

Synapse
Energy Economics, Inc.

Economic Analysis of Nevada's Renewable Energy and Transmission Development Scenarios

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***This report shall be reviewed in concert
with the transcript and comments dated
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Table of Contents

1.	EXECUTIVE SUMMARY	1
2.	BACKGROUND	7
3.	RENEWABLE ENERGY SUPPLY AND DEMAND	8
	A. NEVADA RENEWABLE ENERGY RESOURCES	8
	B. CALIFORNIA'S RENEWABLE PORTFOLIO STANDARD	9
	C. CALIFORNIA RPS COMPLIANCE FORECAST	10
	D. CALIFORNIA'S RELIABILITY NEEDS	13
4.	DEVELOPMENT SCENARIOS	15
	A. SCENARIOS	15
	<i>Near Term Scenarios</i>	<i>15</i>
	<i>Long Term Scenarios</i>	<i>15</i>
	B. DEVELOPMENT AND FINANCING FOR GENERATION AND TRANSMISSION	18
	C. TRANSMISSION COSTS	20
	D. RENEWABLE GENERATION COSTS	20
	E. DELIVERED ENERGY COSTS	21
	F. TRANSACTION COSTS BETWEEN THE NEVADA AND CALIFORNIA MARKETS	23
5.	MARKET OPPORTUNITY	26
6.	ECONOMIC AND FISCAL IMPACTS	30
	A. BACKGROUND	30
	B. DIRECT SPENDING IN NEVADA	30
	C. MODELING ASSUMPTIONS	32
	D. ECONOMIC IMPACT RESULTS	34
	E. FISCAL IMPACTS	40
	F. COMPARISON OF IMPACTS TO INITIAL INVESTMENT	41
7.	CONCLUSIONS AND POLICY CONSIDERATIONS	44
8.	WORKS CITED	47



1. Executive Summary

The State of Nevada is home to diverse, high quality and abundant renewable energy resources with the potential to support large scale development of solar, wind and geothermal generation projects. The Nevada State Office of Energy (NSOE) has estimated that the state holds the potential for the development of over 4000 MW of installed capacity, or for producing over 16 million MWh of energy from renewable sources per year¹—equivalent to almost 75% of Nevada’s 2011 retail sales. This potential far exceeds the amount required to meet the state’s current Renewable Portfolio Standard (RPS) requirement. As such, it provides an opportunity to explore the potential economic benefits of further developing these resources for export to California, home of the nation’s most aggressive RPS standards and therefore a sizeable market for renewable energy.

Nevada’s resources are spread across the geographic expanse of the state, and their large-scale development to serve regional energy needs is dependent on the expansion of the transmission system, both to connect renewable energy zones to the Nevada grid, and to expand the export capability to the neighboring demand areas.

These opportunities were recognized by Nevada Governor Brian Sandoval in late 2011, when the New Energy Industry Task Force (NEITF) was tasked with “facilitating the timely development of transmission facilities and renewable energy resources in [Nevada], which includes without limitation facilitation of permitting, construction, and electrical interconnection of these facilities and resources.”² The task force was further directed to “develop the business case from the perspective of Nevadans and our neighboring states necessary to develop our state’s renewable resources and related industries with lowest possible risk to ratepayers.”³

In response, the NEITF, with assistance from the Western Grid Group, developed a Request for Proposal outlining a set of six renewable energy generation and transmission development scenarios to act as a bellwether of the opportunities to increase renewable energy development for export. Three near term scenarios envision varying transmission and generation investments for a range of 500-1500 MW in the 5-8 year time horizon; three long term scenarios anticipate development of 500-1000 MW over the 10-20 year time horizon. Table ES-1 presents an overview of these scenarios; analysis of this range of development options is intended to help determine the business case for the clean energy industry and what role the state can play to facilitate continued growth.

Funding for this study was provided by Nevada’s Governor’s Office of Economic Development, in partnership with NSOE.

¹ Based on “Projects” report on the NSOE website, <http://www.energy.state.nv.us/documents/Renewable-Energy-Projects.pdf>. As updated 5/10/2012.

² Nevada Executive Order 2011-18.

³ Ibid.

Table ES-1: Summary of proposed scenarios

	Scenario 1	Scenario 2	Scenario 3	Scenario 4	Scenario 5	Scenario 6
Description	Harry Allen to Mead	El Dorado and Clayton extension	Harry Allen Transformer	North Project	East Project	South Project
Incremental Capacity (MW)	1150	1500	400-500	500	750	750-1000
Transmission Costs (\$2011, mil) ⁴	\$70	\$555	\$46	\$198	\$414	\$595
Renewable Capital Costs (\$2011, mil)	\$4,789	\$5,789	\$1,808	\$2,361	\$2,614	\$3,491
Timeframe:	Near term (5-8 years)			Long-term (10-20 years)		

Source: NEITF

Synapse’s analysis consists of three major components. First, we explore issues surrounding the development of new generation and transmission within Nevada, and between Nevada and neighboring areas. We consider potential resource needs of California’s investor owned utilities (IOUs) and publicly owned utilities (POUs) toward meeting their RPS requirements. We lay out the specific details of each scenario, the anticipated construction times and the potential mechanism for the sponsorship and financing of the various projects to begin to investigate the opportunities for developing Nevada’s renewable energy resources for delivery into the California market.

Next, we derive the levelized costs of transmission additions (\$2011) included in the six scenarios by using appropriate economic assumptions for the cost of capital, the annual revenue requirement and the expected energy generation and utilization of the lines from the generation projects. Likewise, under appropriate capital cost assumptions, including O&M costs for each technology type, we derive the renewable energy generation costs in the form of levelized cost assumptions in (\$2011/MWh) for solar PV in the year 2015 and 2020; and for wind and geothermal generation under utility and merchant financing assumptions with and without subsidies (ITC/PTC). Finally, we provide the estimates for the costs of delivered energy to California⁵ by each scenario and funding type by combining our estimates on the levelized costs of generation and transmission.

This key result, shown in Table ES-2, represents one key aspect of the market opportunity or business case for Nevada’s renewable energy resources to compete for renewable energy contract solicitations in California. While numerous other factors may affect the business case, such as permitting and construction schedules, and technological diversity, the delivered costs must be competitive with other offerings from within the target market for an economic development strategy based on renewable energy exports to succeed.

⁴ Scenarios 4, 5, and 6 include transmission projects that are partially located outside Nevada.

⁵ Throughout this report, when we refer to deliveries to California we consider only the mechanics and costs of delivering energy to the CAISO control area. Unless specifically addressed, additional costs and logistical considerations may pertain for delivery to any specific location within California.

