



# **Roadmap for Rooftop Solar in Southern Nevada by 2020**

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## **Executive Summary**

On December 10<sup>th</sup>, 2013, a panel of Solar Energy business owners and Sustainable Energy Industry experts convened for a half-day discussion at the American Institute for Architects (AIA) Boardroom in the Historic 5<sup>th</sup> Street School in Las Vegas, NV in order to create a ‘Roadmap for Rooftop Solar in Southern Nevada by 2020’. The goal of the meeting was to use the solar industry's knowledge to create a roadmap for increasing commercial and residential rooftop solar in Southern Nevada by 2020.

The discussion format was to reveal the Strengths, Weaknesses, Opportunities and Threats (SWOT) of the industry from a state and local perspective and lay a foundation for this roadmap. The roadmap developed includes these three immediate corners in the first two quarters of 2014: form a state chapter of the Solar Electric Industry Association (SEIA), develop a comprehensive third-party study of the potential of the solar industry in the Southern Nevada economy through Nevada’s higher education system and lastly present this study to Nevada’s Interim Legislative Committee on Energy prior to the 2015 Legislative Session.

The fourth corner of the foundation is to utilize the outcomes of the above actions to educate and advocate for building a resilient, robust, thriving rooftop solar business industry in Southern Nevada. This would be accomplished through traditional and non-traditional communication channels targeted towards the public, the solar and related industries (i.e. commercial and residential construction) and most importantly, our policy makers at the state and local levels. Policies, such as fiscally responsible industry incentives, and procedures, like a streamlined permit process, will be critical to the industry.

Larger, national issues which were outside of the local and state scope, but which were still included in the final roadmap, were the expiration of the Bonus Depreciation Rule on December 31<sup>st</sup>, 2013 and the sunset of the Solar Investment Tax Credit (ITC) in 2016. The Nevada Solar Industry must coalesce and assist in advocating at a national level for the re-initiation and extension of these policies, respectively. We will also have unique access to participate in the 7<sup>th</sup> National Clean Energy Summit in August of 2014 and an opportunity to engage in the Solar Power International (SPI) Conference, the largest conference of its kind in North America, which is coming to Las Vegas in October of 2014.

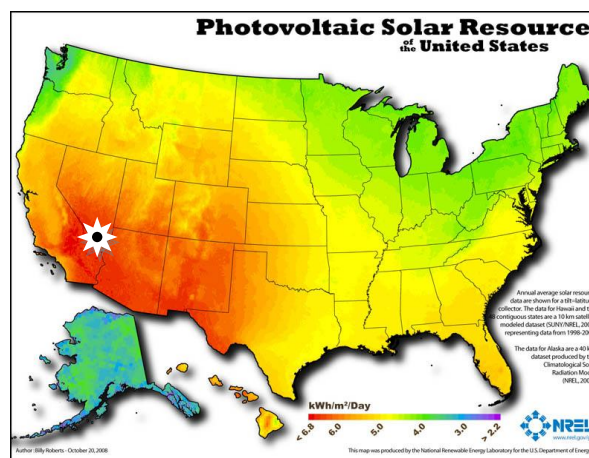
By initiating and completing the first four corners of the roadmap’s foundation, building upon them, and engaging at a national level, we will more easily recognize our weaknesses, and anticipate our threats. The ultimate opportunity will be when we come together as a committed, credible business community willing to educate, advocate, and ultimately build the resilient, robust, thriving rooftop solar industry Southern Nevada needs.

## 1. Strengths

A brief summary of the industry's strengths in Southern Nevada which the panel indicated were: an enviable location in the desert Southwest, Nevada's positive business climate & tax structure, access to a citizen Legislature and other local policy makers. In addition there is a well trained construction workforce and a committed higher education system as demonstrated by the University of Nevada, Las Vegas (UNLV) Solar Decathlon Team placing 2<sup>nd</sup> worldwide in the Department of Energy's (DOE) competition in 2013. The University of Nevada, Reno (UNR) Cooperative Extension has also indicated an initial willingness to produce a comprehensive third-party study for the industry in Nevada.

