MINUTES OF THE
SENATE COMMITTEE ON ENERGY, INFRASTRUCTURE AND TRANSPORTATION

Seventy-fifth Session
April 29, 2009

The Senate Committee on Energy, Infrastructure and Transportation was called to order by Chair Michael A. Schneider at 8:19 a.m. on Wednesday, April 29, 2009, in Room 2135 of the Legislative Building, Carson City, Nevada. The meeting was videoconferenced to the Grant Sawyer State Office Building, Room 4412, 555 East Washington Avenue, Las Vegas, Nevada. Exhibit A is the Agenda. Exhibit B is the Attendance Roster. All exhibits are available and on file in the Research Library of the Legislative Counsel Bureau.

COMMITTEE MEMBERS PRESENT:

Senator Michael A. Schneider, Chair
Senator Maggie Carlton, Vice Chair
Senator John J. Lee
Senator Shirley A. Breeden
Senator Randolph Townsend
Senator Barbara K. Cegavske
Senator Dennis Nolan

GUEST LEGISLATORS PRESENT:

Senator Steven A. Horsford, Clark County Senatorial District No. 4

STAFF MEMBERS PRESENT:

Matt Nichols, Committee Counsel
Scott Young, Committee Policy Analyst
Sandra Hudgens, Committee Secretary

OTHERS PRESENT:

Alfredo Alonso, Lewis & Roca, LLP, Organizational Systems Research Association
Jim Baak, Director of Policy, Utility-Scale Solar; The Vote Solar Initiative
Mike Alastuey, Director, Public Policy and Analysis, Applied Analysis
Tom Clark, Sempra Energy; Cogentrix

Rose McKinney-James, Solar Alliance
Julia Curtis, Director, Sharp Solar Energy Solutions; The Solar Alliance
Annie Carmichael, Federal Policy Director, The Vote Solar Initiative
John J. Warwick, Ph.D., P.E., Interim Executive Vice President, Research, Division of Hydrologic Sciences, Desert Research Institute
E. Manos Maragakis, Dean, College of Engineering, Scrugham Engineering & Mines, University of Nevada, Reno
S. Kent Hoekman, Research Professor, Desert Research Institute
Bob Goff, Vice Chair, Nevada Institute for Renewable Energy Commercialization
Renny Ashleman, City of Henderson

CHAIR SCHNEIDER:
There are two articles you have in front of you from the *Las Vegas Sun*. The first article concerns Senate Bill (S.B.) 358 that we are going to hear today (Exhibit C). The second article is about a proposed wind farm in Searchlight (Exhibit D). Clark County Commissioner Steve Sisolak met with the Searchlight residents yesterday regarding their concerns. The third article is NV Energy's report on their first-quarter financial results (Exhibit E). The last article is in regards to LS Power purchasing the Wyoming to Colorado intertie (Exhibit F). It will allow the company to bring wind energy from Wyoming to Colorado. It also mentions LS Power's southwest project, which would allow wind power to be brought from Midpoint, Idaho to southern Nevada and the desert southwest. LS Power will be making investments in that grid in the future.

SENATE BILL 358 (1st Reprint): Revises provisions related to energy. (BDR 58-1146)

SCOTT YOUNG (Committee Policy Analyst):
> Thank you, Mr. Chairman; excuse me, Mr. Majority Leader. I just thought it might be easier if I explained to the Committee what you have in front of you, so you can kind of keep track of it as we go along. You should have a color mock-up of the proposed amendment to S.B. 358 and it's No. 4669 and it's dated April 27th [(Exhibit G, original is on file in the Research Library)]. The reason I mention that is because we had sent out one earlier, dated April 24th, which was then subsequently changed. Immediately under that, Committee, you should have an explanation of amendment No. 4669 [(Exhibit H)]. It's an expanded version of a legislative digest that we prepared yesterday. Then below that, you should

have a document that has the seal of the City of Henderson on it [(Exhibit I)]. That's a proposed amendment that will be discussed later. And then, below that, there should be a one-page document with green ink. This is a proposed amendment that Senator Townsend requested, and it'll address section 19.55, and I'm sure we'll get to that somewhat later [(Exhibit J)]. But, I wanted you just to understand what the documents were that we had put on the table in front of you. So, if we refer to them later, you'll kind of have an idea of what they look like, and you can find them readily. Thank you, Mr. Chairman.

CHAIR SCHNEIDER:
If anyone is here for S.B. 331, we will hear that last, or if there is not enough time, we will hear that Tuesday morning.

SENATE BILL 331 (1st Reprint): Provides a partial abatement of property taxes and certain sales and use taxes imposed on facilities that use solar or wind energy to generate electricity or process heat. (BDR 58-289)

SENATOR STEVEN A. HORSFORD (Clark County Senatorial District No. 4):
I am learning how important energy issues are to the future of our State. I am presenting a proposed amendment to S.B. 358 that continues to lay the foundation for a new energy economy in Nevada Exhibit G. This proposed amendment does not necessarily embody all of the elements discussed over the last months, but they are provisions ready for debate and discussion. I am ready to listen for and learn the ideas and approaches from others that will ultimately give us the right answers to all the issues. It is time to move these energy policies forward if we are going to position Nevada as the Nation's leader. There is no question that we must take action this Session in order to stimulate creation of jobs in the renewable energy and energy-efficiency industries. The slide show will present the basis for my recommendations (Exhibit K, original is on file in the Research Library). My written testimony is provided to the Committee (Exhibit L).

SENATOR LEE:
Why is the Nevada League of Cities not represented on the State and Local Government Panel on Renewable and Efficient Energy (the Panel) in section 1.19, subsection 2 of the proposed amendment? The Nevada

Association of Counties is included under paragraph (d). Should not the cities be represented for input on things that will happen in their jurisdictions?

SENATOR HORSFORD:
We can include them. I am open to any other ideas and suggestions.

