photovoltaic power plant the utility will develop for these customers. Nevada's policy currently allows companies to purchase renewable energy credits (RECs), allows renewable energy tariffs, and allows companies to develop or lease onsite renewable energy projects. If Question 3 passes in 2018, then retail and wholesale market access to renewable energy would be provided too. The products available in Nevada meet five of the six Corporate Renewable Energy Buyers' Principles. (The state falls short on the principle of access to cost competitive options). The state might consider incorporating corporate renewable purchase commitments into the IRPs that utilities submit to regulators to plan for resource needs over multiple decades. By integrating these renewable purchase commitments into the IRP process, regulators can avoid over-building resources and stranding generation assets.

Utility-Oriented Policies

Some states have created programs that aim to reduce greenhouse gas emissions and increase investments in clean energy resources. States might see an emissions or clean peak standard as the next step in a progression from the state's RPS. To increase utility adoption of clean energy technologies, Nevada's policymakers might consider the following:

1. Emissions standards can take a technology neutral approach that looks at the total emissions of the utility portfolio and drive emissions down with a combination of renewables, traditional fuels, efficiency, and technological advances. Emissions reductions can be achieved through 1) a carbon portfolio standard approach, or 2) a market-based approach. A portfolio emissions standard sets emissions reduction targets to be achieved over time. This can be implemented through the IRP process or by establishing a maximum allowable rate of emissions per unit. Under a market-based approach, a state or a group of states might set

a certain emissions reduction target, for example, 20% below 1990 levels by 2040. This reduction is achieved by the distribution of annual emission allowances that decrease to the point that the standard is met in 2040. One of the advantages of a market-based program is that it is designed to reduce emissions in the most economically efficient manner possible. Such a standard can also address other concerns such as pollution, asthma risk, environmental justice and water use.

2. Clean Peak Standards aim to increase the share of clean energy resources used to meet peak demand and decrease energy bills over the long-term by reducing peak demand in the hours when energy costs are highest. These objectives can be met through different policy options including: planning and procurement that focuses on peak demand; a moratorium on the construction of new peaking units or a phase out of existing units; incentives – including carve-outs in states with RPSs – for clean energy resources delivered during peak times; and/or adopting a new clean peak standard that sets a target for clean energy deliveries during peak times.

ELECTRIFICATION OF THE TRANSPORTATION SECTOR

An estimated 55% of new car sales will be electric by 2040 (Bloomberg New Energy Finance). Therefore, a key part of building a modernized grid involves designing infrastructure that will facilitate easy connection of electric vehicles (EVs) to the grid. One of the most important barriers to increased adoption of EVs is the consumer's awareness of the availability of EV charging stations. Ultimately, drivers want to be sure that their car will get them where they need to go. Another important barrier to increased adoption of EVs is their higher up-front cost as compared to similar conventionally fueled vehicles. The good news is that both supportive policies for developing charging infrastructure and technological advancements have eased "range anxiety." See the U.S. Department of Energy's Alternative Fuels Data Center for a map of refueling locations for EVs and other alternative fuel vehicles.

Nevada has some incentives for citizens to purchase EVs. Local authorities are required to establish a parking fee exemption, and alternative fuel vehicles and hybrid EVs are exempt from an emissions inspection. NV Energy also offers discounted electricity rates to residential customers in their territory for charging plug-in EVs during off-peak hours. Furthermore, the Nevada Office of Energy established the Nevada Clean Energy Fund to fund qualified clean energy projects, including any program, technology, product, or service that supports the deployment of EVs and related infrastructure.

In June 2018, the PUCN voted unanimously to approve several new clean energy investments by NV Energy, including $15 million to incentivize the development of publicly available charging stations. Commissioner Bruce Breslow says Governor Sandoval wants Nevada to be the first state in the West to have a statewide network for electric charging by 2020.

Nevada joined Arizona, Colorado, Idaho, Montana, New Mexico, Utah, and Wyoming in signing the Regional Electric Vehicle West (REV West) memorandum of understanding to create an Intermountain West EV Corridor. The goal is to develop best practices and voluntary minimum standards for stations, expand access to new EVs, and create consistent charging experiences.

There are several additional opportunities to expand the market for EVs in Nevada:

1. EV and EV Supply Equipment (EVSE) Financing and Financial Incentives – As set out above, the state offers limited incentives for EVs and EVSEs. Providing additional financial incentives and innovative financing options can help spur greater market penetration of EVs. Sales, property, and income tax credits are some of the simplest methods for addressing high up-front costs of EVs and EVSE. While sales tax credits are typically applied at the time of purchase, property and income tax credits may do less to address upfront cost barriers as receipt of the credit is typically removed in time from the purchase.[3] Some states have adopted other financial incentives including low-interest loans. A handful of states qualify EVSE under

[3] A study by the Congressional Budget Office however suggests that tax credits are important tools for ensuring increased adoption of alternative-fueled vehicles.

their property assessed clean energy (PACE) programs. A simple solution is to increase and expand existing tax credits to incentivize commercial, publicly available charging stations.

2. Charging Infrastructure Plan – Locating charging infrastructure is different from locating conventional fueling stations. For the most part, EVs are cars used for commuting and local trips. Furthermore, while a driver of a conventional vehicle stops only briefly at a gas station for the specific purpose of filling up, a driver of an EV is generally looking to refuel when they are parked for a longer period of time, for example when going shopping, going to a restaurant, or going to work. Charging infrastructure plans should target these types of locations and attempt to pair the appropriate level of charging infrastructure with a reasonable amount of time a person will be at that location. Legislation could direct a state agency to develop such a plan through a stakeholder process.

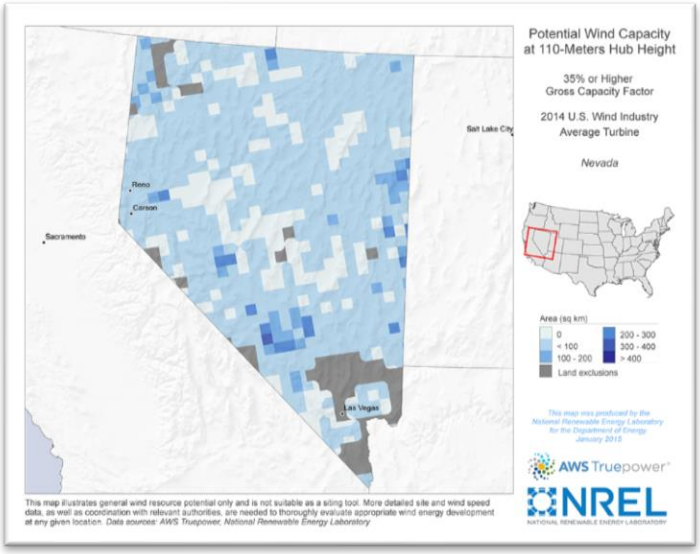
3. Parking Infrastructure Requirements – In tandem with the development of a statewide plan, legislation could set requirements for EV parking infrastructure. Some states have adopted permitting standards for parking lots, requiring, for instance, that for every 100 parking spaces, there must be at least one EV charging space. Legislation could also incentivize utilities to develop make-ready locations. These locations supply power to the point where a utility or third party developer might install an EV charging station. Nevada's building energy code could also be updated to include requirements for EV charging infrastructure.

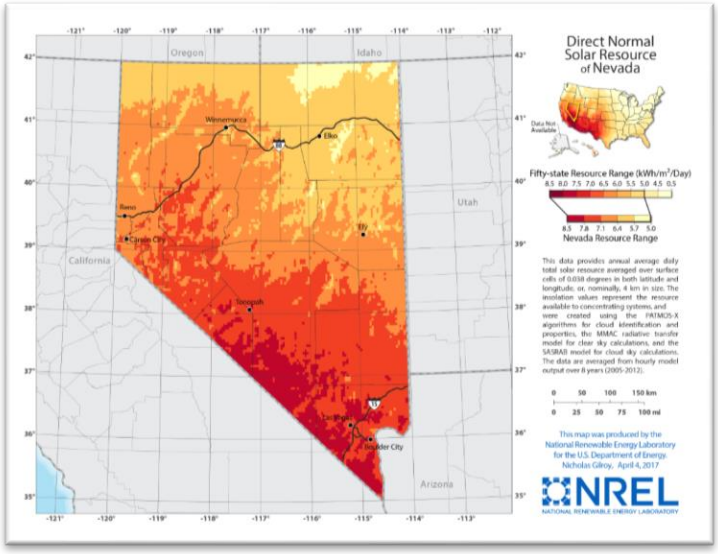
NEWS

- July 17, 2018: $1 Billion Solar Farm near Apex Could Feature Battery Storage
- July 17, 2018: Nevada Officials Verify 50% by 2030 Renewables Initiative Will be on the Ballot
- July 2, 2018: Panasonic Might Invest More in Tesla's Nevada Gigafactory, Report Says
- June 28, 2018: Trouble in the Las Vegas Air
- June 27, 2018: Old Nevada Mines May Get New Leases on Life as Solar Arrays
- June 25, 2018: NV Energy Bets Big on Solar in Nevada
- June 21, 2018: Roadmap Outlines How Nevada's Governor Can Grow Clean Energy Sector
- June 12, 2018: Nevada's 2.3-Cent Bid Beats Arizona's Record-Low Solar PPA Price
- May 15, 2018: Nevada Regulators Allow Utilities to Own EV Charging Stations

NEVADA'S WIND AND SOLAR RESOURCES

WIND https://windexchange.energy.gov/states/nv[4]
SOLAR https://www.nrel.gov/gis/solar.html





[4] Please see your packet for a higher resolution wind energy capacity map.

OTHER RESOURCES

- American Wind Energy Association, Nevada: http://awea.files.cms-plus.com/FileDownloads/pdfs/Nevada.pdf
- Nevada Energy Office: http://energy.nv.gov/
- The American Council for an Energy-Efficient Economy State and Local Policy Database, Nevada: http://database.aceee.org/state/nevada
- The Database of State Incentives for Renewables and Efficiency, Nevada: http://programs.dsireusa.org/system/program?fromSir=0&state=NV
- U.S. Energy Information Administration, Nevada: https://www.eia.gov/state/?sid=NV
- National Renewable Energy Laboratory Biomass Maps: https://www.nrel.gov/gis/biomass.html
- U.S. Department of Energy's Alternative Fuels Data Center, Nevada: https://www.afdc.energy.gov/states/nv
- SPOT for Clean Energy, Nevada: https://spotforcleanenergy.org/state/nevada/
- Advanced Energy Economy, Nevada's Clean Energy Roadmap: https://info.aee.net/advanced-energy-roadmap-for-nevada-1-0
- The Rocky Mountain Institute: From Gas to Grid – Building Charging Infrastructure to Power Electric Vehicle Demand
- The GridWise Alliance, Inc., EVs - Driving Adoption, Capturing Benefits: http://gridwise.org/evs-driving-adoption-capturing-benefits/
- The Regulatory Assistance Project, Performance-Based Regulation: https://www.raponline.org/event/performance-based-regulation-the-power-of-outcomes-part-1/

Our Resources

CNEE Homepage: http://cnee.colostate.edu/

The SPOT for Clean Energy: https://spotforcleanenergy.org/

The Advanced Energy Legislation (AEL) Tracker: https://www.aeltracker.org/

Clean Energy Policy Guide for State Legislatures: http://cnee.colostate.edu/cleanenergypolicyguide/

The Energy Policy Podcast: http://energypodcast.colostate.edu/

CNEE Contact Information

Tom Plant, Senior Policy Advisor
Tom.Plant@colostate.edu