**Environmental:** The largest environmental strength the industry has is our natural geography. As it is said in real estate, it is all about "location, location, location" and Nevada is prime real estate for rooftop solar as indicated by this graphic developed by the National Renewable Energy Laboratory (NREL). In fact, the southern part of the state is almost the visual epicenter of the desert southwest in this regard.

Another positive environmental indicator is that we have a robust transmission system and a reliable grid. According to SEIA, Nevada installed 198 Megawatts (MW) of solar electric capacity in 2012, ranking it 4th nationally<sup>1</sup> falling only behind California, Arizona and New Jersey in that order. However, the MW installed in Nevada were predominantly in the utility sector, not the commercial or residential sectors.<sup>2</sup>



The final environmental benefit is that Solar Photovoltaic (PV), also known as Distributed Generation (DG) uses little to no water<sup>3</sup> and does not disturb existing landscape because it is truly distributed and generally placed upon an existing structure.

**Economic:** Nevada is well known for its positive business climate & tax structure. According to SEIA, there are currently more than 79 solar companies at work throughout the value chain in Nevada, employing 2,400 people.<sup>1</sup> 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. These companies can be broken down across the following categories: 10 manufacturers, 5 manufacturing facilities, 42 contractor/installers, 7 project developers, 5 distributors and 15 engaged in other solar activities including financing, engineering and legal support.<sup>1</sup>

Another positive economic indicator is that the pricing of installed PV continues to fall as the cost of energy rises. SEIA reports that the, average installed residential and commercial photovoltaic system prices in Nevada have fallen by 10% in the last year and that National prices have also dropped steadily, by 5% from last year and 28% from 2010.<sup>1</sup> The current NV Energy residential rate is \$0.13 per/kwh including taxes and fees and will only increase over time. This means that the cost of a rooftop solar system, over the life of the system, is nearing the same cost to produce energy at the rate the utility is charging its consumers.

As with computers and other technologies the fall in the cost of PV is linked to the advancements in technology, production efficiencies and decreases in soft costs. In 2012 solar panels were able to

convert 15% of the available energy into electricity on average, while 2015 panel technology is expected to be able to convert over 23%.<sup>4</sup> This makes the panel smaller, easier to manufacture and install and hence less expensive. Soft costs, such as third-party financing, customer acquisition, and permitting, are also beginning to decrease.<sup>4</sup> This decrease in cost has made, according to the Center for American Progress (CAP), the middle class the biggest adopter of solar power in the U.S. with the majority of solar installations occurring in zip codes with median incomes ranging from \$40,000 to \$90,000.<sup>5</sup> These economic aspects indicate, the timing is right for rooftop solar in Southern Nevada.

**Social:** The strongest aspect noted at the meeting of the expert panel was the committed business community willing to educate, advocate and further build the industry. In fact, this meeting made the bonds of those in the solar rooftop industry even stronger. Perhaps the most recent public example of a resilient community is the Nevada Sustainable Energy Coalition (NSEC): a broad, non-partisan coalition of businesses and organizations in Nevada. Local organizations or chapters who share NSEC's common agenda include the American Institute of Architects (AIA), Building Owners & Managers Association (BOMA), Clean Energy Project (CEP), National Association of Industrial and Office Properties (NAIOP), The Green Alliance and the U.S. Green Building Council, Nevada Chapter (USGBCNV).



Another important aspect is the commitment and support from Nevada's higher education system for this endeavor. UNLV's Solar Decathlon Team placing 2<sup>nd</sup> Worldwide, in the Department of Energy's (DOE) competition last year and UNR's Cooperative Extension indicating an initial willingness to produce a comprehensive third-party study for the industry in Nevada makes this evident. Additionally, in recent years, UNLV has added a Graduate Certificate in Solar and Renewable Energy (SRE) through their School of Environmental and Public Affairs.

Finally, job creation will be inevitable as the solar industry will see year-after-year growth,<sup>6</sup> fueling the demand and need for a highly-trained solar workforce. These jobs would be created in, but not limited to: design, manufacturing, installation, sales, and inspection. The paradoxical strength is that Nevada's has one of the highest unemployment rates in the Nation, but yet, has a skilled workforce, with a solid construction background which is poised, ready and able to assume a role in the solar industry thus helping to bring down the rate to a more historical average.