Table ES-2: Costs of delivered energy to California by scenario and funding type (\$2011/MWh)

Funding Type	Scenario 1	Scenario 2	Scenario 3	Scenario 4	Scenario 5	Scenario 6
Utility, without subsidy	\$116	\$140	\$123	\$99	\$114	\$122
Utility, with subsidy	\$93	\$109	\$97	\$89	\$99	\$102
Merchant, without subsidy	\$131	\$156	\$138	\$110	\$125	\$135
Merchant, with subsidy	\$105	\$122	\$109	\$100	\$109	\$113

Source: NEAC, NEITF, and Synapse

The third part of our analysis is the assessment of economic impacts for the State of Nevada associated with transmission and renewable energy development. For consistency, we have assumed that each scenario attracts a set amount of renewable generation and that each unit runs for 20 years. Synapse developed direct cost estimates for labor and materials and economic multipliers for each renewable resource type and transmission project to estimate the economic impacts of all six scenarios. These impacts are based on both the short term (construction and installation) and long-term (operations and maintenance) spending on the associated transmission and renewable generation activities. Short term spending would impact the state's economy only during the construction period while the long-term impacts would recur annually during the projects' useful lives. Tables ES-3 and ES-4 summarize the total economic impacts (direct, indirect and induced impacts, as explained later in the report) by scenario for renewable generation and transmission. The impacts are reported in terms of jobs, job-years (for short term impacts only), wages, and Gross State Product (GSP) over the life of the project.

Table ES-3: Short term, construction economic impacts by scenario

	Scenario 1	Scenario 2	Scenario 3	Scenario 4	Scenario 5	Scenario 6
Job-years						
Renewable Generation	26,500	29,400	9,600	15,600	14,800	20,000
Transmission	700	5,400	500	2,000	2,100	800
Total	27,200	34,800	10,100	17,600	16,900	20,800
Wages (\$2011, mil.)						
Renewable Generation	\$1,430	\$1,580	\$520	\$850	\$800	\$1,080
Transmission	\$40	\$300	\$30	\$110	\$120	\$50
Total	\$1,470	\$1,880	\$550	\$960	\$920	\$1,130
GSP (\$2011, mil.)						
Renewable Generation	\$2,060	\$2,260	\$740	\$1,240	\$1,160	\$1,560
Transmission	\$100	\$400	\$0	\$200	\$200	\$100
Total	\$2,160	\$2,660	\$740	\$1,440	\$1,360	\$1,660

Source: Synapse calculations using IMPLAN model.

Table ES-4: Long term, annual operations and maintenance economic impacts by scenario

	Scenario 1	Scenario 2	Scenario 3	Scenario 4	Scenario 5	Scenario 6
Annual Jobs						
Renewable Generation	1,130	1,120	390	810	710	930
Transmission	20	170	10	50	60	20
Total	1,150	1,290	400	860	770	950
Annual Wages (\$2011, mil.)						
Renewable Generation	\$66	\$63	\$23	\$51	\$43	\$55
Transmission	\$1	\$10	\$1	\$3	\$3	\$1
Total	\$67	\$73	\$24	\$54	\$46	\$56
Annual GSP (\$2011, mil.)						
Renewable Generation	\$120	\$110	\$40	\$100	\$90	\$100
Transmission	\$3	\$25	\$2	\$7	\$8	\$3
Total	\$123	\$135	\$42	\$107	\$98	\$103

Source: Synapse calculations using IMPLAN model.

We find that Scenario 2 has the largest economic and job creation benefit compared to other scenarios, in part because it involves the most new renewable generation capacity (1,500 MW) and the second largest capital investment in transmission (\$555 million). Scenario 3 involves the lowest amount of renewable generation capacity (450 MW) and the lowest capital investment in transmission (\$46 million) which is limited to the replacement of a transformer. Within each scenario, the impact of renewable generation is higher than the impact of transmission; transmission-focused initiatives that leverage higher levels of investment in renewable generation yield the highest economic and employment benefits for the state.

Figure ES-1 shows the amount of economic activity that is leveraged by every million dollar of transmission investments by scenario. Scenarios 1 and 3 involve low cost transmission projects yet leverage 1150 and 450 MW of generation, respectively. Therefore, these scenarios look attractive from a job-creation perspective since they are anticipated to induce extensive economic activity through small initial investments in transmission. The other scenarios involve large-scale

transmission infrastructure and higher transmission investments, yet are anticipated to leverage a similar range of renewable generation to Scenarios 1 and 3.

Among the long term scenarios, Scenario 4 appears to be the most effective at job creation—largely due to its reliance on geothermal generation, which generates more job-years per dollar than wind or solar; although this dynamic could shift if Nevada gains traction in manufacturing to support the solar and wind generation industries.

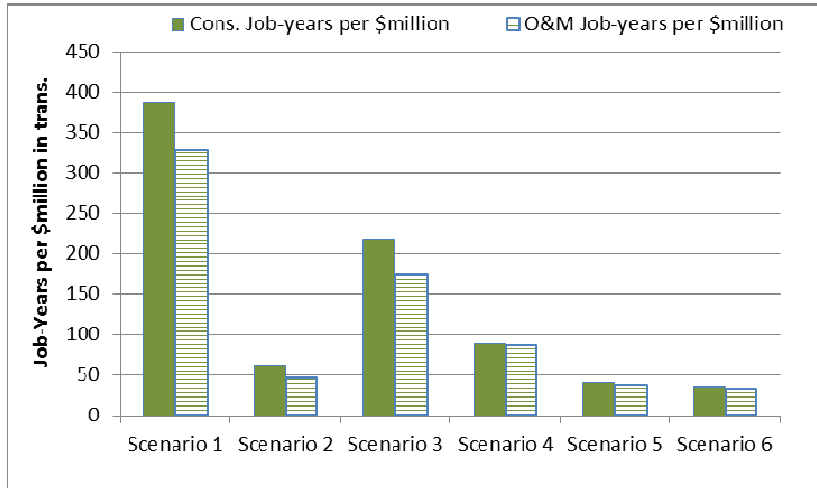


Figure ES-1: Job-year impacts per million dollars of spending on transmission
 Source: Synapse estimates using IMPLAN model and data.

In addition to the economic impacts identified above, Nevadans may benefit from various tax revenues generated from both the short term construction and the long term operations that go to the state and applicable county. These include sales and use tax, property tax, and net proceeds or minerals tax. Table ES-5 summarizes the tax impacts for the lives of all projects including transmission and renewable generation.

Table ES-5: State and local tax impacts by scenario (\$2011, millions)

	Scenario 1	Scenario 2	Scenario 3	Scenario 4	Scenario 5	Scenario 6
Mineral Taxes	\$11	\$6	\$3	\$12	\$8	\$10
Property Taxes	\$360	\$470	\$140	\$190	\$210	\$270
Sales and Use Taxes	\$182	\$215	\$65	\$122	\$110	\$143
Total	\$553	\$691	\$208	\$324	\$328	\$423

Sources: Synapse estimates, Tri-sage, NV Department of Taxation

This report serves as part of the work of the NEITF under the Governor’s directive and Executive Order, and it is intended as a tool for policy discussions and continued analysis of the benefits of developing Nevada’s renewable energy to serve the regional market. The expected economic and fiscal impacts by scenario are only one consideration in evaluating renewable energy development scenarios. The impacts identified in this report are based on the assumption that if any of the projects are built, private investment in the indicated amount of renewable energy and long-term

purchase contracts for that energy will follow. However, this investment will occur only if required market conditions exist for the sale of that energy, and if all other necessary technical, political, siting and land use, and electric system factors were in place. To reduce this uncertainty, greater cooperation and coordination within the state and between Nevada and California at the policy-making level may be the best way to ensure that a viable market opportunity exists for Nevada's renewable resources, prior to putting ratepayer or taxpayer funds at risk.