SENATOR NOLAN:
With the market we are in right now, where are we going to end up in two to three years? Contractors are not getting the loans to do major projects right now, and some are not able to finish projects for which they have received funding. What happens when we finish with the stimulus money and the market does not improve? I would hate to see people being trained for an industry for which there is no work.

SENATOR HORSFORD:
The photovoltaic (PV) distributive-generation element is only a subset of the industry. The training you indicate is for the whole industry. We know of projects under development now that are major developments, such as 250 megawatts (MW) of solar development, which is significant. We know of companies that are interested in coming to Nevada. It will take time for the projects to fully come on line because of required permits and everything else that must take place. This is the reason we have to streamline how decisions are made so we can bring them on line as quickly as possible. As we train people and as current construction projects end, we are going to have thousands of workers needing to go somewhere. Some of them will work on large-scale solar projects and others will work on smaller-scale solar projects. That is why we must build opportunities in the whole industry. There are opportunities available for small businesses who hire a few workers, as well as a large-scale operation which hires thousands of workers. While it will not address the needs for everyone, it will help, as opposed to no development occurring.

SENATOR NOLAN:
Was it 6,000 jobs we were going to dedicate with the stimulus money for training in technical skills for the plants or was it for weatherization?

SENATOR HORSFORD:
Those 6,000 jobs are not just for trainees, some people already have the skills to build these projects. Some workers will move from a hotel-development project to the solar-development project.

SENATOR CEGAVSKE:
What happens to our constituents who have to pay for these programs? I am looking for an assessment to see how this affects everybody. A spreadsheet will suffice. What wording is new on the first page of the proposed amendment Exhibit G?

CHAIR SCHNEIDER:
The green writing on the proposed amendment is what has been added. Senator Horsford removed section 20.5 on page 61 and put that section into the Senate Committee on Finance.

SENATOR CEGAVSKE:
Why was the biomass industry excluded from the list on page 2, section 1.27 of the proposed amendment? Is there representation from the chambers of commerce and nonunion groups? Is the term "waste heat" shown on page 21, section 1.77, subsection 3, paragraph (e) supposed to be "waste energy"? I am concerned how the abatement will affect our tax structure. On page 25, when you remove the capacity and carve outs, would NV Energy be absorbing all the costs? That would mean the cost would be transferred to the citizens. I am concerned one entity would be getting the whole brunt. On page 44, section 13.3, subsection 2, paragraph (b), we need to assess the impact on residents. We are increasing constituents' bills instead of decreasing them. Do we know the impact the local sales and use tax will have on the economy, shown on page 56, section 19.35, subsection 12? How are we going to recycle the products from renewable energy when they are no longer usable? Were schools included or excluded from being retrofitted for energy efficiency? Did I hear that 70-percent renewable energy was going to be commercial and 30 percent was going to be residential?

SENATOR HORSFORD:
We have experts here who are able to answer your questions.

SENATOR TOWNSEND:
There are a number of things in this bill that can be clearly understood if we separate the issues. The first issue deals with the cheapest kilowatt that we do not have to produce. We need to focus on items in S.B. 152 as well as some of the things in this bill, including weatherization and retrofitting, in regard to their total value. They have huge value for the average person right now, particularly those men and women who are either out of work or are worried about their jobs. That is a huge component. We have to make sure we get in line with the jobs issue. When you look at this in its totality, it is almost too hard to swallow.

SENATE BILL 152 (1st Reprint): Enacts the Green Jobs Initiative. (BDR 58-172)

The second thing has to do with the opportunity of abatements. We all want to protect education. There may be additional ways to handle abatements that do not impact education. There are other ideas for opportunities I will bring to our work session. The third item addresses jobs. We might need a matrix to show the Green Jobs Bill alongside S.B. 358 so we can show how both bills interact with each other. The Green Jobs Bill utilizes the stimulus money for training workers for the renewable-energy projects. It is important for everyone to understand that it is a positive-global attempt to conserve energy. This Committee has looked at the carbon-footprint issue, and it needs to be looked at again. The significant part is transportation. I hope everyone is open-minded about these issues. We are not doing anything contrary to the Public Utilities Commission of Nevada (PUCN), nor are we trying to restructure government. We are not forming an anti-energy office. This is a good-faith effort to find a way to focus our efforts about what we are trying to do in this State. People should look at the effort shown in the first couple of slides Exhibit K.

The Panel is an independent group, and there is no intention for the responsibility to be put onto the PUCN. The Panel should be viewed as an independent group in order for us to have a positive discussion about its relationship. No one has disagreed with the concept of trying to find a better way to conserve energy. There is a question concerning future development in outlining zones and transmission components that the Committee needs to address. Local governments will want to know what role they have in their planning. They will want to know if they have any say in their jurisdiction or if the power rests only with the State. I do not know the answer to this question. There will be people with opposing opinions, which is part of the debate process. Let us offer constructive solutions to these questions. Everyone has

good ideas for solutions, and everyone is part of the solution. No one is totally right or totally wrong. Together we can find the right solution.

CHAIR SCHNEIDER:
It is great you have included a representative of the State Public Works Board. I have been told by architects and contractors that they have a real problem with Public Works. I am told Public Works slows things down and messes up things. The Chair of the Senate Committee on Government Affairs could take a look at that. I would hate to see Public Works get involved with what we are trying to do, slow things down and mess up things like they are doing to some of the buildings on the University of Nevada, Las Vegas (UNLV) campus.

SENATOR HORSFORD:
There are advocates from the solar community here to testify and clarify the concepts of this bill. Your Committee is the avenue to work with this bill, and the bills coming from the Assembly and the Governor, to create the best policy. I look forward to working with this Committee to strike that balance.

SENATOR TOWNSEND:
It is a lot easier to be an editor than a writer. We will attempt to be a collaborative editor and not a critique-based editor.

ALFREDO ALONSO (Lewis & Roca, LLP, Organizational Systems Research Association):
I am here today on behalf of the Organizational Systems Research Association (OSRA). Jim Baak conducted a study on the abatement matter with respect to jobs and economical development. Mike Alastuey conducted a study on behalf of the large solar associations.