**Political:** Nevada has a Legislature, which meets biennially for only 120 days, and the policy makers are citizens who are concerned about rates where they live, work and play as much as the rest of the population. Over the last few decades population growth in the southern part of the state has led to a shift in the balance of power and positive changes in leadership. The southern delegation is now a strong voice for passing fiscally responsible legislation to open the marketplace to rooftop solar.

Locally, permitting isn't standardized, but the process through the City of Las Vegas, North Las Vegas and Henderson is smooth and at a reasonable cost. One exception is permitting in Clark County, which requires a structural engineer for residential installations. This is a burdensome requirement for rooftop solar of a certain size. All municipalities have simple to navigate easement rights.

## 2. Weaknesses

To summarize the industry's weaknesses, the panel noted a few predominant areas: a somewhat disconnected industry without a clear, consistent, common message & loud voice, a lack of education and awareness in financial institutions and appraisal industry, that one company provides service for over 90% of Nevada's population and the policy makers look to that utility for information, as does the public. These all bring one final conclusion: a lack of education and communication within the public, our industry, the associated industries and the political arena.

**Environmental:** No weaknesses were apparent.

**Economic:** The biggest downside facing rooftop solar in Nevada is that home equities are still at the bottom compared to the nation. RealtyTrac, a real estate analytics company from Irvine, Calif., reported that 46% of Nevada homes with mortgages have outstanding loans that are at least 25% higher than the estimated market value of the residences.<sup>7</sup> That is double the 23% underwater rate that RealtyTrac found nationally. However, home values continue to increase from their bottoms. The Greater Las Vegas Association of Realtors (GLVAR) market data shows that in the Las Vegas metropolitan region, overall home prices jumped 24 percent in 2012 from 2011 and the median home price of single-family homes sold in January was \$150,000, which compares to \$118,000 at the end of January 2012.<sup>8</sup>

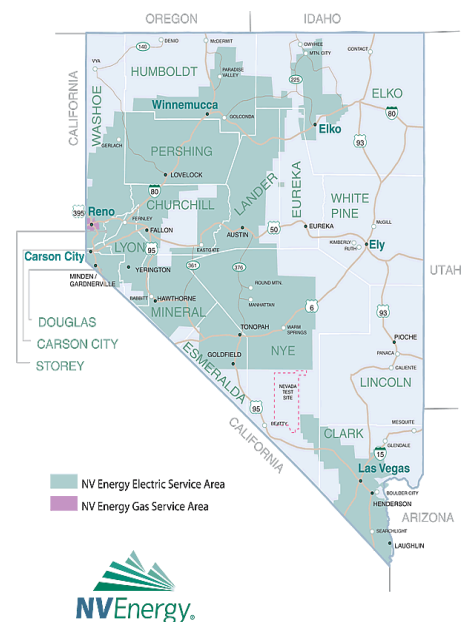
One electric utility provider, NV Energy, provides service for over 90% of Nevada's population, and in the metropolitan area of Las Vegas they are the only choice, which does not increase competition in order to lower rates. On-line reviews seem to indicate very poor customer satisfaction due to this and other reasons.

**Social:** The most predominant weakness in this regard is the absence of education and awareness in the general public, the financial institutions and the appraisal industry. This is due in large part to a lack of access to credible and quality information. Because there is a somewhat disconnected industry without a clear, consistent, common message and loud voice in Nevada's rooftop solar industry, this leads us to the root cause of the issue: a poor internal infrastructure.

The panel also noted that funding for higher education and the impression of a lower quality of K-12 education keeps companies away from Nevada.

**Political:** It was perceived that State Legislators and local policy makers, just like the general public, look to the utility for information relative to renewable energy first, instead of a more un-biased third party resource. While this certainly impacts energy policy it may, or may not be, the cause for procedural issues with the incentive structure and rebate distribution process for both customers and solar companies.

As mentioned above, local permitting is adequate except in Clark County, which requires a structural engineer for residential installations, but it still is not consistent and needs to be.





### 3. Opportunities

**Environmental:** The opportunity is the same as our strength; location, location, location.

*“Established in 1974, the Solar Energy Industries Association (SEIA) is the national trade association of the U.S. solar energy 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.”<sup>9</sup>*

**Economic:** Panelists were all in concurrence that the best economic opportunity was to pool resources to fund a third party study, clearly showing the reality of triple bottom line benefits gained through community use of rooftop solar. The study would be a valuable tool to educate and influence those affecting policy within the state.

