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UNLV Clean Energy Forum 2010 summary

University of Nevada, Las Vegas

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Meeting Summary
University of Nevada, Las Vegas - Clean Energy Forum
A Game Changing Agenda for a Sustainable Energy Future
September 8, 2010

OVERVIEW

This event had an overall purpose to explore and focus on the issues related to deployment of clean energy. The makeup of the panels reflects the diverse group of people that is needed to address our clean energy future. As Rose McKinney James noted during the Panel discussion, “Game On” and there is a need to develop a game-changing plan for Southern Nevada in how it moves forward with deployment of renewable energies. UNLV President Neal Smatresk challenged the group to come out of this meeting with the beginning of how a “plan” will be developed for the region. Over 250 people attended this forum and this followed the excitement generated from the September 7, 2010 Clean Energy Summit sponsored by Senator Reid, Center for American Progress, and UNLV. Following is a summary of the Forum and the major outcomes. This documents summarizes the conversation and does not reflect the individual views of the authors or any single panelists.



OPENING ADDRESS: WILLIAM ANTHOLIS

William Antholis, Managing Director of the Brookings Institution, provided the opening address that focused on the three guideposts that frame the discussion of climate change and energy security. These are ethical, political, and heuristic. The ethical issue is that we are the first civilization to alter the climate, and we may be the last to be able to do something about it. The political issues involve huge differences between the two major political parties. Transforming our energy future and addressing climate change are two of the most complex issues politicians have faced. The heuristic issue is that uncertainty needs to be embraced whether that is scientific, political, or economic.



PANEL 1: NATIONAL AND STATE POLICY

Speakers

Moderator:

- Rose McKinney James, Energy Works Consulting LLC

Panelists:

- Stuart Hemphill, Southern California Edison
- Mark Muro, Metropolitan Policy Program, Brookings Institution
- Tony Sanchez, NV Energy
- Jim Thomson, RAND Corporation
- Rebecca Wagner, Nevada Public Utilities Commission

Summary of Discussion

This panel focused on three important issues related to national and state policies:

(1) the price of renewable energy; (2) the policy and regulatory drivers; and (3) transmission as an important link. **The price of renewable energy** is still the

major driver for many and a challenge is the cost comparison with fossil fuels. An issue with fossil fuels is the market uncertainties that can change very quickly. For instance the price of oil was close to \$100 a barrel in 2008 and it is now (in 2010) approximately \$50 a barrel. Renewable energy has much more stable prices; however, it has experienced regulatory uncertainty for items such as incentives and tax credits. This points to the need for renewable energy to be evaluated not just on cost alone. The longer-term externalities need to be included as part of the decision to invest in renewable energy. In addition, there is a need to look at renewable energy as a commodity and the ability to export to other states.



The policy and regulatory drivers are part of the huge and complex problem. There are some interesting parallels in the way education, health care, and infrastructure challenges are being addressed. For instance, a National Infrastructure Reinvestment Bank has been proposed that leverages public and private investments in transportation systems, water systems, and possibly energy systems. As noted above, renewable energy does suffer from the regulatory uncertainty and there is a need to establish long-term policies such as National Renewable Portfolio Standards (RPS). Currently, 24 states have established RPS policies and this has created problems such as the definition of renewable energy (e.g., Is energy efficiency considered as part of RPS?) and parochialism (i.e., interest in keeping energy in state). A challenge for states is working within the current regulations and still having the ability to broaden the markets.

The transmission of renewable energy from the generation source to the customer base is still a challenge for many regions. The investment in transmission lines can create opportunities for moving renewable energy from remote locations to urban centers, and

also permits energy providers with more flexibility in managing the systems. For instance, NV Energy will have a 235-mile transmission line that will connect northern and southern Nevada. In the north, there is more energy generated from geothermal than is needed for that region. The transmission line will allow resources to move from the north to south and the major population base of Southern Nevada. Transmission is an important interstate issue and a good parallel is natural gas lines that cross through state boundaries. In the long-term, there is a need to develop a national superhighway for transmission of renewable energy. Construction of any transmission lines (and renewable energy) projects will have to be done in a way that the impact to the surrounding environment is minimal and well understood.



Recommendations

- Innovation needs to be part of the solution as we do not have the technology base to meet future demands and for scaling up renewable energy.
- There is a need to increase the ability of states to manage renewable energy as a commodity and have the ability to export to other states.
- A National Renewable Portfolio Standard should be established that is consistent with the efforts of half the states, and creates stable long-term policies that will assist in the investment of renewable energy.
- As new renewable energy projects are developed, the transmission issue has to be addressed at the same time. This includes transmission that facilitates intrastate and interstate movement of energy, while carefully considering the surrounding natural and built environment.