JIM BAAK (Director of Policy, Utility-Scale Solar; The Vote Solar Initiative):
The study we put together shows the economic impacts for developing 2,000 MW of large-scale solar in Nevada over the course of the next 6 to 7 years, (Exhibit M). A more comprehensive report is attached, (Exhibit N, original is on file in the Research Library). We looked at eight 250 MW solar parabolic trough power plants like the Nevada Solar One project in Boulder City. We studied the impact of the development of that in terms of jobs, the economic output and the wages. We used a model put together with the National Renewable Energy Laboratories for this purpose. We modified and updated it. We tailored the analysis for Nevada with the help of the

Clark County Assessor's Office and the Nevada Department of Taxation. We calculated the tax estimates for Nevada. This type of development would create 1,200 permanent jobs during the operation and maintenance phase and nearly 6,000 jobs over a 6-year construction period. These jobs include direct, indirect and induced jobs. These jobs would include jobs at the facility and in the local manufacturing that support that development. All of the workers employed would spread the money to stores, restaurants, banks and other services. The total lifetime earnings, including the 2-year construction period and a 30-year life of each of the projects, represent $5 billion in earnings. The economic output into the community is $11 billion over the life of the projects. We looked at the sales and property tax implications, assuming the abatements that were presented in S.B. 358 were adopted, and there was $270 million in property tax benefits to the State as well as $230 million in sales tax generated. If you consider a 250 MW solar parabolic trough plant, you are looking at 2,000 acres. That is a significant investment and basis for property tax. A natural gas plant is one-fifth the cost of the capital investment for a solar plant. With a solar plant, you have no fuel cost over the life of that plant. With the abatement, the solar plants would be on an equal footing with a conventional fossil-fuel plant. The wage range for the jobs created with this type of development would be from $51,000 to $58,000 per year.

SENATOR TOWNSEND:
We have heard this presentation before and would like you to tell us what you think of the bill.

MR. BAAK:
We support this bill.

MIKE ALASTUEY (Director, Public Policy and Analysis, Applied Analysis):
Our focus was not directed specifically at S.B. 358 or a particular bill. Our focus was on the study comparing the effect of Nevada's current abatement structure with abatements and exemptions available in California and Arizona and to other states where solar facilities are located (Exhibit O, original is on file in the Research Library). We found the abatement structures in Arizona and Nevada are competitive. We would be in a favorable competitive position with the state of California under our current abatements. If the current abatements are allowed to expire, we would have the greatest tax burden of the three states. Currently we are competitive with Arizona, and we beat California. If the abatements expire, we are the least competitive of the three states. It is a

matter of legislative policy how you want to apply the rates of taxation and the abatements.

SENATOR TOWNSEND:
If we did nothing with the abatements, would we equal Arizona? Does the enhanced-abatement analysis match up with what is in this bill or would you have to go back and do the analysis again?

MR. ALASTUEY:
It does not match up with S.B. 358. It matches up with S.B. 331. Senate Bill 358 includes a carve out for certain education taxes that the other bill did not have. We have not run the numbers specifically on S.B. 358.

SENATOR TOWNSEND:
It might be helpful if we knew what that number was. You list the total payments at $14 million at the bottom of your sheet Exhibit O. If that number is adjusted higher, because we carve out education, would the payment increase to $20 million or $7 million or whatever the number? I think it would be important for the sponsor to know we are not throwing out ethereal concepts. We could actually say, "Here is who we are, and this is what we have done." Those proposed abatements are very defensible in this world. They have to be rational.

Utah just went to the maximum abatement which is zero property tax for certain renewable projects. I do not think there is any value for us to do that. We believe in ourselves more than that. There are those who will "shop us." I do not want them doing business here. It is not in everyone's interest to give away the State. I would like you to follow up with the analysis for this bill, if the client will authorize it.

MR. ALASTUEY:
We understand the need for us to stand by for the course of the Session.

SENATOR CEGAVSKE:
On the sheet, it excludes taxes paid during construction, and it shows 15 years of operation Exhibit O. Do we want exemptions during the construction period? Is the first 15 years of operation excluding construction? How will that affect Nevada?

MR. ALASTUEY:
The tabular presentation and the bar chart point out the difference between the two, and they are consistent Exhibit O. The tabular presentation represents the tax burden to the developer over 15 years, including the construction period and the subsequent operation period to the conclusion of the 15 years. The bar chart represents the operational cost after the construction and the relative profitability of each of the operations in each of the states after the construction phase is completed. That is important for two reasons. First, California has the smallest tax incentive on the sales tax side, which is very heavy on the construction phase. Second, California has a substantial abatement on the property tax side. Those are two distinct phases having an impact on future development. By taking the construction phase alone and then the operational phase, it will show the profitability after the initial-capital investment and the value of the plant for future development and financing. For purposes of measuring the relative competiveness of Nevada's abatement structure, the construction period should be included. We wanted to reflect the operational period after construction for purposes of fulfilling the informational requirements.

SENATOR CEGAVSKE:
Are you suggesting we not exclude taxes during construction in Nevada?

MR. ALASTUEY:
Not at all. None of the bills presented exclude taxes paid during the construction period. That is why we showed the relative profitability in a separate presentation from the tax burden to help the developer make a decision.

SENATOR CEGAVSKE:
Should we stick with taxation during the construction phase?

MR. ALASTUEY:
Yes, for purposes of conveying abatements.

SENATOR CEGAVSKE:
Is that in the bill?

MR. ALASTUEY:
There is no distinction between the construction phase and the subsequent operation in any of the bills of which I am aware.

SENATOR CARLTON:
Is it correct to assume that no matter what we do with abatements, there are no guarantees that this power will be sold in the State?

MR. BAAK:
There are no guarantees the power will be sold in Nevada; however, the economic benefits would accrue to the State in terms of jobs and the output created. The analysis I prepared does not look at the value of the power that is generated from any of these facilities; it only quantifies the benefits to the State of the development, operation and maintenance of those facilities Exhibit M and Exhibit N.

