

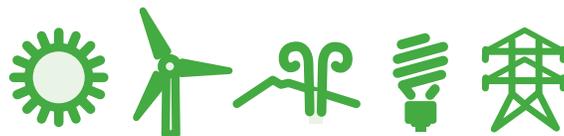


RENEWABLE ENERGY POWERS SILVER STATE AS A CLEAN ENERGY INDUSTRY HUB

Lydia Ball, *Executive Director Clean Energy Project*

March 2014

*With a very special thanks to the Nevada Governor's Office of Energy,
the American Wind Energy Association, the Solar Energy Industries Association, and
the Geothermal Energy Association, for their contributions to this white paper.*



Powering the clean energy economy.

CLEAN ENERGY POWERS NEVADA

Clean energy investment in Nevada has accelerated rapidly in the past five years and is now well over a \$5 billion investment in Nevada, an economic success story that is symbolized this year by three major trade associations holding their annual events in the state.

The Renewable Energy Tax Abatement program administers Nevada's renewable energy tax abatements, extended by the Nevada Legislature in 2009 and transferred to the Governor's Energy Office's jurisdiction in 2011. The program awards partial sales and use tax and partial property-tax abatements to eligible renewable energy producers. Because of this foresight in incentivizing the clean energy industry, Nevada has been able to track the importance of their investments in the industry, ensuring the program is beneficial to Nevada taxpayers.

The Renewable Energy Tax Abatement program has been a crucial tool in attracting investment in Nevada, ensuring Nevadans receive not only the tax income of a growing industry but also receives job creation through this industry. Projects that receive a tax abatement hire at least 50 percent Nevada workers, pay 175 percent of Nevada's average wage and offer healthcare benefits to the workers and their dependents. The projects that receive an abatement from the Governor's Office of Energy, created just under 3,000 direct construction jobs paying an average wage of \$37.30 an hour.

The Renewable Energy Tax Abatement program boasts 1,500 megawatts (MW) of clean energy projects currently in late development stages or constructed making Nevada the heartbeat of the clean energy industry. In just four years¹, Nevada has accepted applications for abatements on 1,176 MW of solar energy from photovoltaic or solar thermal technologies, putting Nevada third among all states in solar per capita.² With more than 566 total MW of geothermal power, Nevada ranks second in the U.S. for overall generation of geothermal energy and number one on a per capita basis.³ Nevada's first

large-scale wind project, the Spring Valley Wind Farm, now generates enough energy for 45,000 homes and additional wind developments are currently underway.⁴ Due to Nevada's vast solar, wind, geothermal and biomass resources, the state has excelled at meeting demand in and out of its borders leading to significant clean energy capital investments. As of 2014, Nevada has 480 MW⁵ of clean energy developed or being developed to meet its energy demand and 985 MW⁶ of clean energy exported to other states.⁵

The cumulative capital investments for projects sold to in-state and out-of-state customers, including transmission lines to move the clean electrons, total \$5.5 billion since 2010.⁵ Nevada's investment of \$500 million in tax abatements has attracted \$5.5 billion of capital investment in clean energy projects to the state resulting in a 10 to 1 return on its investment. Additionally, Nevada will receive just over \$820 million in employment and property benefits from these projects.⁵

Acknowledging the state's importance to clean energy, Nevada leaders, the wind, solar, and geothermal energy industries will each hold a major annual event in Nevada this year.

- The American Wind Energy Association will bring North America's leading wind energy conference and exposition, WINDPOWER, to the Mandalay Bay in Las Vegas, May 5-8, 2014.
- The Geothermal Energy Association will hold its National Geothermal Summit in Reno, Aug. 5-6, 2014.
- The National Clean Energy Summit 7.0 will be held in Las Vegas in early September 2014. Senator Reid will be announcing the event soon.
- The Solar Energy Industries Association will hold its flagship annual event, Solar Power International, at the Las Vegas Convention Center, Oct. 20-23, 2014.

