

In addition to the comments reflected in the minutes of the October 9, 2012 meeting of the New Energy Industry Task Force Subcommittee on Business Case, the following written comments were added to the record:

COMMENTS SUBMITTED BY JOHN CANDELARIA, ASPEN ENVIRONMENTAL GROUP

Report Attributes:

- Good summary regarding NV and CA renewable energy supply and demand situation;
- Good start on comparing the delivery cost of new NV renewable energy to a CA load center to the delivery cost of new CA renewable energy to a CA load center;
- Economic Development benefits (seems useful – for others to decide)
- Jobs, state and local tax revenues (seems useful - for others to decide)
- Policy considerations in Section 7 is useful.

Concerns or Deficiencies:

- Report does not address mutual benefits to CA and NV of sharing either renewable resources or conventional resources, including ancillary services.
- Synapse Business case is limited to an incomplete assessment of whether NV RE can be developed and delivered to CA load centers at a lower price that CA RE can be developed and delivered to CA loads centers. Specifically:
 - Report does not provide a complete analysis or an “apples to apples” comparison of the delivered cost of NV RE resources to CA load centers to delivered cost of CA RE resources to CA load centers.
 - The delivery point in the Synapse analysis is to the border of a CA balancing authority, not a load center;
 - The report does not include any discussion of the available transmission capacity from the delivery point to CA Load Centers and whether new transmission would be required to make the deliveries;
 - The report does not include an estimate of the cost to develop transmission and RE generation in CA vs Nevada;
 - Report does not include projections for the cost of developing and delivering renewable energy in CA in the 2020 time frame.
 - The report addresses only limited options regarding who would build, own or control transmission in Nevada. The report assumed NVE would build transmission and there would be a transmission charge for using the NVE’s transmission system. It did not, for example, assume that transmission developed in NV for delivery of RE to CA could be turned over to CAISO and avoid NVE transmission rates, or that a CA LSE would build the transmission.

- Agree with Dan Jacobson that the report would be confusing to policy makers in its given state and with the deficiencies noted.
- The Ratepayer benefits/RE development for export discussion is confusing. A better explanation of the available opportunities to hold ratepayers harmless should have been included. As it stands, there is no distinction between NV benefits and ratepayer benefits and one could conclude that if ratepayers don't benefit then transmission development for export is not worth pursuing. Nevada could benefit by RE development and export even if ratepayers don't – this assumes that ratepayers assume no risk or cost and essentially complies with the premise that he who benefits, pays.

Specific Comments on the Report

Development and Financing for Generation and Transmission

The “2. Public Sector” section is not clear and seems biased.

- It says “any regional LSE could develop transmission within or between their territory and Nevada, and benefit from utility financing requirements ... This section should explain whether development could include transmission into Nevada?”
- In paragraph two in this section, it says, “Conceivably, NV energy could develop transmission projects as a utility (at ratepayer risk and expense, with any benefits in excess of their allowed return on equity accruing to ratepayers?” What excess benefits are being referred to here? It also says, “For this reason enabling legislation would probably be required before the commission could allow cost recovery for such projects.” Would probably be required??? This comment needs to be explained further.
This whole paragraph has a distinct local bias. If Synapse is going to offer an example like this (i.e., ratepayers assume risk and cost and CA customers benefit), then it should have provided examples of where this practice has occurred in other jurisdictions.
- Also need to add a sentence or two in this section that is similar to last sentence of first paragraph 3. Hybrid Options: Because there are benefits and risk a decision to move ahead with a utility finance option will have to be carefully examined against risk, benefits and likely effectiveness.

Regarding the “3. Hybrid Options: section:

- Probably need to include a summary of the provisions in the CAISO OATT addressing transmission build out to remote areas. LSEs may build to Nevada and it will not be necessary for the Nevada transmission owners to join CAISO.

C. Transmission Costs

- Transmission cost assumptions for short-term scenarios are not provided.
- Transmission cost for long-term scenarios were taken from NEAC report which relied upon RETAAC phase II transmission cost estimates (circa 2009) and include heavy contingencies

- No Transmission costs were provided for CA transmission projects as a comparison (transmission costs in CA are likely much higher than in NV)
 - See Eldorado/Ivanpah, \$450 M, 36 Mile double circuit 230 kV and substation work
 - Sunrise Powerlink, \$1.9B, 117 mi, 500 kV line
 - Devers/Colorado transmission Project, \$697 M, 153 mile
- No information regarding existing or new transmission capacity to get to CA was provided.

D. Renewable Generation Costs

- No new or projected renewable generation costs were provided for CA (Average delivered price from 2003 to 2011 was used).
- No mention of locational cost difference between RE developed in NV vs CA.
- No explanation of how transmission costs were included in average delivered price of RE in CA.

F. Transaction costs between the Nevada and California markets

- Zero hurdle rate value is unrealistic;
- Did not discuss costs between delivery point (border of CA Balancing Area) and receipt point in CA.
- Does not consider dynamic scheduling or AS supplied from CA BA
- Only assumes that new transmission additions become part of the NVE transmission system. What about other options?
- In the last paragraph in this section, why is Synapse discussing ratepayer benefits here and why is it focusing on NVE building everything? Why is Synapse even considering a model where ratepayers pay for the line and NVE is held harmless? Why are they using this model? Where did it get this model?

5. Market Opportunity

- TOD information is interesting but not really sure why this is in the report?
- Synapse did not provide forecast of prices for RE and did not provide RE cost by location (CA or NV)
- Cost derived from study should be considered lowest expected cost of delivering renewable energy to CA load centers.
- Should have compared directly LCOE including RE, T and AS to delivery point to delivered energy price to a CA load center. As it stands now, the report can be somewhat useful in comparing NV developed RE to other out of state developed RE.

6. Economic and Fiscal Impacts

- For others to comment on.

COMMENTS SUBMITTED BY JIM BAAK, VOTE SOLAR:

Jim Baak/Vote Solar

Comments on Synapse “Economic Analysis of Nevada’s Renewable Energy and Transmission Development Scenarios” Report

October 15, 2012

While I believe the report provided by Synapse Energy Economics provides an adequate first cut at an economic evaluation, particularly given the limited amount of time and money available for such an ambitious task, it misses the mark on several points. First and most significantly, the report does not fully address the benefits to both California and Nevada that would be derived from building a trading arrangement for renewable energy. Second, it does not provide a comparison of the relative costs of California and Nevada renewable resources. Third, the capital cost and levelized cost of energy (LCOE) assumptions for solar PV are incorrect and inconsistent with data that will be used in regional transmission planning by the Western Electricity Coordinating Council (WECC). Finally, the report excludes concentrating solar power with thermal energy storage, which has a higher capacity factor and the ability to provide balancing and regulation services for integrating variable PV and wind and may be of significant value to California.

As such, I believe the report is incomplete. While it does provide some valuable information and analysis and may be a starting point for an evaluation, it falls short of being able to adequately inform a decision on the merits of such a trading arrangement between the two states.

Market Opportunity

The report takes a very narrow view of the market opportunity, looking at it from a generic transactional perspective, and only partially at that. It does not compare the relative costs of generation supplied to the California market from both California and Nevada, which is essential for determining the real market potential. Further, the report does not evaluate the potential benefits to California of such an arrangement or the other potential benefits to Nevada beyond direct economic benefit.

On this point, I (and others on the Subcommittee) have been critical of the initial work from Synapse because it did not address the mutually beneficial aspects of the business case. While Synapse did provide some discussion of these issues in the latest draft report, I believe that a true evaluation of market potential is incomplete unless it looks at the costs and benefits to each trading partner. Low cost access to renewable energy is good, but not compelling enough for California to engage in a relationship with Nevada or any other state absent other benefits.

California has expressed interest in developing such an arrangement with Nevada in recognition of the significant economic and environmental benefits and due to several favorable conditions, including existing transmission infrastructure and coordination between the two states, their close proximity, and a good relationship between the governors and energy policy officials of both states. Both states want to build a long-term, sustainable renewable industry, which requires cooperation to build a larger, more accessible market with fewer regulatory, operation and geographic barriers.

To get a sense for the real potential, we must evaluate the costs/benefits for each trading partner. In other words, what's in it for California and how can Nevada benefit from renewable energy delivered from CA? One possible example of this would be for Nevada to take delivery of wind energy generated in the Tehachapi region of California to provide energy to Southern Nevada during the late-evening summer peak. This would help diversify NV's resource portfolio (reducing the dependence on natural gas, the price of which has historically been extremely volatile), provide low-cost wind energy to help meet summer evening peak demands, and provide California with an incentive to do business with NV.

Nevada has a requirement to diversify its generation portfolio, which is currently over 70% reliant upon natural gas. This exposes Nevada ratepayers to considerable risk of supply interruptions and severe price fluctuations associated with natural gas. Given the regulatory risk, costs and uncertainty of carbon emitting resources and nuclear power, renewables offer the lowest risk option as a generation resource, aside from energy efficiency and demand side resources. California has abundant wind energy that could be valuable to Nevada during the summer and which could be delivered via existing transmission. This benefit was not evaluated in the report, however.

The study also downplays the potential for California to increase its RPS beyond 33%, particularly given the state's AB32 greenhouse gas reduction target. For the state to meet its AB32 mandated greenhouse gas reduction target by 2050, it must increase reliance on renewable energy resources and would have to look for additional resources from around the West to minimize costs. Further, the report does not address the potential market opportunities for renewable energy to play a bigger role in California and the West as costs continue to decline, and particularly in light of

troubles at SONGS, California's new OTC retirements, requirements for California utilities to eliminate coal contracts, the very real concern about over-reliance on natural gas for electric generation, California's appetite for exporting renewable energy, the building momentum in support of west-wide market reforms (sub-hourly scheduling, Energy Imbalance Markets, improved forecasting, etc.) that will result in broader regional coordination and reduced costs for ratepayers.

Other factors that should be considered in a complete evaluation of the true market potential for renewable energy and transmission development, and on which the Synapse report is largely silent:

- Potential Value of natural gas exports from Nevada to California to more effectively utilize Nevada's existing gas fleet and for balancing California's increasing reliance on variable renewable resources (or to supply into an EIM).
- Recognizing the trend in the West for more regional planning and coordination and how building this trading arrangement positions Nevada to take advantage of potential renewable growth scenarios.

Cost and Resource Assumptions

The capital cost estimates used in the report for Solar PV are too high and inconsistent with estimates being developed for the Regional Transmission Expansion Planning by WECC. I have included the draft PV capital cost estimates developed for WECC for reference. These costs will form the basis for WECC's 2013 10- and 20-year transmission plans, and will be used by Regional Planning Entities throughout the Western Interconnection to develop regional and interregional transmission plans. While the cost estimates have not been formally adopted by WECC, they are expected to do so by the end of this month.

To summarize, the Synapse report shows capital costs for Solar PV of \$3,621 in 2015. WECC's estimates for fixed solar PV in 2012 (their base year) are \$3,000 and \$3,300 for tracking – both markedly less than the Synapse estimates for 2015 (which is 3 years beyond the WECC base year). WECC's PV capital cost estimates for 2022 of \$2,173 (fixed) and \$2,391 (tracking) are significantly below the \$3,060 estimate provided by Synapse.

WECC hired E3 Consulting to survey existing plant costs and credible publicly available reports and studies to arrive at these numbers. They also vetted the data with industry experts, many of whom believe they are too conservative. Nonetheless, the WECC data provides a baseline for use in transmission planning for the West.

Also, the report implies that solar costs are the same for both California and Nevada, which overlooks the advantages of developing in Nevada, including:

- Faster permitting and construction timeframes for projects developed in Nevada, which reduce uncertainty, positively impacting the ability to finance projects at more favorable terms, and providing a competitive advantage for Nevada-based resources.
- The qualitative advantages of renewable energy from Nevada – solar insolation in Nevada versus second-tier solar project development in California with lower solar insolation.
- Potential reliability benefits to Nevada ratepayers of expanding the transmission grid and closer coordination with California.

Finally, the report does not consider developing concentrating solar power (CSP) projects with thermal energy storage in Nevada. The higher capacity factor and ability to balance variable renewable resources has great value, particularly as California expands its reliance on variable renewable resources and with the potentially significant reduction in baseload resources. As has been experienced in Germany, high amounts of solar PV have the effect of clipping the peak demand and shifting it later in the evening. This makes CSP with storage much more valuable due to its ability to deliver clean energy during the evening hours. CSP also creates more jobs, including operations and maintenance jobs, and greater economic benefits for the state.

COMMENTS SUBMITTED BY DAN JACOBSEN, BCP

BCP Comments on the October 3rd version of the Synapse Report

Some of the Synapse study assumptions and findings are unrealistic or potentially misleading

1. The cost of capital assumption is NV Energy's utility cost of capital – but the law must change to enable this and the report admits that ratepayers would likely not benefit --- and be at significant risk if the new transmission lines are in utility ratebase. All transmission hurdles, including ancillary costs, have also been eliminated. Here is the quote:

Other ancillary services that may be required are not considered here. These include frequency and regulation service (within control area), energy imbalance service, operating reserve service, generation imbalance and loss compensation services. [page 23]

These cost assumptions were made to arrive at “the lowest possible cost of delivering renewable energy from Nevada to California”. This is probably not realistic and will be misleading to Nevada policymakers.