SENATOR CARLTON:
Is there any guarantee the citizens of Nevada will be purchasing this power? Does it go to the highest bidder on the power? Are there any restrictions on where it is sold?

MR. BAAK:
There is nothing in the language in any of the bills.

SENATOR CARLTON:
It is unconstitutional. We need to fix it.

MR. ALONSO:
There is a bigger part to the picture. You are correct, there is no prohibition against exporting. I do not think you want such a prohibition. The creation of this industry will benefit Nevadans in many ways. Nevada will be self-sufficient. You will create an industry that includes manufacturing and includes all the ancillary parts of the industry. For example, in gaming, jobs will be created for the people that sell to the gaming companies. It is a multiplier effect. The attempt is to have a couple of facilities throughout the State. You are correct in assuming that it is a concern. There would be little benefit at the end of the day to the State, but that is not what we are doing here. We are attempting to create jobs. The majority leader, with Senator Schneider and Senator Townsend, has helped create something much bigger. In 10 to 20 years, you are going to have an entire infrastructure surrounding this industry that will include jobs and significant manufacturing. At the federal level, U.S. Senator Harry Reid is working to bring 25 percent of lease payments on federal land back to the State. Right now, you have 5 percent coming back

to the State. Taking everything into consideration, it could be a huge benefit to the State economically.

On behalf of OSRA and the other large solar facilities and companies, we support any efforts to promote this industry in Nevada. We would like to continue working with this Committee and the majority leader in crafting legislation that works long-term for the State. One of the specific technologies my client, OSRA, promotes is "process heat." I am not sure if "process heat" was supposed to be included with "waste heat" found on page 19 of the proposed amendment, or if it was just an oversight. We have had a couple of discussions about this. The "process heat" is not providing electricity, it is providing steam, almost like a boiler. You can use them in large facilities, like a prison system, or many other applications. Large industrial facilities do the same thing, but they simply use the solar portion of it instead of natural gas or electricity.

TOM CLARK (Sempra Energy; Cogentrix):
We support this amendment and many of the elements of the amendment. We look forward to working with the majority leader and this Committee to clean up the key elements of this amendment.

ROSE MCKINNEY-JAMES (Solar Alliance):
I was given the opportunity to learn a great deal throughout the discussions with the working group that have now resulted in this amendment. You need to look back and know where you came from before you can figure out where you want to go. As a result, it is important to make sure we think about what this State has done over a period of time. In the early 1990s, significant work was done on behalf of the geothermal industry, prioritized through legislation. We referred to that priority as indigenous resources. Those resources are renewables, defined as solar, wind, geothermal and biomass. We now have a different terminology called green economy. Green economy is advancing the technologies that support those renewables. Over the years this legislature has consistently modified the policy and focused on the framework of the Renewable Energy Portfolio Standard (RPS). We support streamlining to advance renewables. We have placed a significant emphasis on economic diversification, job creation and economic development. It is important to leverage Nevada's resources. Our emphasis is on distributed generation. We think that distributed generation will provide an important platform to expand our ability to move forward with the holistic industry. The blend of both large and small systems

will give us the basis to achieve manufacturing being located in this State. We will need the production of the components and the ancillary technology to support these installations. We hope that this policy statement will finally result in a substantial and sustainable job creation.

The section of the bill that we are here to address is on page 44 of your mock-up, section 13.3. We came to the working group with a robust and aggressive request for a five percent carve out. Through significant discussions and negotiations, we reduced that request to what you see, which will give us an opportunity to ramp up. The Assembly is looking at A.B. 448 this morning, dealing with the Solar Generation's program which houses the rebates that are made available to those who want to take advantage of the smaller systems. We have identified 24 local installers throughout the State who believe the language in this amendment will be important to establish and maintain a market for distributive solar and to create some balance (Exhibit P). We are also submitting a letter in behalf of Mr. David R. Wayman of TWC Construction, another indication of support for distributive generation from people who are on the ground and attempting to make the commitment and investment in these technologies (Exhibit Q).

The language that you see in the mock-up is straightforward. On page 44, there is an adjustment to the RPS. We support the increase of the solar component from five percent to six percent. We support the opportunity to bring into consideration distributive generation. We heard the concerns about long-term impacts on ratepayers. We believe that the impacts are modest. We do not deny there are impacts. We are talking about some balance. We may need to revisit this to take into consideration the current economic climate. We want to plant a sustainable opportunity for Nevada that will overcome the current economic climate in tune with the federal government.

ASSEMBLY BILL 448 (1st Reprint): Revises provisions governing incentive programs for renewable energy. (BDR 58-511)

JULIA CURTIS (Director, Sharp Solar Energy Solutions; The Solar Alliance):
I am with Sharp Solar Energy Solutions, and I am representing The Solar Alliance for the State of Nevada. While Nevada is on its way to supporting the necessary large-scale solar developments, the State has yet to focus on the policies needed to develop a strong, local distributed-generation's solar market, which will provide long-term sustainable jobs. You have the letter of support

we have had signed by over 25 of the local installers in Nevada, several who have taken time out of their busy business schedules to sit in the hearing rooms this morning Exhibit P. They have created these projects, installed them, inspected them and made sure our product, which has a 20-year warranty, lives up to its warranty. We are talking about long-term jobs that are critical to the integrity of brands, such as Sharp, who have been in business since the 1950s, and will remain in the solar business for the next 100 years. We stand by our product and the installers we work with, the resellers and the distributers. We want to make sure our solar product is working to its best efficiency from the day it is installed until 20 years after the installation date.