**Social:** The predominant social opportunity is to start a local and/or state Solar Electric International Association (SEIA) chapter. SEIA is the Nation’s leading organization<sup>9</sup> for the solar industry and will assist in

giving the local industry a consistent message while uniting the business voice. This will also help align our industry model and discussion with the utilities, rather than taking a position of opposition. The chapter can then become an information ‘clearing house’ and educational opportunity for the public, the industry, homebuilders, and legislators alike.

The Annual Solar Power International (SPI) Conference will be in Las Vegas in late October 2013. SPI is the preeminent conference of its kind in North America, and is a partnership of SEIA and the Solar Electric Power Association (SEPA). SEPA is an educational non-profit organization dedicated to helping utilities integrate solar energy into their portfolio.<sup>10</sup>

Nevada’s higher education system has information relative to economics of solar rooftop DG and indicated a willingness to undertake a third party study from February through May 2014. The report would focus on economic and social benefits and provide data such as the number of rooftops, megawatts produced, jobs created and the salaries of those jobs. We can also engage the Public Utilities Commission (PUC) for information and utilize county connections through UNR’s Cooperative Extension to facilitate further discussion & education.

Finally, the creation of a teaching and education center for the public, the industry, homebuilders, and legislators alike is a longer term opportunity.

**Political:** The most immediate opportunity is to begin participating in Nevada’s Interim Legislative Committee on Energy meeting which begins on January 13<sup>th</sup> 2014. The committee was born out of legislation which passed in the 2013 session and while the principal reason to establish this committee was to oversee implementation of SB 123, a bill with vast and complex energy policies, it must also have a third-party entity conduct a study on net metering which must consider the “societal benefits” from Distributed Generation (DG).<sup>11</sup>

This opportunity will inevitably lead to a further opportunity:



participating with credibility and a common voice in the 2015 Legislative Session. Possible policies from doing so may include: the creation of third-party trust similar to ‘Oregon Trust Model’, Property Assessed Clean Energy (PACE) financing, or other fiscally responsible legislation to open the marketplace to rooftop solar. With a comprehensive third party study and our consistent involvement our Legislators can create a uniquely Nevada renewable energy policy that fully utilizes the positive attributes of the state. Their motivation for positive legislative action will then be based on reliable research and they’ll be spared the rather unpopular “That’s How California Does It” mantra.

#### 4. Threats & Constraints

Overall, the Nevada rooftop solar industry will need to capitalize on our opportunities and strengths because new threats and constraints are predicted to come from a national effort for net metering fee legislation from American Legislative Exchange Council (ALEC).<sup>12</sup> Additionally, while Nevada currently has a Renewable Portfolio Standard (RPS), which includes energy efficiency (EE) standards, it is scheduled to be phased out by 2020, leaving the state with none.<sup>11</sup>

**Environmental & Social:** No threats were apparent.

**Economic:** Other than factors outside of the industry’s control, like another recession or increased interest rates, no economic threats were perceived.



**Political:** However, national policies, which do affect the economics of the industry, are the expiration of the Bonus Depreciation Rule on December 31<sup>st</sup>, 2013 and the sunset of the Solar Investment Tax Credit (ITC) in 2016. Additionally, the industry is under attack nationally from American Legislative Exchange Council (ALEC), an influential lobbying group, which plans to promote legislation with goals ranging from penalizing individual homeowners for the installation and use of residential solar to the weakening of state clean energy regulations.<sup>12</sup> Thirteen of these efforts were defeated in the last fiscal year.

This is also indicative of the “Us Against Them” conversation between the utilities and the renewable energy industry which is especially typical of an Investor Owned Utility (IOU) such as NV Energy. Utilities also make significant contributions to policy makers in order to have access and a better opportunity to influence legislation than most of the renewable community and industry.