1 NV Governor's Office of Energy - http://energy.nv.gov/Programs/Renewable_Energy_Tax_Abatement_Projects/

2 <http://cleantechnica.com/2013/06/25/solar-power-by-state-solar-rankings-by-state/>

3 NV Governor's Office of Economic Development - http://nv.diversifynevada.com/print/renewable_energy

4 AWEA - <http://www.awea.org/Resources/state.aspx?ItemNumber=5204>

5 NV Governor's Office of Energy - http://energy.nv.gov/Programs/Renewable_Energy_Tax_Abatement_Projects/

SOLAR ENERGY POWERS NEVADA

With numerous utility-scale, residential and commercial solar projects, Nevada is one of the top ten states⁴ for installed photovoltaic solar, and one of the top three states for installed concentrating solar power.

Cumulative investment in solar power generating assets in Nevada has reached \$2.3 billion. That includes \$220 million in distributed generation photovoltaic installations – such as residential solar rooftops – and the rest from utility-scale projects.

At 75 MW, Nevada Solar One, in Boulder City, is among the largest solar installations in Nevada. Completed in 2009 by Acciona, this concentrating solar power project has enough electric capacity to power more than 14,400 homes.⁶

Other Major projects include Copper Mountain 2 and 3. Copper Mountain 2, completed in 2012 by Sempra US Gas and Power has the capacity to generate 92 MW of electricity – enough to power more than 13,200 homes. Copper Mountain 2 is currently in Phase II construction to add an additional 58 MW of solar. Construction on Copper Mountain 3 recently began and when completed will add 250 MW to the grid. Combined the Copper Mountain Projects will power about 142,000 homes.

Another utility-scale project, Crescent Dunes Solar Energy Project in Nye County, is currently under construction and is scheduled to come online in 2014. Developed by Solar Reserve, this 110 MW concentrating solar power project will generate enough electricity to power 75,000 homes.⁷

There are currently more than 80 solar companies at work throughout the value chain in Nevada, employing 2,400 people.⁸ These companies provide a wide variety of solar products and services ranging from solar system installations to the manufacturing of components used in photovoltaic panels. They include: 10 manufacturers, five manufacturing facilities, 42 contractor/installers, seven project developers, five distributors and 15 engaged in other solar activities including financing, engineering and legal support.

In 2012, Nevada installed 198 MW of solar electric capacity, ranking fourth nationally. There is now 446 MW of solar energy currently installed, ranking Nevada fourth in the country of installed solar capacity as well. There is enough solar energy installed in the state to power 63,800 homes.⁹

Average installed residential and commercial photovoltaic system prices in Nevada have fallen by 10 percent in the last year. National prices have also dropped steadily— by 5 percent from last year and 28 percent from 2010.¹⁰ There is now enough solar capacity installed in Nevada to power every household in the state capital, Carson City.

Solar cells power the famous “Welcome to Fabulous Las Vegas” sign in 2014.

Demonstrating the power of harnessing Nevada’s clean energy resources and community collaboration, the Clean Energy Project joined Green Chips and the Clark County Commission in January 2014 celebrating their efforts completion to power the “Welcome to Fabulous Las Vegas” sign exclusively by solar energy.

Three solar “trees”, housing 18 photovoltaic panels, were built in the highway median to power the sign. The panels are net metered to the grid and exclusively power the legendary sign’s neon and incandescent lights from the Las Vegas Valley’s near-constant sunshine.

The 25-foot-tall sign was installed in 1959. Its repowering was funded by the Consumer Electronics Association, NV Energy, and a grant from the Las Vegas Centennial History Grant Program, and installed by Bombard Renewable Energy.

6 SEIA/GTM Research U.S. Solar Market Insight 2013 Year in Review – <http://www.seia.org/smi>

7 National Renewable Energy Laboratory - http://www.nrel.gov/csp/solarpaces/project_detail.cfm/projectID=20

8 United States Air Force - <http://www.nellis.af.mil/shared/media/document/AFD-080117-043.pdf/>

9 The Solar Foundation - <http://thesolarfoundation.org/solarstates>

10 SEIA/GTM Research U.S. Solar Market Insight 2013 Year in Review – <http://www.seia.org/smi>

UTILITY-SCALE WIND POWERS NEVADA

Nevada has a significant wind energy resource that is just beginning to be tapped.

According to a resource assessment by the National Renewable Energy Lab, Nevada has more than seven gigawatts (GW) in potential wind energy at 80 meters above the ground (excluding areas unlikely to be developed) that could provide nearly 60 percent of the state's current electricity needs.¹¹

Nevada's first utility-scale wind energy project came online in August 2012 with the commissioning of Pattern Energy's Spring Valley project.

Spring Valley, a 152-megawatt (MW) project located in White Pine County, Nevada, uses 66 2.3-MW Siemens turbines to generate electricity for NV Energy under a long-term power purchase agreement.¹²

Spring Valley cost \$225 million in construction investment. It occupies approximately 77 acres within a site of approximately 7,680 acres in White Pine County, on federal land administered by the Bureau of Land Management. The project was granted a right-of-way by the Bureau of Land Management. Payments to White Pine County and Nevada's Renewable Energy Fund will exceed \$20 million over the life of the project.¹³

The Searchlight Wind project, located in Clark County, also using land administered by the Bureau of Land Management, is now a project of Apex Clean Energy.

The project as announced by the former owner, Duke Energy, is expected to cost approximately \$500 million for 87 wind turbines and associated facilities requiring about 160 acres.

When completed it will produce up to 200 MW of electricity. It is expected to create 250 to 300 construction jobs and 15 permanent positions.¹⁴ Apex Clean Energy, of Charlottesville, Va., acquired it in January 2014 with 10 other Duke Energy wind energy projects in other states totaling 1.1 GW in capacity.¹⁵ It continues to advance through the permitting process toward construction.¹⁶

TRANSMISSION POWERS NEVADA

Transmission development is key to delivering clean energy to Nevadans and the West.

The ONLine Transmission facility was energized at the end of 2013. ONLine Transmission Line is a 231-mile-long line connecting the Harry Allen Substation north of Las Vegas with the newly constructed Robinson Summit Substation located 20 miles west of Ely, Nevada.

ONLine enables further development of renewable energy projects in Nevada by connecting NV Energy's two main service areas for the first time enhancing the overall energy-sharing efficiencies of NV Energy's power generation resources saving Nevada ratepayers on future costs.¹⁵

With just over \$500 million in capital investments, this crucial piece of Nevada's grid was constructed with over 400 workers leading to a \$700 million construction and payroll benefit to Nevada.¹⁷

11 National Renewable Energy Laboratory and U.S. Department of Energy Wind Program - http://www.windpoweringamerica.gov/wind_resource_maps.asp?stateab=nv

12 Pattern Energy - http://www.patternenergy.com/en/operations/projects/spring_valley

13 U.S. Department of Interior Bureau of Land Management - http://www.blm.gov/nv/st/en/fo/ely_field_office/blm_programs/energy/spring_valley_wind.html

14 Duke Energy, quoted in Las Vegas Sun - <http://www.lasvegassun.com/news/2013/jul/06/searchlight-wind-project-headed-regulatory-approva/>

15 Apex Clean Energy - <http://apexcleanenergy.com/news/2014/01/apex-clean-energy-acquires-development-assets-from-duke-energy/>

16 Bureau of Land Management - http://www.blm.gov/nv/st/en/fo/lvfo/blm_programs/energy/searchlight_wind_energy.html and http://www.blm.gov/nv/st/en/fo/lvfo/blm_programs/energy.html 15 NV Energy <https://www.nvenergy.com/company/projects/images/ONLineTransmissionLineFactSheet.pdf>

17 NV Governor's Office of Energy - http://energy.nv.gov/Programs/Renewable_Energy_Tax_Abatement_Projects/

GEOTHERMAL ENERGY POWERS NEVADA

Geothermal energy continues to be a prominent growth industry in Nevada due to the state's abundant high-temperature geothermal resources.

Total investment in Nevada in the past 30 years is estimated by the Geothermal Energy Association at \$2.2 billion to \$2.8 billion, with about \$1 billion of that occurring since 2009.

With 32 operating geothermal power plants producing 566 MW of clean, renewable power, Nevada currently produces more geothermal energy than any other state in the U.S. except California. If Nevada were a country, it would be the eighth largest producer of geothermal power of the 25 countries generating this form of renewable electricity today.

Nevada could become one of the world's leading generators of geothermal energy if the state continues to invest in its geothermal resources. USGS estimated that there is on average 1,300 MW of identified and 4,300 MW of unidentified geothermal resources in Nevada. Many of the largest geothermal fields in the state such as Dixie Valley, Rye Patch, Steamboat Hills, Fish Lake Valley, Beowawe and others still have significant untapped and under developed resources. According to EIA data, the existing projects and those under development would be equivalent to about 15 percent of all electric generating capacity in Nevada in 2010.¹⁸ Geothermal power already generated nearly three quarters of the state's renewable energy in 2012.¹⁹

Economic Benefit of New Development

An average 50 MW geothermal power plant creates 697-892 jobs from concept to operation. When factoring "indirect" and "induced" employment the jobs created by a geothermal power plant are even greater.

The last geothermal industry wide assessment of employment estimated that in 2009 the US geothermal industry employed about 18,000 people directly, indirectly and induced. At that time, GEA projected that if Nevada developed 1,500 MW new geothermal power capacity, roughly 6,375 full time and 24,000 full-time temporary jobs (construction and manufacturing) would be created directly and indirectly, including a modest economic multiplier effect.

Since passage of the 2005 Energy Policy Act, which reformed geothermal leasing and royalty procedures, Nevada has generated at least \$44 million from BLM geothermal leasing activities between 2005 and 2008. This includes \$4.6 million in royalties and over \$39 million in bonus bids. \$33 million of these funds were to be distributed to the State of Nevada and the specific counties involved.

The Bureau of Land Management leased additional geothermal acreage in 2009 and 2010. Bonus bids in 2009 were \$8.4 million and in May 2010 totaled \$8.9 million. The state of Nevada and the affected counties received an additional \$12.9 million from these sales under the 2005 EAct revenue sharing formula.¹⁷

Investment in geothermal energy in Nevada sets records. A competitive auction of public lands for geothermal leasing in Nevada held in August 2008 was the largest geothermal sale ever in terms of dollars bid, bringing in a record \$28.2 million for a total of 105,211 acres.¹⁸

Ongoing research and investment into the development of additional geothermal resources doesn't always culminate in completed power plants but that investigation of geothermal resources does yield jobs and other economic benefits.

¹⁸ See U.S. Energy Information Administration's "Nevada Electricity Profile 2010."

¹⁹ See NV Governor's Office of Energy "Nevada Status of Energy Report 2012-13"

ABOUT THE ORGANIZATIONS

Clean Energy Project

Clean Energy Project, Inc. (CEP) is a nonprofit, non-partisan organization based in Las Vegas and dedicated to powering the clean energy economy through education and engagement with policy leaders, community leaders and citizens on the economic benefits of fully developing a clean energy economy. www.cepnv.org

Nevada Governor's Office of Energy

The Governor's Office of Energy ensures the wise development of Nevada's energy resources in harmony with local economic needs, and positions Nevada to lead the nation in renewable energy production, energy efficiency, conservation, and the exportation of energy. It implements the laws of the State as defined in Nevada Revised Statutes 701 and 701A; manages energy-related programs; facilitates cooperation between key stakeholders; advises the Governor on energy policy; and collaborates with local, regional, and federal partners to ensure a reliable and sustainable energy system. energy.nv.gov

Solar Energy Industries Association

The Solar Energy Industries Association (SEIA) is the national trade association of the U.S. solar energy industry. Through advocacy and education, SEIA is building a strong solar industry to power America. As the voice of the industry, SEIA works with its member companies to make solar a mainstream and significant energy source by expanding markets, removing market barriers, strengthening the industry and educating the public on the benefits of solar energy. www.seia.org

Geothermal Energy Association

The Geothermal Energy Association (GEA) is a trade association composed of U.S. companies who support the expanded use of geothermal energy and are developing geothermal resources worldwide for electrical power generation and direct-heat uses. The GEA advocates for public policies that will promote the development and utilization of geothermal resources, provides a forum for the industry to discuss issues and problems, encourages research and development to improve geothermal technologies, presents industry views to governmental organizations, provides assistance for the export of geothermal goods and services, compiles statistical data about the geothermal industry, and conducts education and outreach projects. www.geo-energy.org

American Wind Energy Association

The American Wind Energy Association (AWEA) is the national trade association for the U.S. wind industry – the country's fastest growing energy industry. With thousands of wind industry members and wind policy advocates, AWEA promotes wind energy as a clean source of electricity for American consumers. As the premier organization representing the interests of America's wind energy industry, AWEA counts more than 1,200 organizations in its membership program. www.awea.org