We support Senator Horsford's 2-percent carve out amendment that will bring on line 160 to 180 MW of solar by 2020 and would result in between 2,400 to 4,800 direct jobs over the life of the policy. The distributed generation provides more jobs per MW than any other energy source. That has been proven by a number of independent researchers, including the federal government. The distributed generation carve out would gradually phase in and insure NV Energy is given ample time to ramp up its Solar Generation's program to meet this modest yearly-solar target. The map shown is provided by the Interstate Renewable Energy Council (Exhibit R). Sixteen states already have distributed generation provisions in their current RPS. Texas is in the process of meeting a 3,000 MW goal for distributed generation by 2020. Arizona has a 4.5-distributed generation carve out by 2025. New Jersey is the second largest installation of distributed generation for voltaics in the country, after California, with a 2.1-percent distributed generation carve out which is their entire electricity load. That is not a percentage of the solar RPS which is what we are proposing in Nevada. We are looking at 0.5-percent total load in Nevada, which is smaller. We are taking a less aggressive target that we are confident we can meet and exceed. The energy can ramp up in a cost-efficiency manner.

Since 14 states already have distributed-generation targets, and since two other states are currently in the legislative process, I will point out the unique, economical and environmental benefits the distributed generation creates. The cost of solar is half the cost of the equipment which is going down and the other half is local labor. The distributed generation carve out will help bring down half of the price tag by creating competition amongst installers. We believe in free-market competition. The price of installation needs to be competitive with neighboring states. It will take time and it will require market certainty in a form of a distributed generation carve out. The industry is trying

to reach grid parity as soon as possible. We believe as early as 2015, solar will be at grid parity meeting the same level of current costs. Our nation's energy landscape is about to change dramatically. With the right policies in Nevada, we will be at the cutting edge of this transformation. The climate change, national energy security and local economic development will require your leadership today. We urge you to keep Nevada as competitive as possible in this new energy economy by passing this achievable and beneficial solar policy. Certification of trained, local Nevada installers will help keep this new, small incentive for rooftop PV systems as viable for economic growth as sustainable increase of distributed-generation PV of the market. As Senator Horsford said this morning, we need to position Nevada as the nation's leader, and we need to help diversify and have a sustainable economy. We urge you to pass this proposed amendment.

ANNIE CARMICHAEL (Federal Policy Director, The Vote Solar Initiative):
I work for The Vote Solar Initiative, a grass-roots advocacy group encompassing 16 states across the country. We have partnered with the Solar Alliance to help model the cost of this carve out. We looked at a ten-year program. We used our experience in other states that have a defining-rebate structure already on the books to model what this would cost Nevada's ratepayers Exhibit R. We modeled a ten-year program with high up-front rebate that will decline as the markets mature in Nevada. We back-loaded the programs on the first couple of years. We gave NV Energy opportunity to ramp up the Solar Generation's program. In the first couple of years, we are looking at targets of three to five MW for both residential and commercial projects. We modeled this on commercial projects. We have 70 percent of the projects focused on small-to-large scale commercial. It is more cost effective by focusing on the commercial market. The assumptions we used are very transparent, and we are willing to work with the Committee to adjust these. Through this process, over several months, these assumptions have been well vetted and are accurate. The net present value is about $90 million over 15 years. That translates to a cost of about 30 cents a month to the average residential customer. Senator Cegavske earlier in the hearing mentioned that it ramps up to about 75 cents in the later years, that is because in the last year between 2019 and 2020, we had a substantial jump from 0.6 percent to 1 percent. Before that, we see a very gradual increase of about 0.02 percent per year.

Studies have shown what consumers are willing to pay in Nevada for renewable energy. For all the associated benefits it brings to the State, a 35-percent rate

increase is modest and doable. I have met with all of you individually to go over the process, and I am happy to go over any of our assumptions or walk you through any of the modeling we have done. This is not a science, so you can change any of these assumptions. We would be happy to work with any of you who are interested in changing the ramp-up levels, the rebate levels, etc.

CHAIR SCHNEIDER:
Do your assumptions contain the cost of carbons?

MS. CARMICHAEL:
No, this is just modeling the marginal cost of bringing online 160 MW. This is not just a cost comparison of what rate increases would be under a business-as-usual scenario. The federal government is debating a carbon policy. They are going to mark up this week in both the U.S. Senate and the House of Representatives to pass substantial carbon legislation which will increase the cost of fossil fuels over the next ten years.

SENATOR CARLTON:
What size unit is needed for a house that is from 1,500 to 2,000 square feet?

MS. CARMICHAEL:
It depends on how much of your load you want to meet with solar for a nominal-sized house. That is usually a two to five kilowatt (kW) system.

SENATOR CARLTON:
What would the rebates be on a 2 kW system?

MS. CARMICHAEL:
You have a 30-percent investment tax credit.

SENATOR CARLTON:
Is that on the federal tax?

MS. CARMICHAEL:
Yes, that is on the federal tax. Under the current Solar Generation program, it is $2.10 a watt, which is what we used for our modeling.

SENATOR CARLTON:
Is that the discount and the cost of the electricity?

MS. CARMICHAEL:
That is the cost of installing it.

SENATOR CARLTON:
Is the rebate that comes from the power companies the $2.10?

MS. CARMICHAEL:
Yes, that is the Solar Generation's rebate program.

SENATOR CARLTON:
In a previous Committee meeting, we had a discussion of $7,000, depending upon the unit. How much would a system like that lower the monthly electric bill for that particular residence?

MS. CARMICHAEL:
It depends on the size of the system and how much energy is currently being used in the house.

SENATOR CARLTON:
Do you have an example of how this would impact an average household?

MS. CARMICHAEL:
Do you mean going solar in Nevada?

SENATOR CARLTON:
Yes.

MS. CARMICHAEL:
I do not have any specific examples with me. I am sure we can provide some.

SENATOR CARLTON:
It makes it easier to understand if we have the numbers to show what the costs would be for a family with the rebates. How much does it cost to put a unit on a roof?

MS. CARMICHAEL:
It depends on the size of the system. It could cost from $20,000 to $40,000 or less.

SENATOR CARLTON:
On a $30,000 unit, the credit from the federal government would be $9,000. The $9,000 is a credit on income tax. Is 35 cents per month the average cost for the residential user?