PANEL 2: THE PRESENT AND FUTURE MARKETS OF RENEWABLE FINANCING

Speakers

Moderator:

- Robert Lind, Managing Director, Berkshire Bridge Capital

Panelists:

- Gary Hecimovich, Partner, Deloitte Tax LLP
- Richard Kauffman, Chairman, Levi Strauss; Former CEO, Goode Energies
- Elon Musk, CEO Tesla Motors; Chairman, SolarCity; CEO, SpaceX
- Parker Weill, Managing Director, BankAmerica Merrill Lynch

Summary of Discussions

This panel focused on issues that preclude or make difficult the financing of Clean Energy Projects throughout all phases of a business' lifecycle. The financing types included venture funding, project financing, private equity financing and the public markets (debt & equity).

There was general agreement that a significant issue which businesses encounter in financing electric generation has to do with changing rules and the lack of a cohesive energy policy. Most electric generation sites (solar, wind, hydrocarbon or nuclear) have, or expect to have, long lives and the costs to build such facilities are planned to be amortized over the life of the facilities along with the operating expenses. These facilities require significant “upfront” capital investment and the return on investment is projected against the long term plans. When either expenses or income are “at risk,” the cost of financing long term projects with that defined “risk” increases until the project becomes “unfinanceable.”



Large energy production facilities financed in the bond market have the ability to match costs and revenue with the tenor of the notes. With the long lifecycle of the typical large energy generation facility, the financing should be aligned with the life expectancy of the generation and the associated cash flow. Banks and other lenders that use customer deposits (short term) to fund loans have a portfolio mismatch of assets to liabilities. If the generation facility is expected to have a 15, 20 or 30 year life, then the bond market matches the appropriate tenor of the notes to the investors and to the cash flow associated with the production. The bond market would focus on “proven” technology (lower risk facilities) and not on innovative/unproven technology (venture capital investing). The bond market could be aligned with public policy (as with American Recovery & Reinvestment Act of 2009) to incentivize investors. Specific energy projects meeting “national good” standards could receive tax credits whereby the bonds would carry tax exemptions. Such actions (policies) would allow the projects to “compete for world” capital in a more competitive (tax advantaged) manner.

A cautionary note concerning the bond market: the “hurdle” is high as to the risk disclosure requirements for individual investors. Tax incentives given to high income earners and/or high net worth individuals are under pressure following the failure of the auction rate preferred market and municipal markets. Also, the political atmosphere may not be conducive to tax incentives for the wealthy. So, the depth of the market has not been determined and rating agencies and investment banks may be slow to rate/offer project bonds to individuals.

The point was made that the clean energy financings will compete for capital in a global market. The greatest market growth may be in the international markets (China, India, Brazil, etc.) where country risk may also be priced into the financing costs. For individual home projects, solar and wind generation favor the establishment of leasing companies. A leasing company currently has the advantage of negotiating power purchase agreements with the utility. Then, by owning, installing, maintaining and leasing the required equipment to a homeowner, the company can take the tax credits (investment tax

credit), financing costs and depreciation and write the expenses off against income. The homeowner cannot get similar treatment.

Recognizing the importance of tax policy in the deployment of clean energy, a comment was made in support of the carbon tax. The discussion was short lived and respectful and led into a more general discussion of “who will pay for tax incentives” and “what is best?” The consensus was that, while there are many options, some policy that removed doubt would help the financial markets for clean energy.

Recommendations:

- Establish an energy policy that recognizes the significant capital requirement (“upfront” expense) and the long-lived assets necessary for the generation of clean energy (tax incentives serve a policy purpose). Tax incentives and loan guarantees would be considered a part of the policy that permits clean energy projects to more competitively compete for global capital.
- Examine ways to minimize the “risk” component of financing costs associated with clean energy generation.
- Encourage distributed generation (rooftops/backyard windmills) individual homeowners should receive comparable incentives to those provided to leasing companies.
- An energy policy might recognize the advantage of removing “inflation” from the future cost of generation and be highlighted to state and national regulatory bodies. Once a solar, wind or nuclear energy facility is built (the fixed costs), the inflationary risk is removed as no new “feedstock” is required. The utility commissions can take a longer perspective in calculating the “return on invested capital” with regard to clean energy in utility companies’ rate case models.
- Energy policy needs to streamline the “concept” to “deployment” process. The “uncertainty” cost of getting approvals, permits and licenses are making a number of projects “unfinanceable.” The most costly capital is the riskiest capital. With an uncertain process and long, if ever, “time to construction,” many potential clean energy project never get financing.