Currently Nevada’s Renewable Portfolio Standard (RPS) includes energy efficiency (EE), which can meet up to 25% of its RPS with credits earned from EE measures. However, starting in 2015, this energy efficiency “carve-out” is phased out until by 2020 the utility is not entitled to any credits for EE measures. Companion legislation to establish a separate EE standard, while expected, was not introduced in the 2013 session<sup>11</sup> and will hopefully be addressed in the next legislative session.

Technological advances allow greatly increased communication with all elected officials in Nevada, however, the industry must continue to be in frequent contact with those who are responsive and find

ways to better connect with the offices in Carson City where face to face meetings are seldom possible. Exploring opportunities for networking through public interest organizations that work throughout the state and are willing and eager to represent our interests while they interact with elected officials is essential.

## 5. Unknown Variables & Other Topics

**Unknown:** The biggest unknown will be the MidAmerican Energy Holdings Company (MEHC) acquisition of NV Energy. However, because MEHC owns more than 1.4 GW of large PV projects in California and Arizona through its renewable energy subsidiary, and has pioneered bond financing of solar projects, we anticipate enthusiasm for expansion of PV and other solar installations in Southern Nevada.<sup>13</sup> NV Energy has also entered into power purchase agreements for electricity from over 335 MW of PV and concentrating solar power (CSP) projects in Nevada.<sup>13</sup> This appears to be a very positive sign that, at this time, further development of renewable energy is positive. How MEHC will perceive Southern Nevada rooftop PV remains an unknown though.

**Other:** Nevada does have one other consortium which supports solar; Solar NV. They, however, are an American Solar Energy Society (ASES) affiliate and will keep that affiliation because they are more of a grassroots organization where individuals support the advancement of solar, rather than a consortium of businesses.

## 6. Roadmap

As the panel acknowledged the Strengths, Weaknesses, Opportunities and Threats (SWOT) of the industry our foundation began to appear, and the roadmap became clear. Our ultimate opportunity will be to come together as a committed, credible business community willing to educate, advocate, and ultimately build the resilient, robust, thriving rooftop solar business industry Nevada needs.

This will be done in the following four main steps. The first step is the establishment of a local or state SEIA Chapter in January 2014 which will leverage a national organization at the local level and most importantly establish credibility. SEIA is the Nation's leading organization for the solar industry and will assist in giving the local industry a consistent message while uniting the business voice. The chapter can then become an information 'clearing house' and educational opportunity for the public, the industry, homebuilders, and legislators alike.



Secondly, the industry shall embark on a third party study through Nevada's higher education system, from February through May 2014, and also engage the Public Utilities Commission (PUC) for information. The report would focus on economic and social benefits and provide data such as the number of rooftops, megawatts produced, jobs created, and the salaries of those jobs. It would also illustrate how NV Energy would have a beneficial impact from rooftop solar, and how neighbors are in no way affecting other neighbors by going solar. This report would give political cover to Legislators, if needed. This study is anticipated to cost approximately \$50,000 to \$60,000. Partial funding sources may come from the Civil Society Institute (CSI) or the Federal Sun Shot Initiative (SSI).



Once the report is complete, it is highly desirable to present it to Nevada's Interim Legislative Committee on Energy prior to the 2015 Legislative Session. This committee begins meeting on January 13<sup>th</sup>, 2014, and is anticipated to meet a few more times before the session begins in January of 2015. The report is anticipated to support possible policy ideas for the session. Some of the future actions the panel encouraged were: incentives being funneled through a third party similar to the 'Oregon Trust Model', Property Assessed Clean Energy (PACE) financing, or other fiscally responsible legislation to open the marketplace to rooftop solar.



The fourth cornerstone is to utilize the outcomes of the first three actions to educate and advocate for building a resilient, robust, thriving rooftop solar industry in Nevada going forward. This would be accomplished through traditional and non-traditional communication channels targeted towards the public, the solar and related industries (i.e. commercial and residential construction) and most importantly, our policy makers at the state and local levels. One of the local initiatives needed is a streamlined permit process, especially in the Clark County jurisdiction.

Within the fourth step are a few time-specific and ongoing steps towards the ultimate goal. The time specific steps are to attend and/or participate in the 7<sup>th</sup> National Clean Energy Summit in August of 2014 and to engage in the Solar Power International (SPI) Conference, the largest conference of its kind in North America, which is coming to Las Vegas in October of 2014. All of these actions will give the industry great momentum going into the most critical time sensitive step: the 2015 Legislature which convenes from late January 2015 through early June 2015. The industry must also be active at the state level in the 2017 and 2019 Legislative sessions.