MS. CARMICHAEL:
Yes. This is just a marginal increase. This is not the cost of running the Solar Generation's program.

SENATOR CARLTON:
This fee is in addition to the monthly bill. How many electric bills go out to homes in southern Nevada per month? Is it a million homes or a million and a half homes? I did not understand the capacity-rated average installed cost on page 4, of your graph on the first part of your handout Exhibit R. What does that mean?

MS. CARMICHAEL:
It is the cost per watt for installing solar.

SENATOR CARLTON:
Is the price per watt the installation cost?

MS. CARMICHAEL:
Yes.

SENATOR CARLTON:
It is confusing.

MS. CARMICHAEL:
I got this from the Lawrence Berkley National Lab and I could not alter the graph on page 4 Exhibit R. They tend to use long explanations.

SENATOR CARLTON:
According to the chart, the installation per watt is a little over $10, then it went up to $11, but in 2000 it dropped, and remained at that level on page 4, Exhibit R.

MS. CARMICHAEL:
The solar industry of tomorrow is not the industry of yesterday or today. We are going to see a dramatic decline in prices because we have never had the supply of silicon on line that we now have. The modular price Julia Curtis mentioned was just half the price of solar that is going to dramatically decrease in the next couple of years.

MS. CURTIS:
The solar panel-learning curve is such that the panel prices have dropped this year, 2009. We are looking at more price decreases in the coming years. The cost of solar is half the cost of equipment and half the cost of local costs. The cost of equipment is slowly going down.

SENATOR CARLTON:
It seems contradictory to me that the average residential cost is less than the commercial or industrial cost. Doing individual houses would seem to be more expensive. How do the prices per month end up varying between residential and industrial?

MS. CARMICHAEL:
The industrial bills are higher because they use more energy. When we modeled this, we looked at a larger percentage of the projects from smaller to larger commercial projects. Those are the cheaper projects. The point of the distributive generation carve out is to phase out and leave in place a healthy self-sustaining market. We focused on the cheaper projects because solar is more cost-effective and affordable for everyone. After the first ten years, those residential and commercial property owners who are willing to invest the majority of their money in the system will be followed by the State that will supply the additional marginal cost. Over time, as the program phases out and competition increases among local installers, the price of installing solar will come down. The market will then function on its own. It is a temporary policy.

MS. CURTIS:
The modeling reviews are 70-percent commercial application and 30-percent residential application. The federal investment-tax credit which goes to residential has now been changed. It is a cash grant providing more liquidity to the commercial installations. We have seen a tremendous standstill in the commercial sector. The federal government is trying to loosen up capital to make sure those projects in the pipeline are actually able to go forward and fund

what they originally planned to do. This distributed generation carve out allows the earlier adopters to bring the cost down for everyone. We would like to see the most cost-effective solar for everyone. The cost of solar is still more expensive than the average homeowner in Nevada can afford. The early adopters will bring the price down for future years and for future installations on homes.

CHAIR SCHNEIDER:
On page 46, line 22, paragraph (a) of the mock-up, Exhibit G: '"Distributed generation system" means a facility or system for the generation of electricity that is in close proximity to the place where the electricity is consumed.' Did you want to put in line 23, "the generation of renewable electricity?" Or could it mean a coal plant?

MS. MCKINNEY-JAMES:
We have offered another definition that we would like to bring to the Committee.

MS. CURTIS:
We would like to strike the definition and replace it with:

> Distributed generation shall mean electricity generated from renewable energy as defined in HNR [sic] 704.7811, and sited at the customer premise, and connected on the customer side of the electricity meter providing electric energy primarily to offset customer load on the site with periodic excess generation exported to the grid under applicable net-metering tariffs.

There is a lot of debate in many states on how to define distributed generation. We looked at various states and decided it should be on the customer side of the meter.

CHAIR SCHNEIDER:
That would make it the customer's responsibility.

MS. CURTIS:
It would mean the customer would own the system.

SENATOR TOWNSEND:
The average person does not understand what all of this means. We do not have a cost for an average PV installation. Can you give us the cost in a range?

MS. CARMICHAEL:
A 6-kW system on a residential home would cost $40,000. You take $10,500 off.

SENATOR TOWNSEND:
That is different from what you already testified. You said the average house is two to five kW. Now you are saying six kW.

MS. CARMICHAEL:
I was just handed this piece of paper with specific information.

SENATOR TOWNSEND:
I am just trying to clarify for anyone on the Internet. We want to compare apples to apples so everyone can understand the issues. We are trying to figure out the cost of the carve out. If the average home is two to five kW, what is the average PV installation going to cost?

MS. CARMICHAEL:
A five kW system on a larger home, the net cost after the rebate and the federal government's...

SENATOR TOWNSEND:
Give me the cost, then give me the net cost.

MS. CARMICHAEL:
It would cost $40,000.

SENATOR TOWNSEND:
The net cost is $40,000.

MS. CARMICHAEL:
Under the current Solar Generation's program, the $2.10 per watt rebate would equal a $10,500 deduction off the cost of that system.

SENATOR TOWNSEND:
Is that a check that would come from NV Energy to the consumer for purchasing one of these units?

MS. CARMICHAEL:
Correct, the consumer would receive the check after completing the application process. At the end of the year, the federal government gives a tax credit for $12,000 which is 30 percent of the system's cost.

SENATOR TOWNSEND:
That is a tax credit, not cash.

MS. CARMICHAEL:
Correct, unless it is for commercial property.

SENATOR TOWNSEND:
I am only worried about the average consumer.

MS. CARMICHAEL:
That system ends up costing $17,500, the net cost of the system after the rebate and tax credit.

SENATOR TOWNSEND:
That is not net. Net is for what the check was written. At the end of the year, there is a credit on the tax return. That has to do with other things in your tax return.

MS. CARMICHAEL:
The tax credit is on your income.

SENATOR TOWNSEND:
The point I am trying to make is, it sounds fine to the average consumer who is all excited, wanting to do the right thing for the environment, until he asks, "It is going to cost me how much?"