LUNCHEON SPEAKER: JOHN WELLINGHOFF

John Wellinchoff, Chariman of the Federal Energy Regulatory Commission focused his presentation on “smart” technologies that will help meet future energy demand needs. His presentation started with an overall picture of energy use in the U.S. by sector and sources. This highlights that coal, natural gas, and petroleum are meeting the majority of our needs. The traditional drivers for making policy decisions at the national to local scale involve reliability, security, environmental, and economics. In “smart” systems, the drivers are reliability, economics, security, and sustainability. Smart solutions enable residential consumers to make informed decisions. However, there is a bigger need for smart response



for commercial and industrial sites that account for approximately 2/3 of total energy use. Smart systems have a two-way flow of information and power. Finally, electric vehicles are going to be a major part of the transportation sector and this will impact the need for clean energy and grid integration.

PANEL 3: CURRENTLY OFF THE SHELF AVAILABLE TECHNOLOGY

Moderator:

- Oliver Hemmers, Harry Reid Center for Environmental Studies

Panelists:

- Bob Boehm, UNLV Center for Energy Research
- Phil Cirone, Ameresco
- Anthony Hills, Southwest Gas Corporation
- John Stafford, Sensus USA

Summary of Discussions

This panel focused on the technologies that are currently available in addition to the innovation that is needed to make renewable energy competitive. The innovation noted in the session focused on system technology (including demand side technology), solar technology, and finance models.

The system technologies such as wireless devices that communicate back to system operators are being used extensively by utilities for improved demand side management. These technologies are constantly being tested and improved to ensure complete confidentiality for the consumer and high performance for the utilities. Many of these technologies are ones that have been tested before for water and gas utilities. Industry is also starting to offer performance-based contracts where a certain energy savings is guaranteed and the company pays for the capital improvements. An example of this was a \$25 million retrofit of City of Henderson streetlights. Another innovation in system technology is with gas-heat pumps that are proving to be energy efficient. This technology is used in buildings for heating and cooling with an efficient use of water.



In **solar technologies**, the future looks promising as the price of keeps coming down. This includes thin film and the more efficient multi-junction cells. For some applications, the main advantage of solar is for meeting peaking demands. The National Renewable Energy Laboratory has found that two states have grid parity with solar photovoltaics, and in three years 48 states will have that grid parity. Concentrating solar power (CSP) has great potential for large-scale projects and provides storage as part of the system.

The panelists were asked to comment on the future of solar from their industry perspective. The main points that came out of this discussion included:

- Electric vehicles have a lot of potential for integration into smart systems. The consumer is an important part of making the smart grid work and industry is counting on industry participating.
- The most immediate gains are going to be found in energy efficiency, demand response, and education along with life style change for consumers.
- The use of natural gas at the point of use makes sense and provides a cost effective solution. Future efforts should focus on education and knowledge of how energy is produced transmitted and consumed.
- The two big game changers for the energy future will be the price of PV and the time of use rates imposed by the utilities.

PANEL 4: ECONOMICAL AND CLEAN NUCLEAR POWER

Moderator:

- Paul Seidler, Harry Reid Center for Environmental Studies

Panelists:

- Charles Ebinger, Brookings Institution
- James Conca, New Mexico State University
- Angelina Howard, Howard Johnson Associates

Summary of Discussions

This panel focused on the role of nuclear power in meeting our future energy demands. The panel discussed various economical and technological issues related to nuclear. These issues are related to the basics of nuclear, policy, and deployment.

An important **point of information of nuclear** is that it can be used for weapons or energy generation. The focus for this panel was the issue of nuclear used for energy. From the standpoint of cost alone, the cost of nuclear is comparable with coal and hydropower. An advantage is that nuclear can be run approximately 92% of the time which is the highest of the energy technologies and serves as a good base load. There is a lot of potential for innovation in nuclear and bringing down the costs with new technologies. China is moving fast with the development of nuclear plants with over 400 new plants proposed by 2050.

An important **policy related issue** is the bond ratings that a utility might have if they are building nuclear facilities. The utility must carefully evaluate their investment in nuclear and how this might impact their bond rating if things go wrong with a plant. At an international scale, the development of nuclear energy needs to be carefully watched for potential use in weapon development. This highlights the need for the U.S. to maintain leadership in commercial nuclear to limit the misuse of it internationally.

Deployment related issues include the energy-water nexus linkage in the use of nuclear to be co-located with desalination plants that require large amounts of power. As the energy future is evaluated, there is a need to include all forms as part of the portfolio. This will also help with conserving other fossil fuels for other uses and other generations.

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