2. Background

The State of Nevada has an abundance of diverse, high-quality renewable energy resources, with attractive opportunities for the development of utility scale geothermal, wind, and solar energy projects. As of 2011, NV Energy (NVE), the state's leading regulated public utility, had approximately 46 renewable energy projects on line or under development. These projects are expected to provide approximately 1250 MW of capacity if and when they are completed, primarily serving the state's retail customers.

Nevada has a Renewable Portfolio Standard (RPS) of 15% of retail sales for the year 2011, which steadily increases to 18% in 2013, 20 percent in 2020, and 25% in 2025. As of 2011, NVE's operating companies have exceeded their RPS requirements—reaching 24.9% for NVE-North and 16.7% for NVE-South—with future projections of energy procurement indicating full compliance with incremental RPS until at 2020, according to NV Energy's compliance reports. As such, there is an opportunity to develop the state's significant renewable energy resources in excess of the current minimum RPS requirements, if a viable market for the capacity and energy can be identified.

One noteworthy aspect of Nevada's renewable energy potential is the geographic proximity and electrical connectivity to the region's major market for renewable energy—the State of California, with its 33% by 2020 RPS program—the most aggressive in the nation.

Governor Brian Sandoval addressed this opportunity in his State of the State Address on January 24, 2011 and further formalized it in Executive Order 2011-18. In this order, he directed the New Energy Industry Task Force (NEITF) to explore opportunities for the state to promote and facilitate the development of renewable resources for export to regional load centers, and to determine if improved coordination between the Nevada and California electricity markets could enable Nevada to realize the economic development benefits of its abundant renewable energy resources. He also asked the NEITF to develop the business case for the development of these resources with the lowest possible risk to Nevada ratepayers.

This memorandum presents Synapse's preliminary analysis of electric system and economic considerations in support of the NEITF's work. As the basis of this effort, six renewable energy development and transmission reinforcement scenarios were identified by NEITF, with the assistance of the Western Grid Group, that would facilitate energy export to or exchanges with California. Synapse has used these six scenarios to quantify the likely costs of developing transmission and renewable resources. We also analyze economic impacts in terms of employment, wages, Gross State Product (GSP), and tax revenues.

Synapse's analysis focuses on the fundamental purposes for the development of the scenarios: export of renewable energy to meet demand in California, and economic benefits for Nevadans. In order for this export to be economically viable and for Nevada to realize the associated benefits, the combined costs of renewable generation and transmission investments in Nevada must be within the willingness to pay for the delivered energy by customers in the target region. Here we provide preliminary estimates of the associated generation and transmission investments, discuss financing models, review the market for renewables in California, and present our revenue and economic impacts analyses for these potential investments in Nevada.

3. Renewable Energy Supply and Demand

A. Nevada Renewable Energy Resources

The State of Nevada has abundant, high-quality renewable energy resources and enormous potential for the development of geothermal, solar, and wind energy projects. The qualitative assessment of these resources and their geographic location has been presented in reports from the National Renewable Energy Laboratory (NREL) and through initiatives such as the Nevada Renewable Energy Transmission Access Advisory Committee (RETAAC). One of the outcomes of the RETAAC initiative has been the development of a resource map identifying many of Nevada’s economically viable renewable energy zones and the transmission infrastructure essential to tap the energy from such resources. (Figure 1)

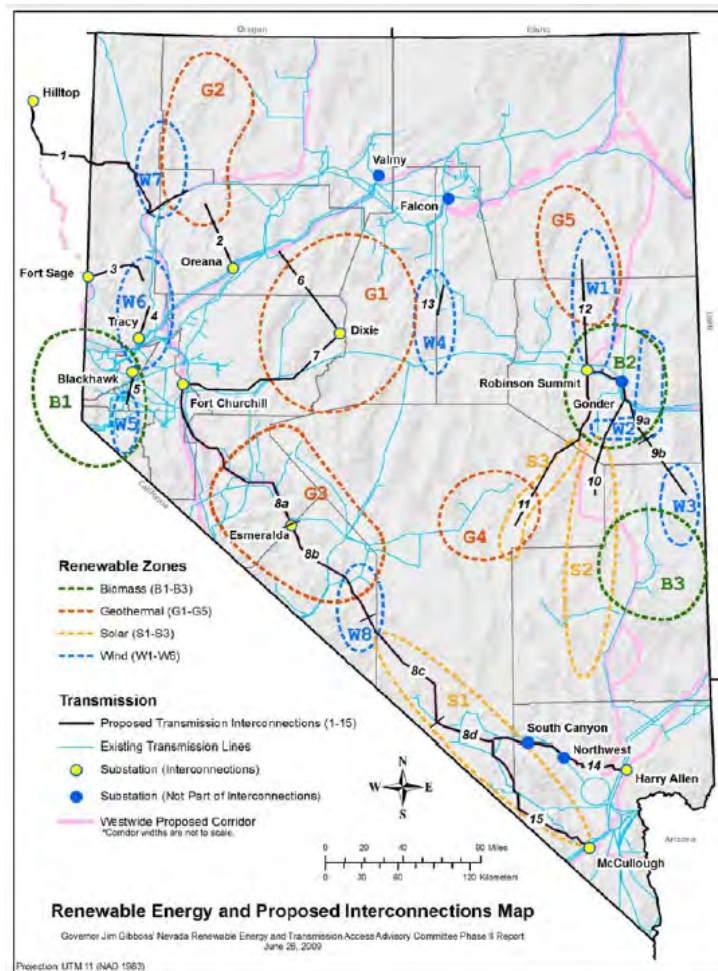


Figure 1: Nevada renewable energy zones and proposed interconnections map

Source: Nevada RETAAC Phase II

As discussed above, the state’s RPS states that 25% of NV Energy’s energy must come from renewable sources by 2025, with specific carve-outs for solar energy, energy efficiency, and

energy conservation programs. By NV Energy's current estimates, Nevada's RPS is fully subscribed through the year 2020, if all approved contracts perform (McGinley, 2012). As such, there may be limited in-state demand for Nevada's utility-scaled renewable energy in the near future unless the state's RPS targets are revised, demands are increased, or other mechanisms are developed to spur demand for these resources.

However, Nevada's geographic and electrical proximity to the California Independent System Operator (CAISO) controlled grid and its wholesale energy market, and to other California Balancing Authority Area (CBA) systems, offers plausible opportunities for renewable energy deliveries into the state of California. As such, developing Nevada's renewable energy resources for use in the regional market may present an attractive economic development opportunity for the state.

B. California's Renewable Portfolio Standard

The State of California has the most ambitious Renewable Portfolio Standard (RPS) program in the United States. Established, accelerated, and expanded through the years 2002 and 2011 by various California legislative bills, the RPS program requires investor owned utilities (IOUs), publicly owned utilities (POUs), electric providers and community choice aggregators to obtain 33% of the total energy required to meet their load from eligible renewable energy sources by 2020.

As of the Fourth Quarter of 2011, the IOUs reported that they collectively served approximately 17% of their electricity with RPS-eligible generation in 2010, and the number increased to 20.6% for their cumulative 2011 retail electricity sales, in line with expected progress toward 20% for the first compliance period. The large and medium sized POUs were cumulatively averaging approximately 23.3% of POU-eligible and 13.4% of California Energy Commission (CEC)-eligible⁶ RPS deliveries in the year 2010 (California Energy Commission 2011).

The CEC has established three RPS compliance periods and three categories each, commonly referred to as "buckets" of quantitative procurement limits in meeting the RPS goals (Table 1). Each bucket defines the qualitative aspects of RPS-eligible generation such as interconnection, balancing authority, dynamic scheduling or Renewable Energy Credit (REC)-only procurement.

⁶ Only California's IOUs are directly regulated by the CPUC, so only these entities are strictly held to the commission's definition of eligible renewables. The governing body for each POU establishes its own eligibility criteria, which can vary significantly from the CEC criteria.

Table 1: California Renewable Portfolio Standard compliance schedule and resource requirements

	First Compliance Period (2011-2013)	Second Compliance Period (2014-2016)	Third Compliance Period (2017-2020)
<i>RPS Procurement (% of energy delivered)</i>	20%	21.6 - 25%	27-33%
Bucket I (% of RPS)	50%(min)	65%(min)	75% (min)
Bucket II (% of RPS)	0-50%	0-35%	0-25%
Bucket III (% of RPS)	25%(max)	15%(max)	10%(max)

Source: CPUC

Table 1 shows that the highest percentage of procurement for California is mandated to be in the “Bucket I” category, defined to be meeting one of the following criteria:

1. Energy and Renewable Energy Credits (RECs) from an RPS-eligible facility that is directly interconnected to the distribution or transmission grid within a CBA; or
2. Energy and REC’s from an RPS-eligible facility, that is not directly interconnected to a CBA, but is delivered to a CBA without substituting electricity from another source; or
3. Energy and REC’s dynamically transferred to a CBA.

This report assumes that all generation within various scenarios modeled in the State of Nevada are deemed eligible for Bucket I due to various system conditions with each scenario, such as the California Load Serving Entity’s (CA LSE) control over the transmission substation where energy is delivered; new transmission build-outs directly into CA LSE’s territory; or other contractual arrangements enabling direct energy deliveries into the CAISO market.

C. California RPS Compliance Forecast

California’s RPS is binding on almost all load serving entities (LSEs) in the state. The regulatory rules surrounding implementation of the standard, development of procurement forecast, definition and calculation of the “Renewable Net Short” (RNS)⁷ are all in current proceedings at the California Public Utilities Commission (CPUC) and the CEC. To that extent, LSEs are currently developing methodologies, inputs, and formats of reporting RPS portfolio needs and the RNS, and there is only limited information available in the public domain to substantively verify forecasted renewable procurement and associated shortfall, if any.

The California Public Utilities Commission has provided a set of graphics on RPS-eligible renewable energy procurement of the state’s large IOUs for the years 2012-2020, with the total energy mix split into categories of operational and contractual status in the form of online generation and approved, pending, expiring and under negotiation contracts (Figure 2).

⁷Renewable Net Short is defined as the amount of new renewable generation necessary for an LSE to meet or exceed the RPS target, relative to its currently contracted quantity. Because this metric compares a future requirement with currently-held assets, it should not be interpreted to necessarily indicate the degree to which the entity is or is likely to be out of compliance.

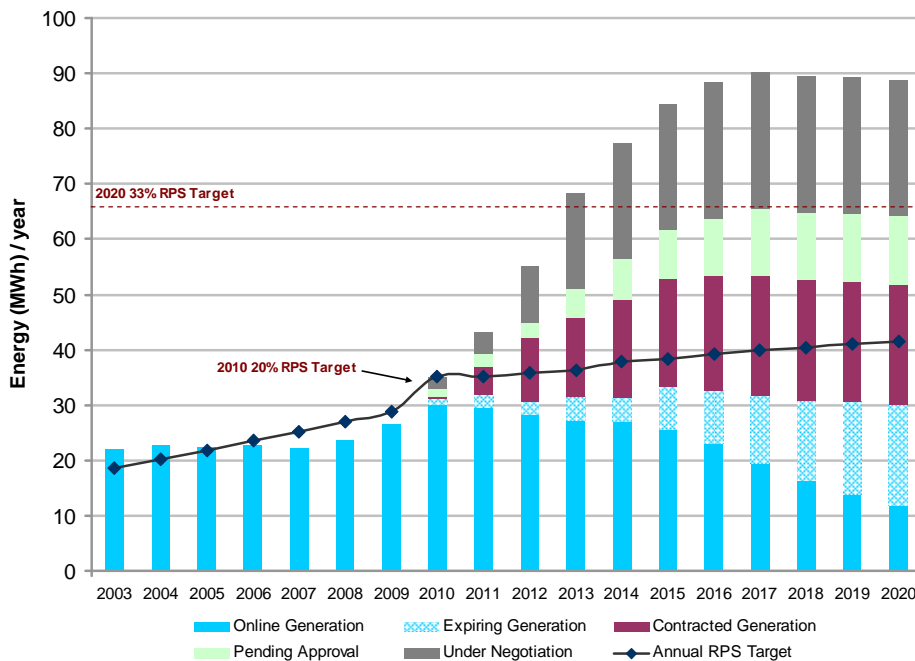


Figure 2: California's projected renewable energy procurement and RPS targets for Investor-Owned Utilities (IOUs). The vertical axis should be interpreted as TWh/yr.

Source: 'California's Renewable Energy Programs for Utility-scale Projects', California Public Utility Commission (CPUC), Sara Kamins, September 16th 2010.

As suggested by Figure 2, the probability of meeting, exceeding or missing the IOUs' 33% RPS obligations will depend on the dynamics and uncertainties with re-contracting of expiring energy contracts, outcomes of contract negotiations, and performance of approved contracts and regulatory approval of pending energy contracts. However, it is unclear if there is any specific consideration to the appropriate treatment to expiring generation and under-negotiation generation, since the former can be eligible for the latter and hence may be double counted.