MS. CARMICHAEL:
The Solar Generation is consistently sold out.

SENATOR TOWNSEND:
That is not the question. Let us assume, based on the bill, you take the cap off. That is not what I am arguing about. The average person needs to know, when we pass a law, what it means to him. It means a $40,000 general area of cost for a 5 kW thing on your house. The check they have to take out of their account is going to be $29,500. Does the research show that the average person, in a 2,200 square-foot home with an average income, is likely to write a check for $29,500 to do this? Do you have that in your research?

MS. CARMICHAEL:
I do not have any studies showing the percentage of Nevadans who are looking to go solar at this time.

SENATOR TOWNSEND:
I would think all Nevadans would like to go solar, if they could afford it.

MS. CARMICHAEL:
We have given the cost of solar today.

SENATOR TOWNSEND:
I believe in geographic pricing so that one group is not subsidizing another group, as you see here. That is my concern. It is going to take people with means to be able to write a check for $29,500, but everyone's power bill will go up. That means the lower income person will be subsidizing people with means. Are you talking about adding 160 MW?

MS. CARMICHAEL:
Yes, over 15 years.

SENATOR TOWNSEND:
Is that 10 MW or 12 MW per year?

MS. CARMICHAEL:
No, it is only the first couple of years it would be three MW or four MW.

SENATOR TOWNSEND:
To how many homes does that equate?

MS. CARMICHAEL:
It depends on the percentage of commercial versus residential and the size of the systems. We modeled that it would be 70-percent commercial projects.

SENATOR TOWNSEND:
Are the vast majority of homes now going to receive an actual federal stipend?

MS. CARMICHAEL:
Any commercial project can apply for an upfront grant since the tax equity problem. Their income taxes have gone down.

SENATOR TOWNSEND:
Whose income taxes have gone down?

MS. CARMICHAEL:
The income tax on commercial businesses across the county has gone down.

MS. CURTIS:
The revenue on commercial businesses has gone down; we do not know if the taxes have gone down also.

SENATOR TOWNSEND:
It is important to understand what you are attempting to do. I do not disagree with the concept of the majority leader trying to nudge this market into existence. There should be a debate on whether to lift the cap and find out what the market is. If all the rich people in southern Nevada want to buy these units, I am thrilled. But I do not think they should be subsidized by persons of modest means. There is a lot of great stuff in this bill. I will get together with the majority leader to see what we can do with large-scale stuff. I am having a hard time with this amendment right now with regard to mandating a carve out.

CHAIR SCHNEIDER:
With solar on some houses, you should be able to shave 160 MW off the peak because it is peak savings. That savings would be shared by all the ratepayers because the PV works during the peak time, according to the PUC. Would you bring that information back? Can you tell us about the people who are leasing the systems? Is it true that leasing companies come out to the house to install the system and handle all the rebates for a couple of thousand dollars?

MS. CARMICHAEL:
That is correct. There is an amendment offered by the City of Henderson to do municipal tax assessment-based financing which is an innovative financing program that residential and small commercial customers will be able to avail themselves of, if it passes Exhibit I. If that happens, it would spread out the cost of solar.

CHAIR SCHNEIDER:
That is like the Berkley model Exhibit R, page 4.

SENATOR TOWNSEND:
When prices of automobiles increased, the finance community came up with the concept of leasing. It allowed more people to buy more expensive cars. What you said about leasing solar units has value for the average person. That will keep the cost down for everyone, and I hope we can encourage it. Somebody else owns the system, somebody else puts it on the roof and somebody else maintains it.

CHAIR SCHNEIDER:
It is like leasing a copy machine that is maintained, and if it breaks down, they replace it or repair it. It is the same thing, and it will decrease your electric bill.

SENATOR CEGAVSKE:
Do you have any studies showing how long it takes from the time you pay off the system to when you start getting a return on the investment?

MS. CURTIS:
The minute you turn on the PV, you realize the savings. Depending on inflation and how quickly the rate increases, you will see the benefit immediately. We have studies on it.

CHAIR SCHNEIDER:
Give the studies to the Committee.

SENATOR CEGAVSKE:
Why would the utility company owe a rebate if a customer owns their own system? Where is the $10,500 discount coming from and why?

MS. MCKINNEY-JAMES:
The rebate program, which is the Solar Generation's program, is funded through the mill assessment that comes to the PUCN, so it comes from the ratepayers. This is a program that has been established and was in place for five years through this body. In exchange for the rebate, the utility receives the credits that allow them to comply with the RPS. There is an exchange of economic benefit between the entity that owns and has installed the system with the utility company. That is the way the program is currently structured.

SENATOR CEGAVSKE:
Does the rebate go to the person that comes and puts it on the house?

MS. MCKINNEY-JAMES:
The rebate goes to the homeowner, the installer.

SENATOR CEGAVSKE:
Does the homeowner turn around and give it to the installer?

MS. MCKINNEY-JAMES:
No. The rebate goes to the owner, and the credits go to the utility.

SENATOR CEGAVSKE:
Do the credits go to NV Energy?

MS. MCKINNEY-JAMES:
Yes.

SENATOR CEGAVSKE:
My colleagues and I are concerned about everyone having to pay for the ones that can afford to buy solar.

MS. MCKINNEY-JAMES:
I will meet with you. Representatives from the PUCN should speak on this issue because these are complex realities associated with how rates are allocated between classes of customers. One of the major issues from the industrial customers was their view that they were subsidizing residential customers. Part of the regulatory process is to try to bring some balance and some equity to all classes of customers. It is difficult to eliminate what is viewed as subsidization.

It is a part of how we do rate design. I encourage you to speak to the PUCN in order to clarify how issues are balanced.

SENATOR TOWNSEND:
I do not think you want to bring up rate-design issues.