2. The approximation of incremental tax revenue assumes no new abatements. [Page 40] This may not be realistic.
3. For the long term projects, a fair amount of the investment occurs in California. 17% of scenario 4, 54% of scenario 5 and 88% of scenario 6. It is unclear how this investment will be funded. It seems very unlikely that California investment could be funded in NV Energy's ratebase.
4. The report acknowledges that renewable energy from Nevada must be priced within California's willingness to pay but there is no quantification of willingness to pay at specific levels related to the proposed transmission projects. [page 7]
5. The prospects for California to purchase renewable energy from Nevada is described in a way that will be very confusing and potentially misleading to Nevada policymakers. Here is the quote:

Taken at face value, the resources that California LSE's report towards their future compliance, and the prices they indicate they are willing to pay, leave little room for Nevada to serve as a major supplier to that market. However, there are a number of reasons to suspect that an opportunity remains. [Page 28]

After making these statements the report offers hope that: expected in-state renewables will not materialize, expected California pricing will fail, Nevada projects will drive California projects

from the market, California RPS will go up. The report provides no assessment of the likelihood of these events occurring. This approach asks Nevada policymakers to make uninformed decisions based on the likelihood that California plans will fail or that legislative changes will be made.

6. The report assumes that all Nevada renewable energy will be classified as “bucket 1”. This may not be realistic, particularly if NV Energy does not join CA-ISO. [Page 9] The report does not attempt to quantify any difficulty that NV may experience in attempting to sell renewable energy to California – even though California policymakers have asserted that they prefer to generate renewable energy within California – in order to generate California jobs.
7. The report indicates that some Load Serving Entities in California may fund development of renewable projects in Nevada. Here is the statement:

However, it is also possible that California LSE’s may pursue self-build and ownership options to develop renewable energy projects in Nevada, and thus could benefit from lower-cost utility financing. [Page 18]

It doesn’t appear that there is any basis for this statement - and it contradicts statements from California Policy Makers about their goal of generating renewable energy within California.

8. The report suggests that a viable means of financing transmission would be for NV Energy to put the project in ratebase with ratepayers receiving any earnings above NV Energy’s cost of equity. Here is the statement:

Conceivably, NV Energy could develop transmission projects as a utility (at ratepayer risk and expense, with any benefits in excess of their allowed return on equity accruing to ratepayers) in anticipation of providing firm energy deliveries to California for firm contracts. [Page 19]

This is unrealistic and will be very misleading to Nevada policymakers. At another place in the report there is a finding that Nevada will need to offer prices to California that are so low that there will be no benefits to Nevada ratepayers. Here is the quote:

“... there are likely to be little or no ratepayer benefits from this use of NVE’s transmission infrastructure. Eliminating these transmission charges means that the export transactions will not contribute to the embedded costs of NV Energy’s transmission infrastructure, and thus these full costs would have to be borne by Nevada ratepayers. In other words, there is a trade-off between holding down the cost of delivering Nevada’s renewable energy for export, and any ratepayer benefits for the use of NV Energy’s transmission assets for this export. The highest levels of cooperation will lead to the greatest market opportunity for Nevada’s renewable energy, but the benefits of these cost savings would not accrue to

Nevada ratepayers because there will be no surplus rents collected for the use of Nevada's transmission facilities." [page 25]

It is very misleading to present a form of financing to Nevada policymakers that is contrary to other findings in the report. Moreover, even if the project could generate surplus earnings, it would not be a simple gesture to give the surplus to ratepayers. It would be very complex and contested.

9. The economic impact analysis focuses only on the upward impacts --- and while the report acknowledges that there will be downward impacts from increasing the retail price of Nevada electricity there is no quantification of downward impacts. Here is the quote:

The economic impacts calculated here do not include the effects of any changes in ratepayers' electric bills. Any such ratepayer impacts would depend on the type of funding mechanism, as discussed in Section 3, and on the ability of Nevada utilities to extract rents for the use of their transmission infrastructure for energy exports. However, as discussed above, any such rents would run counter to the goal of providing low-cost renewable energy to California. If Nevada ratepayers were to bear the cost of new transmission without receiving such rents, the ratepayer impacts could be substantial. [page 34]

Consequently the economic impact values will be misleading to policymakers.

10. The report includes many positive characterizations, such as "plausible opportunity", "attractive economic development opportunity for the state" [page9] These characterizations will be misleading because they do not reflect the significant risks and uncertainties.

11. At one place in the report there is an estimate of the possible California RPS shortfall:

However, absent any additional interim procurement, or regulatory change, we estimate that the POU RPS shortfall in the year 2020 could range between 2000 and 9000 GWh (Figure 4). [page 12]

But at another place in the report

The opportunity for meeting that demand through 2020 with new, out-of-state resources, is subject to significant uncertainty. [page 13]

Nevada policymakers will be asked to commit significant funds based on projections that are very uncertain.

12. The major conclusion is that obstacles can be resolved by cooperation between California and Nevada policymakers. The report conclusion emphasizes that this cooperation needs to occur before ratepayer or taxpayer funds are put at risk. There is no evidence that cooperation can overcome obstacles such as uncertainty about out of state market purchases, ancillary costs, bucket 1 status. More importantly, it seems likely that instead of resolving issues before ratepayer or taxpayer funds are put at risk, Nevada policymakers will be asked to change policies before issues are resolved. The final conclusion is unrealistic.

COMMENTS SUBMITTED BY BRIAN WHALEN, NV ENERGY

October 12th, 2012

Dear Ian,

Below are NV Energy's comments and suggested edits to the "Economic Analysis of Nevada's Renewable Energy and Transmission Development Scenarios", draft of October 3rd, 2012, performed by Synapse Energy Economics, Inc. Our comments are presented in two sections – general and editorial. The general comments address the report content. The editorial comments address corrections for accuracy or clarity.

General Comments:

The Synapse work appears to generally meet the requirements presented in the business case and request for proposal documents. Synapse has performed evaluation and documentation of potential export scenarios from the state of Nevada. They have also documented significant potential obstacles and/or limitations with each of these export scenarios. Given the time and funding available, we believe this report is a useful and informative document.

NV Energy does have concerns that the economic impacts associated with increases in transmission rates were not accounted for in this report. In order to perform a comprehensive business case for transmission export, particularly with the aim of economic development, it is necessary to determine the damping effect on the existing economy and other non-renewable energy areas of economic development caused by increased electric rates. NV Energy recommends that if the State wants to foster economic development, it may want to perform such an analysis in order to avoid unintended consequences (e.g., potential NV economic losses due to higher rates).

Scenarios 1 and 3 have been the subject of NV Energy System Impact Studies. The other scenarios have not undergone comprehensive local or regional reliability planning. These other scenarios have screening level estimates of facilities, performance, and costs that should not be relied upon for project selection. A System Impact Study, Affected Systems study, and/or a WECC Three Phase Path rating analysis would be necessary to develop the actual facilities, performance, and costs for a preferred scenario selection.

Editorial Comments:

Page four: Under table ES -3, it is not clear that these numbers represent total economic benefit possibilities including the multiplier effects.

Page five: The meaning of the label on the "Y" axis of figure ES – 1 is unclear. It appears to say for Scenario 1, you create 450 jobs per \$million invested. It is also unclear how O & M jobs are almost the same as the construction jobs in this figure.

Page 15: Scenario two is confusing. Are the proposed VEA 500 kV line and the Bright Source Hidden Hills project included in the estimated numbers? Both 500 kV and 230 kV transmission is referenced in the paragraph but it is unclear what the actual plan of service is.

Page 18: In the third paragraph there is a reference to generator developers' obligations under our tariff. This statement is incomplete. Please refer readers to the NV Energy OASIS site where the complete Open Access Transmission Tariff and Business Practices are posted.

Page 19: In discussing hybrid options, there is little difference whether ratepayers or taxpayers bare risk because NV Energy's ratepayers represent 90% of the load within the state.

Pages 23-25: The description of hurdle rates is off the topic and confusing. Costs for new transmission will be borne by customers. A different administrative structure or footprint definition won't change this.

Page 30: In the last paragraph, last sentence it says "Scenarios 1 through 3 are entirely located in Nevada so all of the initial investment can be attributed to the state". This statement is misleading. Transformers, breakers, reactors and conductor are likely to be procured from foreign manufacturers. These portions of the costs would be required to be excluded from the in-state benefit calculation as shown in table 15 on page 34.

Page 4, 35 There are references to the replacement of the transformer at Harry Allen. This transformer is not a replacement. It is a new 500/230 kV transformer.

NVEnergy appreciates the opportunity provided by the Nevada State Office of Energy to participate in this economic development process. We believe this Synapse work provides a good deal of additional insight to possible export transmission development. However, we also see that additional work needs to be done to determine the comprehensive costs and benefits of export transmission proposals.

Brian Whalen
NV Energy