The CPUC also defines "viability" as a metric for a renewable energy project that bids into the California IOUs' RPS solicitations. As described on the CPUC website,⁸ the viability score can be viewed as a means to quantify a project's strengths and weaknesses in key areas of renewable project development. The CPUC has categorized projected renewable energy procurement by viability buckets as shown in Figure 3.

⁸ <http://www.cpuc.ca.gov/PUC/energy/Renewables/procurement.htm>, accessed August 2012

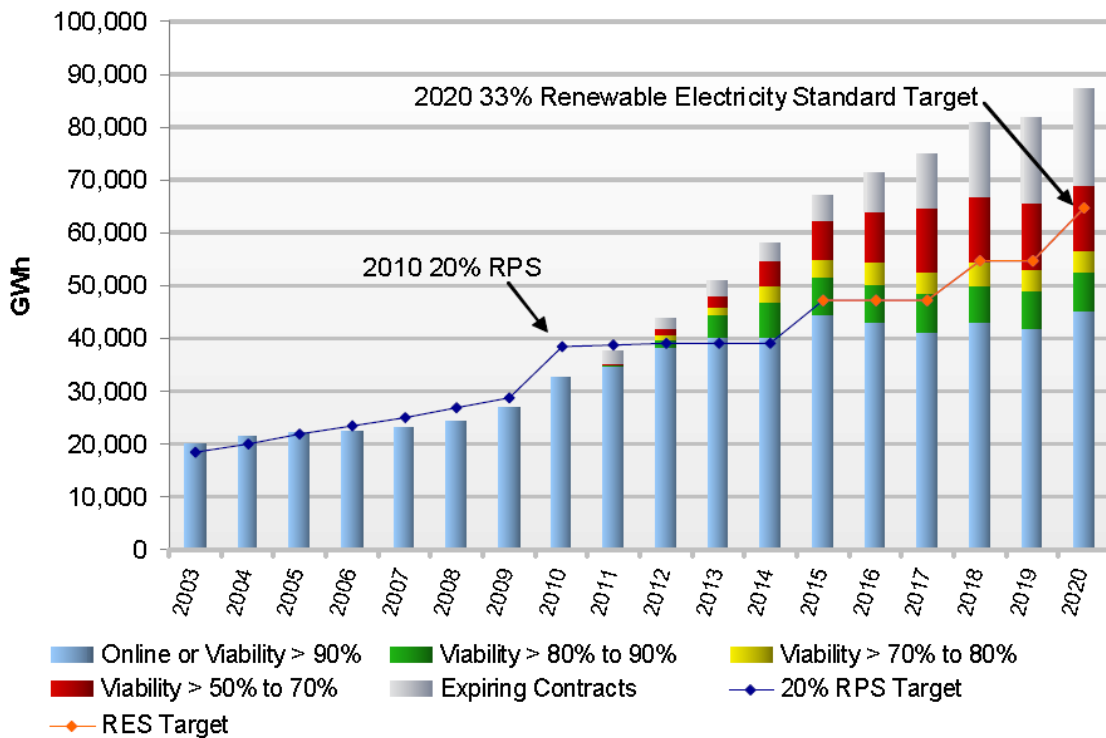


Figure 3: California's projected renewable energy contracts categorized by viability

Source: 'Progress towards California's Renewable Portfolio Standards Goals', California Public Utility Commission (CPUC), Julie Fitch, February 1st 2011

Publicly-owned utility RPS compliance

The California State Energy Commission (CEC) provides some information on the 2020 RPS deliveries expectations for the state's POUs towards meeting the RPS. Unfortunately, this information is generally limited or generic in nature, often with little documentation of assumptions on projected deliveries of renewable energy or success of project contracts. Based on this limited data, it appears that the state's 18 large and mid-sized POUs will cumulatively average between 19% and 29.7% of RPS compliance by 2020, accounting for planned deliveries (California Energy Commission 2011). While this seems to imply a significant need for additional resources to meet the RPS requirement, the extent to which the POUs are already in negotiations to purchase additional resources from within or outside the state is unknown.

The projections of POU RPS deliveries are reported by the CEC in two categories, POU-eligible and CEC-eligible. This difference is a result of current rules, which permit each POU's governing body to establish eligibility criteria. It is possible that in the future, the CEC will impose its eligibility criteria on all California POUs in addition to the IOUs (California Energy Commission 2012). 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).

One independent study, a report from Emerging Energy Research (2011) on the forecast of California's demand and contracted supply under the RPS targets, projects a significant shortfall for both IOUs and POUs in meeting their targets: up to 6 Terawatt hours (TWh) for the combined

POUs, 3 TWh for San Diego Gas & Electric (SDG&E), 10 TWh for Southern California Edison, and 20 TWh for Pacific Gas & Electric (PG&E) in risk-adjusted deficit.

It is evident that the market for renewable energy in California will be significant in view of the aggressive RPS; however, due to the factors discussed above, the opportunity for meeting that demand through 2020 with new, out-of-state resources is subject to significant uncertainty.

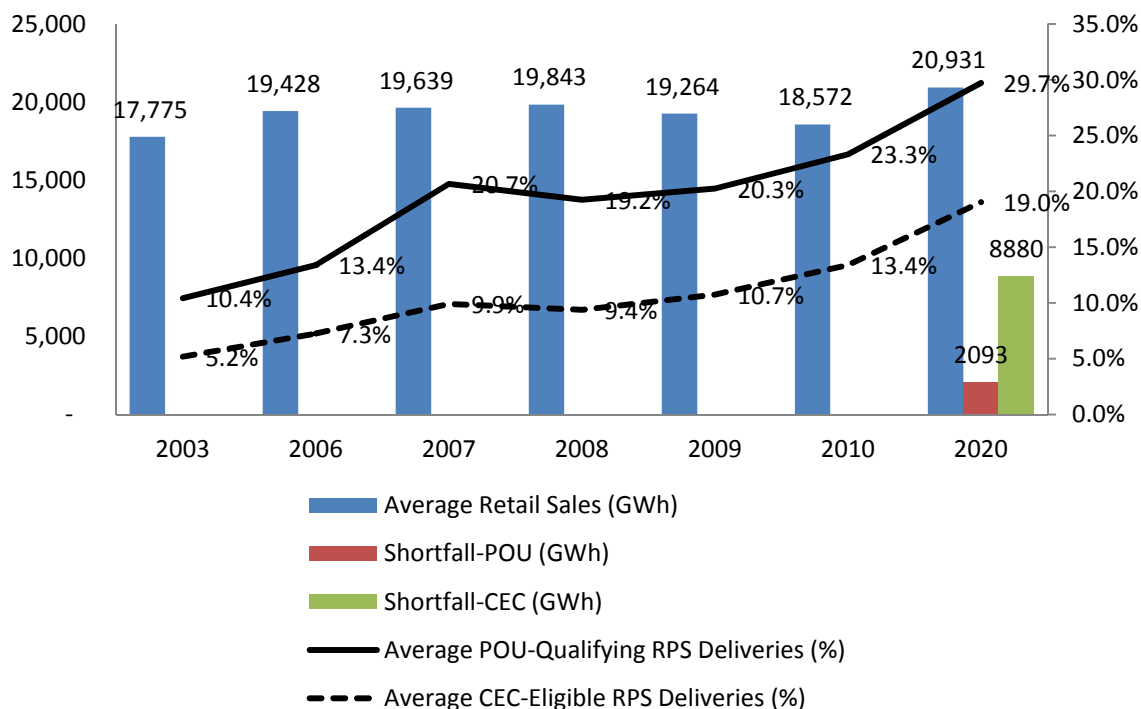


Figure 4: California POUs (selected) renewable energy procurement trends

Source: 'Updated Publicly Owned Utilities Database as of November 2011', California Energy Commission (CEC), November 16th 2011

D. California's Reliability Needs

California's demand for renewable energy resources is driven by the 33% RPS law as described above; however, this is only one of the challenges faced by the state as it moves into an environmentally-sustainable energy future. Another significant challenge is maintaining resource adequacy throughout the state while complying with the State Water Resources Control Board's (SWRCB) Once-Through Cooling (OTC) policy and the Greenhouse Gas (GHG) emissions policy under California's Assembly Bill 32 (AB32).

This policy mandates that any power plant that uses ocean or estuarine water for cooling purposes must either dramatically reduce the use of such water, or cease operations. The California ISO, among others, has estimated that this will lead to the loss of approximately 10 GW of in-state fossil generating capacity later in the current decade.

Much of the OTC generation serves resource adequacy needs in California's local capacity areas constrained by limited transmission import capabilities. This function of some at-risk OTC

generation will have to be addressed through replacement resources, but these resources may be procured more for capacity than for energy services, primarily to meet load during periods of peak demand. Some renewable resources, particularly geothermal and solar, may be able to replace a portion of these resources for reliability purposes. However, this will require that the associated energy is deliverable to the local reliability areas when needed. Nevada's renewable resources seem generally unlikely to be best-positioned for this purpose owing to the lack of additional transmission connections into the specific local reliability areas. Therefore, the best opportunity for out-of-state renewable energy resources from states such as Nevada is likely to be California's incremental renewable energy procurement as it moves towards the 33% RPS compliance.



4. Development Scenarios

A. Scenarios

Nevada's New Energy Industry Task Force (NEITF) has proposed six renewable energy export scenarios comprised of generation development and transmission system improvements designed to facilitate the development and export of energy to California. These scenarios have been developed to serve as a foundational framework for the economic analysis of the benefits of developing Nevada's renewable energy resources to serve the regional market.

The three 'near term' scenarios, which could yield renewable energy exports in the 5 to 8 year time horizon, are expected to facilitate between 500 to 1500 MW of energy export. These are characterized primarily by transmission upgrades in Southern Nevada.

The three 'long term' scenarios, which could yield renewable energy exports in the 10 to 20 year time horizon, are expected to facilitate between 500 and 1000 MW of renewable energy exports for each scenario. These scenarios are derived from the Nevada Energy Assistance Corporation (NEAC) Transmission Initiative Routing Study and reflect transmission lines proposed to access the potential renewable energy resource zones (Figure 5) identified as the Nevada Renewable Energy Zones (REZ) by the Renewable Energy Transmission Access Advisory Committee (RETAAC).

Briefly, the scenarios are as follows, and as summarized in Table 2.

Near Term Scenarios

Scenario 1: The addition of a 60 mile long, 500 kV AC transmission line from Harry Allen to Mead substation, similar to the Southern Nevada Intertie Project (SNIP). This is expected to add 1150 MW of delivery potential through the congested southern Nevada grid from 800 MW of solar and 350 MW of geothermal resources.

Scenario 2: The addition of multi-segment 500 kV and 230 kV AC transmission lines, approximately 247 miles in total length from Valley Electric Association (VEA) control area to the El Dorado substation and an extension of the VEA line to the Clayton substation. This is expected to add 1500 MW of delivery potential from 200 MW of geothermal and 1300 MW of solar resources.

Scenario 3: The installation of a 1500 MVA transformer at the Harry Allen substation. This is expected to add 400 to 500 MW of delivery potential across the congested southern Nevada grid from 100 MW of geothermal and 400 MW from solar resources.

Long Term Scenarios

Scenario 4: The addition of a 126 mile long, 345 kV AC transmission line connecting NV Energy's Oreana substation to the proposed Viewland substation in the Lassen Municipal Utility District (LMUD) area, referred to as the 'North Project' in the NEAC report. This is expected to provide 500 MW of incremental export capacity to the northern central California market.

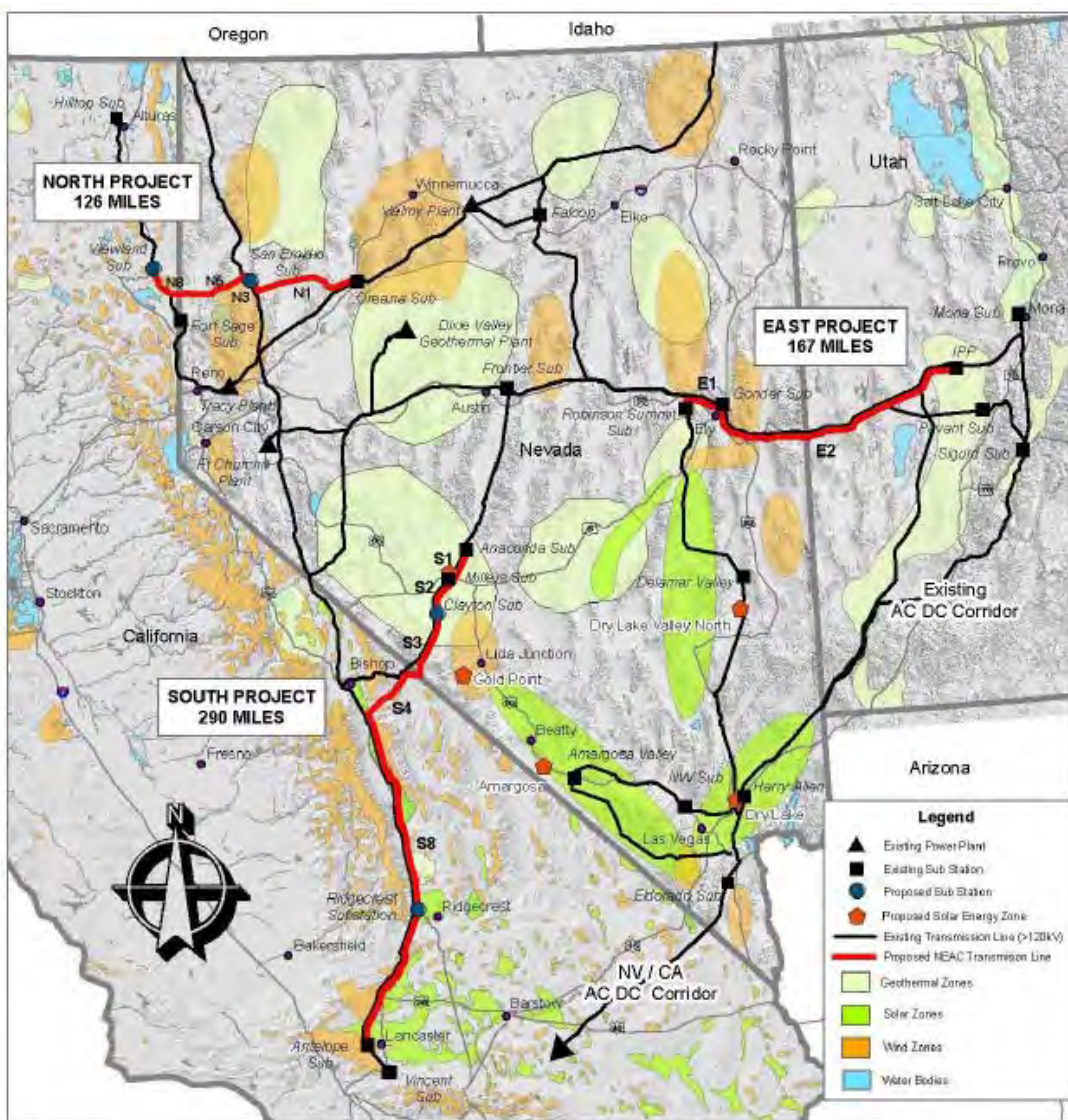


Figure 5: Long term scenarios - transmission

Source: NEAC Transmission Report

Scenario 5: The addition of a 167 mile long, 500 kV AC transmission line connecting Robinson Summit substation in Nevada to the Intermountain Power Project (IPP) substation in central Utah, referred to as the ‘East Project’ in the NEAC report. At the 500 kV level, the range of export capacity is projected to be between 750 and 1000 MW. The IPP substation is an existing hub of power transfer to California.

Scenario 6: This is a 290 mile multi-segment transmission line project which includes a 230 kV segment from NV Energy’s Anaconda substation to the Clayton substation and a 500 kV segment from Clayton to the Antelope substation in southern California with step-up transformation at Clayton, referred to as the ‘South Project’ in the NEAC report. This project is expected to provide 750 to 1000 MW of incremental export potential into California.

Table 2: Summary of proposed scenarios

	Scenario 1: Harry Allen to Mead	Scenario 2: El Dorado and Clayton extension	Scenario 3: Harry Allen Transformer	Scenario 4: North Project	Scenario 5: East Project	Scenario 6: South Project
New Capacity (MW)	1150	1500	400-500	500	750	750-1000
Timeframe for energy delivery	Near term (5-8 years)			Long term (10-20 years)		

Source: NEITF

Table 3 illustrates the timing of the construction⁹ and operations of transmission and renewable generation projects by scenario. The useful lives of the projects were assumed to be 30 years for transmission and 20 years for renewable generation. For transmission projects, we assumed that small projects (Scenarios 1 and 3) would take two years to build and large projects would take four years. For renewable generators, we assumed two years for the installation of solar PV, wind and geothermal technologies. The construction of renewable generation is likely to be staggered over time, however, this does not change the calculation of economic impacts.

Table 3: Timing of scenarios analyzed in this study

	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026-2036	2036-2043
Scenario 1: Harry Allen to Mead															
Scenario 2: El Dorado and Clayton extension															
Scenario 3: Harry Allen Transformer															
Scenario 4: North Project															
Scenario 5: East Project															
Scenario 6: South Project															



Source: NEITF, Tri-Sage et al., 33% Implementation Plan.

Figure 6 shows the proposed mix of new renewable capacity for each scenario. The near term scenarios are predominantly composed of solar capacity while the long term scenarios, with the exception of Scenario 6, include a higher mix of geothermal and wind.

⁹ For our current purposes, “construction” refers to all activities required to set up each type of transmission and generation including planning, building, installation, and drilling.

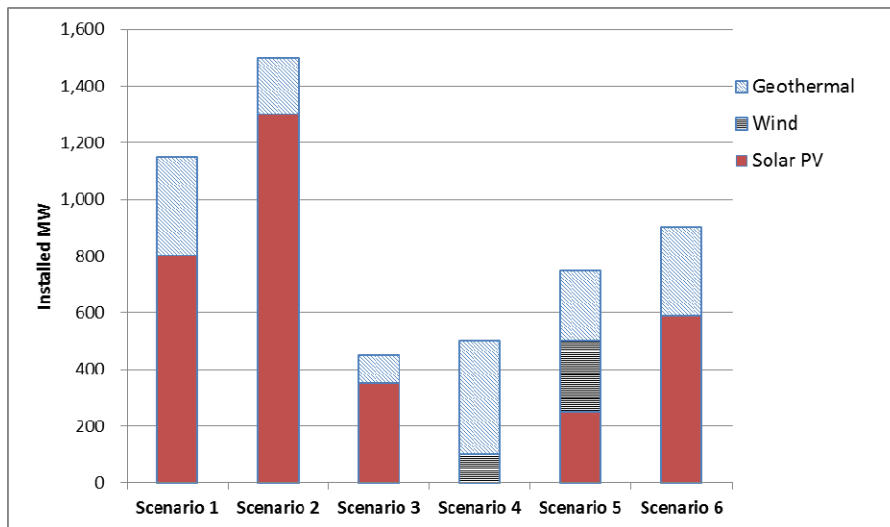


Figure 6: Installed renewable capacity by scenario (Installed MW)

Source: NEITF, calculations by Synapse based with assumed midpoint of any range in RFP.

B. Development and Financing for Generation and Transmission¹⁰

The mechanism for the development and financing for the renewable energy generation and transmission associated with the six identified scenarios impacts the levelized cost of energy to be delivered to California. It is also germane to the Governor's directive to build a business case with the least possible risk to Nevada ratepayers. The NEITF has a subcommittee focused on the issues of transmission financing and planning, and various options are being reviewed, in conjunction with this report, prior to making recommendations to Governor Sandoval. The discussion here reflects the perspective of the authors, based on our experience with project development and regulatory practices throughout the United States.

While the specifics of each scenario will determine the nature of development and funding assistance that may be applicable, there are primarily two categories - private (i.e., independent investors or unregulated utility affiliate) and public (i.e., regulated utility). Other combinations or hybrid options, encompassing aspects of these two, are also possible.