With the expiration of the Bonus Depreciation Rule on December 31<sup>st</sup>, 2013, and the sunset of the Solar Investment Tax Credit (ITC) in 2016, ongoing efforts on a political front will be coalescing and assisting in advocating at a national level for the re-initiation and extension of these policies, respectively. Other ongoing efforts will be the establishment of a local supply and distribution hub with inventory, an office for support infrastructure and the creation of teaching and education center for the industry and the public.

In parallel with educating today's potential consumers of rooftop solar, the Nevada solar industry can take advantage of an upcoming integrated energy literacy curriculum for elementary schools. Via this grant, two Clark County School District teachers have created this curriculum. The objective is that students will begin to have a scientific and comprehensive understanding of energy. The underlying foundation of the unit will incorporate science, technology, engineering and math (STEM), which encourages students to solve problems based on solid information. Through this new initiative, the solar industry can offer learning materials and field trips to provide a "hands on" environment in which to educate future consumers.



## 7. The Civil Society Institute & the 2020 Rooftop Solar in Southern Nevada Panel Participants

The Civil Society Institute is a nonprofit and nonpartisan think tank that serves as a catalyst for change by creating problem-solving interactions among people, and between communities, government and business that can help to improve society. Their approach lies in the way they serve as catalysts for change, especially in key areas of critical need: science policy and regenerative medicine, climate change and global security and economic change.

The following Solar Energy business owners and Sustainable Energy Industry experts convened on December 10<sup>th</sup>, 2013 for a half-day discussion at the American Institute for Architects (AIA) Boardroom in the Historic 5<sup>th</sup> Street School in Las Vegas, NV in order to create a 'Roadmap for Rooftop Solar in Southern Nevada by 2020'.

**Monica Brett** served as a grant administrator for this project and is the owner of her own consultancy company, Energy Bridge, which focuses on building resilient communities. For the last decade, her attention has been on building a sustainable infrastructure for renewable energy and energy efficiency by promoting beneficial legislation and regulations, strengthening public/private collaboration, designing curriculum and college programs and teaching. Prior to that, she was based in Europe for 13 years, where, after graduate studies at the London School of Economics, she worked on multiple international sustainable development projects for the United Nations, European Union and donor agencies.

**Judy Trechiel** served as a grant administrator for this project and is the executive Director of the Nevada Nuclear Waste Task Force, the leading grassroots organization representing public opposition to a national high-level nuclear waste repository at Yucca Mountain, NV. She has held that position for the last twenty-eight years, traveling nationally and internationally as a speaker and public representative. Previously she worked in connection with the building trades in Southern Nevada. She has worked with decision makers at all levels of government on policies and programs in opposition to nuclear energy and the promotion of renewable sources of energy and sustainable development. She lives and works in Las Vegas, Nevada.



**Kelly Thomas**, LEED BD+C, HERS, served as the facilitator and author for this project and has a long professional commitment to sustainable building and business principles dating back to his days at UNLV's School of Architecture in the mid 90's. His commitment to sustainability started publicly in the 1999 Nevada State Legislature via the introduction of legislation relative to Smart Growth, a Recycling Initiative, and the creation of the Nevada Center for Sustainable Living. Now, Kelly has 20 years of experience in leadership roles relative to the planning, procurement, and policy fields in both the horizontal and vertical built environment. He is the chairman of the Nevada Sustainable Energy Coalition (NSEC), a Subcommittee of the USGBC-NV Government Affairs Committee and a former USGBC Executive Board of Directors member.

**Buddy Borden** served as a participant for this project and is an Economic Development Specialist for University of Nevada Cooperative Extension. Buddy has over 22 years working as an Economic Development Specialist for Cooperative Extension; 18 years in Nevada and 4 years in Wyoming. He is committed to assisting communities build strong sustainable economies through entrepreneurship, business retention and expansion, and business recruitment. His interests are in community & business economic development processes, analyses and community based education, economic base analysis, small business procurement and regional economic impact modeling and analysis.

**Chris Brooks** served as a participant for this project and is Director of Bombard Renewable Energy. He is responsible for the engineering, procurement, and construction of every solar project Bombard has completed. Chris is a founding member of Solar NV, the Nevada Chapter of the American Solar Energy Society (ASES). In 2007, he was appointed to the Nevada Renewable Energy and Energy Conservation Task Force as the solar representative. In 2008, U.S. Senator Harry Reid appointed him to the Blue Ribbon Panel for Nevada's Clean Energy Future. In 2009, Chris was awarded the AFL-CIO Contractor of the year and in 2013 he was again honored by the AFL-CIO as a Friend of Nevada Working Families. A native Nevadan, Chris has been a Journeyman Wireman for over 17 years and began his career working as an lineman's apprentice for his family's company at Nellis AFB.

**Louise Helton** served as a participant for this project and is Founder and Vice President of Governmental Affairs for 1 Sun Solar Electric. Ms. Helton has been an effective force in developing policy and getting legislation passed in Nevada since 1988 and has received numerous local and national awards for her work including recognition from Harvard's Kennedy School of Government



and the Ford Foundation. Currently, Ms. Helton serves on the government affairs committee of the USGBC Nevada Chapter and as a Consortium member of Southern Nevada Strong. To advance Sustainable Energy legislation in the state of Nevada, Ms. Helton founded the Nevada Sustainable Energy Coalition which has established a broad-based business alliance to advocate at the state and local levels. Ms. Helton served on the host committee for the Global Solar Summit which attracted the top solar panel manufacturers, and solar project developers for meetings in Las Vegas.

**Gregg Lawson** served as a participant for this project and recently worked for Solar Universe Corporate, until deciding to partner with long time friend Brian Geczi to run Jersey Electric's division, Solar Universe Las Vegas. His professional career started as a Military Intelligence Analyst for the 75th Ranger Regiment in Ft. Benning, Ga, where he obtained the rank of Sergeant in less than two years. After graduating from the University of San Francisco with a degree in business Gregg got into mortgage business and eventually became President and COO of Onyx Capital Property & Investment, a nationwide company he co-founded. He then landed a role with then start-up Solar Universe and has been with the company since 2009.

**Scott Shaw** served as a participant for this project and is Director of Research and Development at Service 1st Energy Solutions, a Las Vegas, NV based solar and energy efficiency company. In this

capacity he is responsible for business development, PPA development, contract negotiation, and commercial project development. He is also Chairman of the Board for the Vital Synergy Foundation, a 501(c)3 that is committed to expanding our intelligent use of energy resources through renewable generation and the proactive use of proven energy efficiency methods. In his capacity as chairman, he works exclusively with other nonprofit organizations that serve our communities in the Southern Nevada region. He does this by way of developing solar installations, structure weatherization, community events, education, fundraising, grant writing, investment partners, and job training on behalf of those organizations. Scott is also a member of a number of local and national renewable energy associations.

**Russell M. Rowe, Esq.** served as a participant for this project and represents SolarCity. Russell is a partner in the Griffin Rowe law firm specializing in administrative law, land use and government affairs. He was an integral participant in the passage of legislation (Assembly Bill 428) in the 2013 session of the Nevada Legislature aimed at restructuring Nevada's solar incentive program to provide predictability and transparency in the application process. Russell has represented both private and public clients in Nevada on federal, state and local issues in a variety of economic sectors, including solar and renewable industries, since being licensed in 1998, and he has represented clients before every session of the Nevada Legislature since 2001. Russell has built a reputation for honesty and integrity with Nevada elected officials since he began his government affairs career in 1990 on Capitol Hill in Nevada's First Congressional District office. Russell obtained his law degree from the University of San Diego (USD) in 1998 and his bachelor of arts in political science from UNLV in 1990.

Solar City entered the Southern Nevada marketplace in 2012 and is a full-service solar contractor for homes, businesses and governments providing custom design, financing, and installation.

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Page 4: NV Energy Service Territory Map  
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Page 6: US Capitol Building at Sunrise  
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Page 7: North Las Vegas City Hall at Sunrise  
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Page 8: Rooftop Solar Installation  
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Page 8: Clark County School District (CCSD) Logo  
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