JOHN WARWICK PH.D., P.E. (Executive Vice President, Research, Division of Hydrologic Sciences, Desert Research Institute):
The Desert Research Institute (DRI) supports S.B. 358 and amendment 4669 as it attempts to reach out to engage Nevada's research universities which are the University of Nevada, Reno (UNR), UNLV and DRI. On behalf of the DRI, I would like to thank Senator Townsend and U. S. Senator Harry Reid for their leadership in formulating an idea and helping to acquire some federal support to create the Nevada Renewable Energy Consortium (NREC) which is really a collaboration between the two Nevada research universities of UNR, UNLV and the DRI. The purpose of NREC is to help Nevada achieve its vision of energy self-sufficiency through efforts involving research, development and demonstration, technology deployment, business development and education and training in the field of renewable energy. I call your attention to page 7, lines 4 to 19, where the expertise of DRI is identified with respect to geothermal research Exhibit G. That language probably came from NRS 701.180 which articulates DRI to have a mission with respect to geothermal. In reference to NREC, DRI does not do geothermal research; UNR does geothermal research. Paragraph (b) refers to the Nevada System of Higher Education, of which DRI is a part. Consider simplifying that section, in light of NREC, and reference this consortium which is the NREC consisting of UNR, UNLV and DRI. Put the various aspects you want us to do under a NREC heading which will emphasize the collaborative nature of what we are trying to attempt through the NREC, rather than attempting to individually assign research to one unit of higher education.

E. MANOS MARAGAKIS (Dean, College of Engineering, Scrugham Engineering & Mines, University of Nevada, Reno):
I have distributed my remarks to you (Exhibit S). We support the amendment to S.B. 358. It provides a framework so the State can take advantage of the benefits of renewable energy. This bill provides a link between the Nevada System of Higher Education institutions and renewable energy in Nevada. The renewable energy industries are our partners, and this bill provides the strategy and framework to strengthen this partnership. UNR, UNLV and DRI are working

collaboratively as a consortium on renewable energy. We are also working with the community colleges on training and certification programs. We want to preserve the function of NREC. I would like to draw your attention to section 19.55, on page 58. We would like to see the establishment of the Office of Energy Technology with the Nevada System of Higher Education be removed. We would like to preserve the function of NREC, which will be enhanced. We would like to see the bill reinforce the fact that the State will invest in kindergarten through 12th grade renewable-energy education as well as higher education and research efforts related to renewable energy. These efforts will contribute to Nevada as well as to the Nation and make Nevada notable as a pioneer in renewable energy and implementation.

S. KENT HOEKMAN (Research Professor, Desert Research Institute):
I have been involved for 30 years in research and development, energy technologies and environmental impacts of energy systems. My expertise has to do with fuels. I was interested in testimonies on biomass and biofuels and I would encourage the Committee to enhance the role of biomass and biofuels in this bill. Over the last couple of years at DRI, I have been organizing, coordinating and structuring all of our renewable energy activities into one focal area that we call the Renewable Energy Center at DRI. Some of these centers are forming at UNR and UNLV. We believe this bill is one more mechanism to help the collaborative activities between these centers, called NREC.

BOB GOFF (Vice Chair, Nevada Institute for Renewable Energy Commercialization):
My remarks address section 19.55, subsection 2, paragraph (b) Exhibit G. The Nevada Institute for Renewable Energy Commercialization (NIREC) three years ago became a 501c(3) public/private partnership for the purpose of transforming renewable-energy science in our three research universities into viable business solutions. I suggest the wording be changed from: “Establish a mechanism for transferring technology to the marketplace, ...” to one that says, in working with NIREC, we implement a mechanism for transferring technology to the marketplace. There is already a board of trustees in place for NIREC that includes the presidents of Nevada’s three research institutions, UNR, UNLV and DRI, who provide the oversight and the accountability for the results. We have a technology and commercialization advisory board consisting of leading experts from academia, industry and government that conduct peer review selection of the best candidates out of the research institutions for commercialization in renewable energy. We have entrepreneurs and residents consisting of highly

experienced business executives who work alongside research teams to help guide the process so the research scientists can advance their science in a direction that will result in successful commercialization entities. We have established an arms-length relationship with corporations that capitalize interest in licensing this technology and fund start-up companies, thus providing a critical pathway for successful commercialization. The protection of the intellectual property of the research partners is included. These are two pragmatic reasons why I am suggesting that this wording be changed. From a timing viewpoint, there are tremendous amounts of opportunities relating to renewable-energy science commercialization that comes out of the stimulus package, and some have deadlines on them in the next couple of months. Working alongside the research partners, NIREC can improve the probability of Nevada bringing some of those successes into place. The United States Energy, Research and Development Administration has indicated business and technology accelerators are some of the quickest ways for universities to build high-quality jobs because it leverages all the activities in the universities and it provides spin-out companies and other sources for job creation. For those reasons and because NIREC is an accelerator, I am suggesting NIREC be included in both a long term and a quickening ability in the implementation of what is included in this paragraph.

SENATOR TOWNSEND:
There is language drafted for the Committee in regards to NIREC and how it might fit into S.B. 358 Exhibit J. We want to accommodate the institutions and their testimonies if the Committee wants to include it.

RENNY ASHLEMAN (City of Henderson):
I am representing the City of Henderson. You have an amendment that would permit the City of Henderson to put an assessment district together to assist in financing small-scale commercial and residential projects Exhibit I. The Committee received our testimony favorably last time. It was in error that it was not picked up in the drafting and put into this amendment.

SENATOR CEGAVSKE:
Why just Henderson? If it benefits one city, why not all the cities?

MR. ASHLEMAN:
It is not specific to Henderson. It is for all the municipalities. It alters the statute that permits local improvement districts. Some of the other cities have thanked us for bringing it forward.

SENATOR HORSFORD:
I would encourage us to remain open-minded based on what works best on going forward.

VICE CHAIR CARLTON:
There being no further business, the Senate Committee on Energy, Infrastructure and Transportation is adjourned at 11:14 a.m.

RESPECTFULLY SUBMITTED:

Sandra Hudgens,
Committee Secretary

APPROVED BY:

Senator Michael A. Schneider, Chair

DATE: