NEVADA'S CLEAN ENERGY FUTURE

How the Silver State can lead on renewables, energy efficiency, and electric vehicles

ACKNOWLEDGEMENTS

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Cover photos

Left: Crescent Dune's 1.1 gigawatt-hour storage capability alone is about equal to all of the world's utility scale batteries combined.

Photo courtesy of SolarReserve

Top Right: Utility-scale renewable energy projects in Nevada are capable of creating more than 1,000 jobs during construction.

Photo courtesy of SolarReserve

Bottom Right: The Don A. Campbell geothermal project in Nevada generates 19 megawatts of electricity.

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ABOUT E2

Environmental Entrepreneurs (E2) is a national, nonpartisan group of business leaders, investors, and professionals from every sector of the economy who advocate for smart policies that are good for the economy and good for the environment. Our members have founded or funded more than 2,500 companies, created more than 600,000 jobs, and manage more than $100 billion in venture and private equity capital.

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EXECUTIVE SUMMARY

A MAJOR ECONOMIC OPPORTUNITY

Clean energy presents Nevada with a big opportunity to grow its economy and create jobs in renewable energy, energy efficiency, and electric vehicles (EVs).

By tapping into some of the nation's most abundant solar resources, electricity providers are purchasing renewable energy from large-scale solar projects at lower costs than ever before.[1,2] In some cases, it may even be cheaper to build a new solar farm than to operate an existing natural gas plant. Complementing this growth of Nevada's solar industry is an abundance of geothermal resources.

Increasingly, businesses and home owners are also embracing energy efficiency. Thanks to advances in energy efficiency — from lighting technologies like Light Emitting Diodes (LEDs) to successful efficiency programs run by utilities across the country — businesses and homeowners are saving thousands of dollars on annual electric bills.

Meanwhile, automakers are busy introducing next-generation EVs whose range and price appeals to a broad consumer base. And what's powering this growing fleet of EVs? Nevada sunshine.

SOME PROBLEMS…AND SOLUTIONS

Governor Brian Sandoval has expressed support for clean energy, and recent legislatures have enacted policies that support clean energy.[3] In 2013, the Governor helped pass legislation that provided a framework for NV Energy to close the Reid Gardner coal-fired power plant, exit the coal-fired Navajo Generating Station, and replace this power plant capacity with natural gas and renewable energy resources.

Lately, though, while policymakers have been overwhelmed with important budgetary matters, Nevada's energy policy has lagged big advancements in renewable energy, energy efficiency and EV technology.

The current Renewable Portfolio Standard (RPS), which requires electric utilities to buy a certain amount of renewable energy, is failing to spur new solar and geothermal power projects. The Public Utilities Commission of Nevada (PUCN), meanwhile, terminated three important customer-facing clean energy programs — net metering (the policy undergirding rooftop solar), a program that encouraged customers to install efficient pool pumps, and a program that reduced the price of efficient LED light bulbs. And car buyers aren't incentivized to purchase EVs, despite the wide-ranging economic and environmental benefits they deliver to the state.

Now is the time to sharpen Nevada's economic edge and update its clean energy policies. Nevada policymakers should:

- **Increase the minimum amount of electricity energy providers get from renewable energy sources like solar and geothermal.**
- **Require electric utilities to run programs that help customers save energy, while raising the amount of energy that utilities are required to save.**
- **Put in place tax rebates for EV purchasers; spur utilities to invest in EV charging infrastructure in market segments critical to EV adoption, including apartment buildings and workplaces; and ensure that electricity rates encourage customers to charge EVs at optimal times.**

The result would be a fresh, forward-looking energy policy that can drive the state and its economy into the next decade.

RENEWABLE ENERGY

DECLINING SOLAR COSTS, AND A ROLE FOR GEOTHERMAL

Solar costs have declined quickly, due to substantial private and public investment in research and development, and increased manufacturing capacity. According to the investment firm Lazard, the cost to generate electricity from solar has decreased by 78 percent since 2009,[4] and many analysts believe costs will continue to fall.

THE COST TO GENERATE ELECTRICITY FROM SOLAR HAS DECREASED BY **78 PERCENT SINCE 2009**

In 2010, the U.S. Department of Energy (DOE) started its Sunshot program, with an ambitious goal of helping the solar industry by 2020 reach the low cost of $1 per-watt, or 6 cents per-kilowatt-hour (kWh). That's low enough for solar to directly compete with coal and natural gas. This year, DOE released a progress report, finding that five years into the program, the industry is already three-quarters of the way toward reaching the goal,[5] and a recent industry report concluded that it will hit the target by 2020.[6]

These price declines are evident in Nevada, where NV Energy has contracted for electricity from large solar projects at record-low prices. In July 2015, NV Energy received power purchase agreement (PPA) offers from large solar power projects at less than 4 cents per-kWh.[8] At prices this low, energy from new solar projects in Nevada is cheaper than energy from new natural gas-fired power plants; in some cases it may be cheaper to build a new solar farm than to operate and fuel an existing natural gas plant.

ENERGY FROM NEW SOLAR PROJECTS IN NEVADA CAN BE **CHEAPER THAN** ENERGY FROM NEW NATURAL GAS-FIRED POWER PLANTS

In December 2015, Congress passed a multi-year extension of federal tax credits for wind and solar, providing near-term market certainty for the renewable energy industry.[9,10]

Additionally, Nevada has strong geothermal resources that can complement solar growth. In today's cost environment, geothermal electricity is more expensive than solar, and the integration costs of solar are low. However, as the percentage of electricity Nevada generates from solar increases, geothermal can play an important role as a zero-carbon technology that can help balance the grid.

WHAT ABOUT ROOFTOP SOLAR?

This report focuses on policies that support utility-scale solar installations, not rooftop solar, partially because so much has already been written on the issue. E2 and its affiliate NRDC support the continuation of net-metering in Nevada, for both existing and new customers, because the energy, grid, and environmental benefits rooftop solar provides are likely sufficient to justify the incentive provided by net-metering, given Nevada's retail electricity rates.[7]

GRID CAN HANDLE EXPANSION

Nevada can confidently expand its renewable energy commitment: incorporating significant amounts of renewables into the grid is both feasible and cheap, according to recent studies and experiences elsewhere.[11,12,13,14] For example, in Texas, wind has surpassed 45 percent of hourly load on multiple occasions,[15] and Iowa now generates 31 percent of its total annual power from wind.[16] Detailed analysis of the Western Interconnect has found that variable renewables can provide up to 30 percent of total annual generation with proper system planning and only minor adjustments to the existing grid.[17]

Improving electricity market coordination across the western region, through an expanded Independent System Operator, would make integrating more clean, renewable electricity into the grid even easier.[18] Balancing electricity uses and power plants over larger areas and more population centers allows for easier renewable resource integration. "Non-correlated" projects that do not operate under the same weather conditions can balance each other.[19] Customers in neighboring states could use some of Nevada's electricity production when it exceeds the state's own electricity needs, or vice-versa.

NEVADA RENEWABLE ENERGY PURCHASES NOT ACCURATELY REFLECTED IN RPS

Nevada has a "25 percent by 2025" RPS, but the law allows resources other than renewable energy resources — such as energy efficiency — to be used for compliance, and some renewable energy resources earn more than one credit for each unit of energy produced.

The result: NV Energy is able to comply with the 20 percent standard for 2015 even though only 13 percent of its electricity comes from renewable sources.[20]

Utility	2015 retail sales (MWh)	2015 energy from owned renewable energy capacity (MWh)	2015 energy from long-term, short term renewable energy contracts, net metered systems (MWh)	2015 total renewable energy (MWh)	2015 total renewable energy (% of retail sales)
Nevada Power	21,665,971	3,046	3,025,540	3,028,586	14%
Sierra Pacific Power	8,246,177	215	938,921	939,136	11.4%
Total NV Energy	**29,912,148**	**3,261**	**3,964,461**	**3,967,722**	**13.3%**

Nevada's RPS stays at 20 percent through 2019, then increases to 22 percent. Nationally, a lot of solar is likely to be built between today and 2020, because of the federal ITC extension.[21] But Nevadans may not see the benefits of this development.

As the table below shows, NV Energy's existing investments, contracts, and bank of old portfolio energy credits means it's already 91 percent of the way to meeting its renewable energy obligations through 2020.

A	B	C	D	E	F
Utility	**Portfolio Energy Credit need, 2016–2020[22] (MWh)**	**Forecast credit generation from owned, contracted renewable energy resources, 2016–2020[23] (MWh)**	**Portfolio Energy Credit carry-over from 2015[24]**	**Remaining need, MWh (B – C – D)**	**Remaining need, percent of Portfolio Energy Credit need (E/B *100)**
Nevada Power	22,099,290	17,774,060	3,750,305	574,925	2.6%
Sierra Pacific Power	8,411,100	4,695,680	1,705,491	2,009,930	23.9%
Total NV Energy	**30,510,391**	**22,469,740**	**5,455,796**	**2,584,855**	**8.5%**

To be clear, large-scale solar projects are being developed in Nevada. But these are being constructed for the benefit of large energy users that have made corporate (e.g., Switch, Apple) or political (e.g., City of Las Vegas) commitments to renewable energy.[25]

While the projects are large, they are a small percentage of NV Energy's overall load. Only aggressive policies can deliver renewable energy at-scale, and only renewable energy purchased on behalf of Nevadans can reduce the state's risky dependence on out-of-state fossil fuels for electricity.

POLICY RECOMMENDATION:

EXPAND, STRENGTHEN THE RPS

Twenty-nine states and the District of Columbia currently have RPS policies. A number of states have recently increased their Renewable Portfolio Standards, partially to capture the benefit of the federal wind and solar tax credit extension.

A recent report from DOE and Lawrence Berkeley National Laboratory found that RPSs provide a wide range of economic, health, and climate benefits. The report concluded that, in 2013 alone, RPSs across the country saved customers up to $1.2 billion from reduced wholesale electric prices and $1.3 to $3.7 billion from lower natural gas prices (as a result of lower demand for natural gas across the power sector).

Additionally, RPSs have supported nearly 200,000 renewable energy-related jobs, provided $5.2 billion worth of health benefits through improved air quality, and resulted in global climate benefits of $2.2 billion.[26]

Nevada should expand its RPS to require at least an additional 25 percent of electricity needs be met with renewable resources by 2030.[27]

> NEVADA SHOULD EXPAND ITS RPS TO REQUIRE AT LEAST AN ADDITIONAL **25 PERCENT** OF ELECTRICITY NEEDS BE MET WITH RENEWABLE RESOURCES BY 2030

An expanded RPS, along with a new energy efficiency resource standard (EERS), should be designed to work if the market for electricity generation becomes competitive; i.e., even if customers could pick an energy supplier other than NV Energy.

Policymakers should recognize that if customers can switch providers, providers will be uncertain about how much electricity they need to serve and could be reluctant to sign long-term agreements to buy renewable energy. This has made the Illinois RPS difficult to meet, even though the state has abundant wind energy.[28] Nevada must consider policies to avoid this outcome.

Updating and strengthening Nevada's RPS would allow the state to serve its energy needs with emission-free, abundant, and low-cost solar resources, while also reducing the amount of fossil fuels Nevada must import from other states.

ENERGY EFFICIENCY

TECHNOLOGIES, PROGRAMS SAVE UTILITIES MONEY

Since the 1970s, electric utilities have run programs to help customers save energy. In the last decade, states and utilities have expanded these efforts.

In 2006, for instance, total spending on customer-funded electric energy efficiency programs was $1.6 billion, and only three states' efforts achieved savings of greater than 0.8 percent of retail sales.[29] By 2014, however, program spending quadrupled to nearly $6 billion and 18 states achieved first-year savings of greater than 0.8 percent of retail sales.[30]

These increases were driven by several factors, including the spread to more states of Energy Efficiency Resource Standards (or EERS, which are policies analogous to Renewable Portfolio Standards that require utilities to save a certain amount of electricity each year); program expansions in the Midwest and Mid-Atlantic; and switching to fluorescent lighting from inefficient technologies like metal halide and incandescent light bulbs.

By comparison, NV Energy in 2009 saved 1.5 percent of retail sales. But after programs were cut, NV Energy in 2013 saved just 0.6 percent of retail sales.

Nevada Lags Neighbors

Nevada now lags peer states like Arizona, Utah, and New Mexico in energy efficiency policies and programs. The former two states spent around $20 per-person on electric utility energy efficiency programs in 2014; Nevada spent less than half that amount.[31]

Arizona requires[32] electric utilities to install energy efficiency measures that save around 2.5 percent of annual sales. Nevada law, meanwhile, currently does not require NV Energy to offer programs that help customers save energy. In fact, the PUCN recently terminated two cost-effective energy efficiency programs — for LED light bulbs and energy efficient pool pumps[33] — based on little evidence.

NV ENERGY IN 2009 SAVED **1.5 PERCENT** OF RETAIL SALES. BUT AFTER PROGRAMS WERE CUT, NV ENERGY IN 2013 SAVED JUST **0.6 PERCENT** OF RETAIL SALES

POLICY RECOMMENDATIONS:

BOOST EERS TO 2 PERCENT, IMPLEMENT 'DECOUPLING,' UPDATE BUILDING CODES

Nevada should establish an EERS requiring electric utilities save the equivalent of 2 percent annual sales, ramping up to this level from current savings levels of less than 1 percent. NV Energy should be allowed to recover program costs and receive a performance-based reward if it performs well in delivering energy savings.

The PUCN should be required to implement 'decoupling' — a policy that supports energy efficiency by adjusting rates to ensure the utility recovers its authorized fixed costs, no less and no more — to ensure the utility is not financially harmed by implementing energy efficiency programs.

The state should also update its building energy codes to the latest available, and Las Vegas should fully apply this latest code, for now the 2015 IECC.

WHAT DOES ENERGY EFFICIENCY LOOK LIKE?

BETTER, CHEAPER LED LIGHTS

An LED replacement for an old 60-watt incandescent bulb needs only 10 watts to produce the same amount of light, and lasts 10 to 25 years instead of one. Customers are noticing these advantages, and the market is changing quickly.

LEDs grew from 5.7 percent of lamp shipments in the first quarter of 2015 to 26.1 percent one year later, but this growth has mainly come at the expense of Compact Fluorescent Lightbulbs (CFLs), the other efficient lamp-type. Overall efficient lamp sales have stagnated: CFLs and LEDs together accounted for 45 percent of lamp sales in the first quarter of 2015, and 45.3 percent of lamp sales one year later.[34] Inefficient incandescent and halogen lamps account for the majority of lamp shipments today, meaning there is a big opportunity for utility energy efficiency programs that reduce the price of LEDs while helping retailers increase sales.

OPTIMIZING VOLTAGE

Utilities must supply power to end-users within power quality standards set by the American National Standards Institute. These include standards for voltage — analogous to water pressure in a pipe — the "pressure" at which electrons move through a power line and into a device. Utilities generally over-supply voltage to customers, using engineering rules-of-thumb to ensure customers at the end-of-the-line have acceptable voltage because of losses that occur as power flows to the edge of the distribution system.

To save energy, utilities are increasingly deploying Conservation Voltage Reduction (CVR) programs, a strategy that reduces customer service voltages in order to achieve a corresponding reduction in energy consumption. Better-dispersed voltage sensors allow utilities to see voltage in real-time and ensure customers receive the minimum amount of voltage necessary for safe and efficient operation of electricity-consuming devices. These CVR programs are often implemented system-wide or on large portions of a utility's distribution grid, saving up to 4 percent of customer energy consumption on any distribution circuit.[35]

HEAT PUMPS

Instead of creating heat by directly burning natural gas — as happens in a gas water heater — or sending electricity through a resistance element — as happens in a toaster, hairdryer, or baseboard heater — heat pumps move and concentrate heat in the ambient air. Heat pumps are now competitive with the most efficient natural gas alternatives, and much more efficient than appliances that use electric resistance elements, because of technological advances.

Heat pump water heaters, clothes dryers, and HVAC units are all readily available, creating new opportunities for energy efficiency programs to increase the sales of these appliances.

'DEEP-DIVES'

In their paper on the feasibility of reducing electricity use 30 percent in ten years, authors Chris Neme and Jim Grevatt highlight the success of energy efficiency program administrators who use a strategy called "deep-dives." In this strategy, administrators focus on specific, important industries in a service territory, understand their business needs and how they use electricity and natural gas, and use account management approaches to uncover opportunities for deep savings. The authors cite Efficiency Vermont's success in transforming the market for ski area snow guns in Vermont,[36] an important end-use for those large customers.

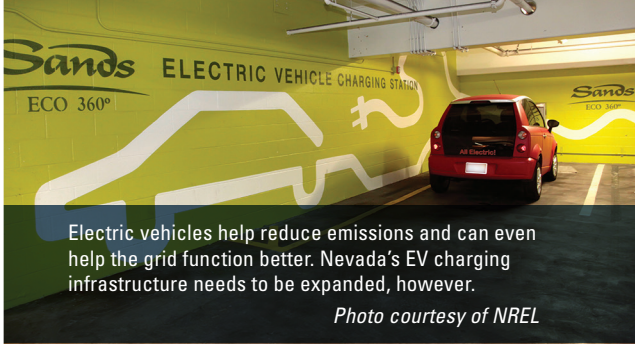
CONTINUOUS ENERGY IMPROVEMENT

Even energy-intensive businesses often treat their energy bill as a fixed cost, rather than something that can be changed. Continuous Energy Improvement (CEI) programs, also known as Strategic Energy Management programs, help businesses implement a process to continually reduce energy use, akin to quality improvement programs like Six Sigma or ISO 50001. Such programs require a business to recruit an executive-level sponsor, develop an energy baseline and reduction goal, and put in place an energy team.[37] The business then gets help from a utility or third party program administrator in implementing a plan to reach the goal.

CEI programs work well with "deep-dive" programs because they help build trust and relationships between a utility or third-party energy efficiency program administrators and businesses. These relationships are useful in better understanding a business's objectives and upcoming capital investments. A knowledgeable program administrator can then help the business add energy efficiency features to these investments.

ELECTRIC VEHICLES (EVs)

MORE EVS CAN LOWER EMISSIONS, HELP STABILIZE GRID



Electric vehicles help reduce emissions and can even help the grid function better. Nevada's EV charging infrastructure needs to be expanded, however.

Photo courtesy of NREL

Transitioning the consumer auto fleet to EVs is critical to addressing climate change, as the transportation sector was responsible for 26 percent of U.S. greenhouse gas emissions in 2012.38 With Tesla's Gigafactory, Nevada is at the forefront of electric vehicle technology in the U.S.

Cheaper batteries, economies of scale, and more competition is leading automakers like Tesla to manufacture EVs that are better (at least 200 miles on a single charge) and more affordable (less than $37,500) than their predecessors.39 These models include the Tesla Model 3, Chevrolet Bolt EV, Ford Model E, BMW i3, Nissan Leaf, and Volkswagen e-Golf.

While they require a lot of electricity, EVs can help a high-renewables grid function better. Customer-owned EVs are mainly parked — and thus can be charged — at times of highest renewable energy production, namely at night when the wind is blowing and cars are parked in driveways or garages, and during the day when the sun is shining and cars are parked at workplaces.

Electric utility programs can ensure that cars are charging their batteries in a manner that meets the owner's driving needs, while also helping stabilize power flow on the grid and meeting the backup power needs of the area where it is parked. After all, it's easier to cut carbon by deploying more renewable energy than it is to try to make gasoline less carbon-intense.

THE TRANSPORTATION SECTOR WAS RESPONSIBLE FOR **26 PERCENT** OF U.S. GREENHOUSE GAS EMISSIONS IN 2012

Room for market growth, expansion of EV infrastructure

EVs constitute a small portion of Nevada new car sales. Between June 2015 and May 2016, EVs (including plug-in hybrid EVs) made up less than 1 percent of all light-duty vehicles sold.[40]

EVs CAN HELP A HIGHRENEWABLES GRID **FUNCTION BETTER**

NV Energy offers EV and plug-in hybrid owners a rate schedule that varies electricity prices according to the time of day electricity is used, with lower prices at non-peak times like the evening and early morning.[41] Offering these rate schedules encourages EV owners to charge vehicles at times when the grid is unstressed.

The Governor's Office of Energy and NV Energy are also launching the Nevada Electric Highway, a series of four charging stations along Highway 95, which connects Reno with Las Vegas.[42]

However, the state does not offer EV owners incentives or discounts, nor does it have a strategy to encourage development of robust charging infrastructure.

POLICY RECOMMENDATIONS

INCENTIVIZE SALES GROWTH WITH TAX CREDIT, SPECIAL RATES FOR EV CUSTOMERS; BUILD MORE CHARGING INFRASTRUCTURE

Nevada should provide a tax credit for EVs.

State law should also require investor-owned utilities to offer rates specifically designed for EV customers that promote smart charging of electric vehicles.

The state should also encourage utilities to develop car-charging infrastructure in important but underserved market segments, including apartment buildings and workplaces.

ENDNOTES

[1] Nevada is 12th in the nation in the amount of solar photovoltaic technical potential, and second in the amount of geothermal technical potential. National Renewable Energy Laboratory, U.S. Renewable Energy Technical Potentials: A GIS-Based Analysis, July 2012.

[2] Bloomberg News, "Buffett Scores Cheapest Electricity Rate with Nevada Solar Farms," by Christopher Martin, July 7, 2015, available at: http://www.bloomberg.com/news/articles/2015-07-07/buffett-scores-cheapest-electricity-rate-with-nevada-solar-farms.

[3] http://gov.nv.gov/News-and-Media/Press/2016/Sandoval-Reconvenes-New-Energy-Industry-Task-Force/

[4] Lazard, "Levelized Cost of Energy Analysis 9.0", November 2015, available at: https://www.lazard.com/perspective/levelized-cost-of-energy-analysis-90/.

[5] Department of Energy, "On the Path to Sunshot," May 2016, available at: http://energy.gov/eere/sunshot/path-sunshot.

[6] Greentech Media Research, "U.S. Solar PV Price Brief H1 2016: System Pricing, Breakdowns and Forecasts," June 2016, available at http://www.greentechmedia.com/research/report/us-solar-pv-price-brief-h1-2016.

[7] http://www.solarcity.com/sites/default/files/SolarCity-Distributed_Energy_Resources_in_Nevada.pdf

[8] Ibid, Bloomberg News.

[9] Congress extended the renewable energy tax credits as part of the Consolidated Appropriations Act of 2016. The Production Tax Credit (PTC) for onshore wind projects was extended at its full value of 2.3 cents/kWh through the end of 2016, and then will phase down to 80 percent of its full value in 2017, 60 percent in 2018, and 40 percent in 2019. The Investment Tax Credit (ITC) for solar projects has been extended at its full value of 30 percent of project investment costs through the end of 2019, and will drop down to 26 percent in 2020 and 22 percent in 2021. Without additional legislation, the PTC will expire after 2019, and after 2022 the ITC will drop to 10 percent of investment costs for utility-scale and commercial projects, and will expire for residential projects.

[10] Rhodium Group, "Renewable Tax Extenders: The Bridge to the Clean Power Plan," January 2016, available at: http://rhg.com/notes/renewable-tax-extenders-the-bridge-to-the-clean-power-plan.

[11] GE Energy Consulting, PJM Renewable Integration Study (March 31, 2014) available at http://www.pjm.com/~/media/committees-groups/task-forces/irtf/postings/pris-executive-summary.ashx.

[12] GE Energy Consulting, Eastern Renewable Generation Integration Study, performed for NREL (2010) available at: http://www.nrel.gov/electricity/transmission/eastern_renewable.html.

[13] Southwest Power Pool, "2016 Wind Integration Study," January 2016, available at: https://www.spp.org/documents/34200/2016%20wind%20integration%20study%20(wis)%20final.pdf.

[14] White House Council of Economic Advisors, "Incorporating Renewables into the Electric Grid: Opportunities for Smart Markets and Energy Storage," June 2016, available at: https://www.whitehouse.gov/sites/default/files/page/files/20160616_cea_renewables_electricgrid.pdf.

[15] Utility Dive, "With another generation record, Texas edges closer to 50% wind penetration," by Herman K. Trabish, April 8, 2016, available at: http://www.utilitydive.com/news/with-another-generation-record-texas-edges-closer-to-50-wind-penetration-1/417089/.

[16] Energy Information Administration, "State Profiles: Iowa," March 17, 2016, available at: http://www.eia.gov/state/?sid=IA.

[17] GE Energy Consulting, Western Wind and Solar Integration Study, performed for NREL, September 2013, available at http://www.nrel.gov/electricity/transmission/western_wind.html

[18] http://www.caiso.com/Documents/SB350Study-Volume11RenewableIntegrationandReliability.pdf

[19] National Renewable Energy Laboratory, "On the Path to Sunshot: Emerging Issues and Challenges in Integrating High Levels of Solar into the Electrical Generation and Transmission System," May 2016, available at: http://www.nrel.gov/docs/fy16osti/65800.pdf.

[20] NV Energy Portfolio Standard Annual Report for Compliance Year 2015, April 1, 2016, Section 3.6 and 4.7, Table 3-2 and 4-4, Table 3-3 and 4-5, pdf pages 28-29 and 41-43, available at: http://pucweb1.state.nv.us/PDF/AxImages/DOCKETS_2015_THRU_PRESENT/2016-4/10708.pdf.

[21] Ibid Rhodium Group.

[22] Assuming load is the same.

[23] Assuming 500,000 MWh/year from Crescent Dunes and 22 percent capacity factor at Nellis II,

[24] Ibid NV Energy, Tables 3-5 and 4-7, pdf pages 30 and 44.

[25] Public Utilities Commission of Nevada Docket No. 15-11026 and 15-11025.

[26] Lawrence Berkeley National Laboratory (LBNL) and National Renewable Energy Laboratory (NREL), "A Retrospective Analysis of the Benefits and Impacts of U.S. Renewable Portfolio Standards", January 2016, available at: http://www.nrel.gov/docs/fy16osti/65005.pdf.

[27] Assuming Nevada gets 6.5 percent of national solar development, the amount the state received in the first half of 2014 and one percent less than it received in 2015, the state could expect an additional 15 or 24 percent of its electricity to come from new solar installations by 2021, from, respectively, NREL, Impacts of Federal Tax Credit Extensions on Renewable Deployment and Power Sector Emissions, February 2016; Bloomberg New Energy Finance, Impact of Tax Credit Extensions for Wind and Solar, December 16, 2016.

[28] Illinois Department of Commerce and Economic Opportunity, State of Illinois: Goal Status Report for Energy Efficiency and Renewable Energy, 2016, page 67, available at: https://sites.google.com/site/illinoisenergyroadmap/documents-and-comments/Illinois%20Energy%20Roadmap_Goals%20Status%20Report.pdf?attredirects=0&d=1.

[29] Measured on a "first-year" basis: the savings, in the year after installation, of all the devices and projects the program administrator funded in the given year (in this case, 2006).

[30] Neme, C., and Grevatt, J., The Next Quantum Leap in Energy Efficiency: 30 Percent Electric Savings in Ten Years, Regulatory Assistance Project, February 2016, Page 3-4.

[31] New Mexico utilities spent around $15 per-person. Consortium for Energy Efficiency, Efficiency Program Industry by State and Region Appendices, 2015, March 15, 2016, Table 5, "Total Efficiency" column. NST-EST2014-01, https://www.census.gov/popest/data/state/totals/2014/tables/NST-EST2014-01.xlsx

[32] http://images.edocket.azcc.gov/docketpdf/0000116125.pdf

[33] http://www.swenergy.org/press-release?PressID=124

[34] http://www.nema.org/Intelligence/Pages/Lamp-Indices.aspx

[35] Evaluation of Conservation Voltage Reduction on a National Level", Schneider, Fuller, Tuffner, and Singh, Pacific Northwest National Laboratory for the US Department of Energy, July 2010. http://www.pnl.gov/main/publications/external/technical_reports/PNNL-19596.pdf.

[36] Ibid at 40.

[37] http://beccconference.org/wp-content/uploads/2014/12/presentation_Sullivan.pdf

[38] https://www.epa.gov/ghgemissions/us-greenhouse-gas-inventory-report-1990-2014

[39] FleetCarma, http://www.fleetcarma.com/next-generation-electric-vehicles/.

[40] Alliance of Automobile Manufacturers, in collaboration with the Center for Sustainable Energy, http://www.zevfacts.com/sales-dashboard.html

[41] https://www.nvenergy.com/renewablesenvironment/EV/electricVehicle.cfm

[42] http://energy.nv.gov/Programs/Nevada_Electric_Vehicle_Programs_and_Resources/

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