The development of renewable energy generation projects is mostly expected to be from independent utility-scale generation developers, who invest capital for generation development in anticipation of long term Power Purchase Agreements (PPA's) for firm energy deliveries. In this case, the counter-party would be the potential off-takers outside of Nevada. Generation developers are generally required to fund needed transmission enhancements in the form of generation interconnection upgrades to the interconnecting utility, unless the transmission provider or owner elects to fund the capital for the network upgrades (NV Energy 2011). 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.

¹⁰ As noted under policy considerations, the NEITF has a subcommittee devoted to the transmission financing and planning issues, and these types of options are being reviewed at a high-level to gauge interest, in conjunction with this memorandum, in making recommendations to Governor Sandoval.

There are a number of possibilities for transmission development and financing, each with its own set of advantages and disadvantages. These include:

1. Private Sector Development: Private sector entities such as independent transmission companies (ITC's) develop transmission with private capital and financing. While there is no direct risk to ratepayers in this case, independent transmission projects often require anchor asset investment and advance transmission capacity subscription to succeed. One model for private sector development would be for NV Energy to form an unregulated subsidiary that would develop transmission on a venture basis without seeking recovery, thus protecting ratepayers from the expense and risk of projects that are not primarily conceived for providing reliable electric service in Nevada. In this case any profits from the use of these assets would be returned to shareholders.

2. Public Sector: Any regional LSE could develop transmission within or between their territory and Nevada, and benefit from utility financing requirements, and have the facilities under applicable CBA control. In this case the ratepayer impacts would have to be justified against other alternatives for procuring renewable energy, and would require approval from the respective public utility commissions or governing bodies.

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. However, because the transmission projects for certain scenarios (specifically the near term scenarios) are specifically designed for export and not to support reliable electric service to Nevadans, this would be outside of the conventional charter for regulated utility use of ratepayer funds. For this reason enabling legislation would probably be required before the commission could allow cost recovery for such projects.

3. Hybrid Options: Several other hybrid options of public-private partnership may exist that combine the benefits of both categories. The state of Nevada can form Quasi-governmental agencies that co-fund the development of transmission with the private sector (example – Wyoming Infrastructure Authority) or promote transmission development with limited ownership interests (example – NM RETA). The funding can be arranged by state bonding, guarantees and other incentives such as property taxes, and provision of eminent domains. Alternatively, the state of Nevada could implement safeguards in the form of backstop private development costs or assured recovery of abandonment costs in case of project cancellation. This can be enabled through an Integrated Resource Plan (IRP) or independent transmission contract. Because there are benefits and risks with each option as the level of state involvement and ratepayer liability varies, any choice of a hybrid mechanism will have to be carefully examined against risk, benefits and likely effectiveness.

Another option would be for transmission owners in Nevada to join the regional independent system operator, CAISO, as participating transmission owners (PTO). In this construct, the PTO's file their annual transmission revenue requirement (TRR) with the CAISO. CAISO in turn, collects a Transmission Access Charge (TAC) from the participating load serving entities in proportion to their native load to cover the system-wide TRR. While this may be a potential option for transmission owners in Nevada to allocate their transmission costs more broadly and reduce ratepayer impacts in the state, this is a two-way process: the PTO (and/or LSE) would also be

partly responsible for the costs associated with additional transmission investments across the CAISO footprint. Additional studies are being conducted between entities in California and Nevada to study the impacts of such a model, which is beyond the scope of this report.

C. Transmission Costs

Total transmission costs for the development scenarios were taken from the NEAC study and the RFP for the three long term scenarios, and were based on Synapse estimates for the three near term scenarios using standard cost estimates for transmission upgrades in the western interconnection.

The levelized costs of transmission represent the annual, real dollars of recovery required to fund the projects. These were developed using NEAC's assumptions for O&M cost recovery and NV Energy's cost of capital (8%) for a 30-year recovery period. These estimates therefore assume that a utility would secure capital for these projects. These costs would be higher if the transmission projects were developed by an independent transmission owner, due to a private investor's higher financing cost and private investors' requirements for return on investment.¹¹

Table 4: Transmission costs by scenario (\$2011)

	Scenario 1	Scenario 2	Scenario 3	Scenario 4	Scenario 5	Scenario 6
Overnight Cost* (\$ millions)	\$70	\$555	\$46	\$198	\$414	\$595
Annual Generation (GWh)	4,625	4,932	1,651	3,092	3,154	3,790
Levelized cost (\$/MWh)	\$2	\$13	\$3	\$7	\$15	\$18

*Overnight costs refer to the capital investment were a resource to be built overnight; that is, with no requirement for financing during the construction phase.

Sources: NEAC, NEITF, and Synapse

D. Renewable Generation Costs

Table 5 shows Synapse's cost assumptions for new wind, solar and geothermal plants in Nevada in 2015 and 2020. For wind and geothermal costs, we assume an installed cost of \$1,950 and \$5,406 per kW, respectively, through 2020. For solar PV, our cost estimates reflect the production of AC power, since ultimately energy in that form that will be sold to the grid. These were based on estimates from a number of industry sources, including Black & Veatch, Lazard, E3 Analytics, the California Energy Commission and the U.S. EIA. However, for solar PV we assumed relatively modest cost reductions between now and 2020, given the dramatic reductions seen over the past several years.

¹¹ Because utilities have captive ratepayers and are guaranteed recovery of prudently-incurred costs for used and useful infrastructure, they are generally considered low-risk borrowers and they can attract investment with a moderate return on equity. Third-party investors put their own capital at risk and therefore face higher financing costs; they also must project a higher return on investment in order to attract capital.

Table 5: Renewable capital and O&M cost assumptions (\$2011)

Resource	Capital Cost (\$/kW-AC)	Fixed O&M (\$/kW-yr)	Variable O&M (\$/MWh)
Solar PV (2015)	\$3,621	\$35	\$0
Solar PV (2020)	\$3,060	\$34	\$0
Wind	\$1,989	\$61	\$0
Geothermal	\$5,406	\$86	\$10

Source: Synapse estimates based on review of solar studies, Wisser (wind) and AEO (geothermal) Values assume \$100/kW interconnection costs

Synapse developed levelized costs for these resources in order to gauge the cost of each proposed scenario. To do this, we estimated capacity factors of 31% for PV (based on NREL’s PV Watts tool), 33% for wind (based on Class 2 wind at 80 meter hub heights), and 80% for geothermal.¹² A key variable for estimating the levelized costs is whether the federal Investment Tax Credit (ITC) and/or Production Tax Credit (PTC) will be available to renewable projects through 2020. Table 6 shows the levelized costs of renewable energy both with and without these federal subsidies, along with costs for both merchant and utility project sponsors as discussed above. Nevada-specific subsidies, such as tax abatements or other incentives, are not considered.

Table 6: Renewable energy levelized cost (\$2011/MWh)

Resource	Utility, w/subsidy	Utility, w/o subsidy	Merchant, w/subsidy	Merchant, w/o subsidy
Solar PV in 2015	\$102	\$141	\$115	\$159
Solar PV in 2020	\$88	\$121	\$99	\$136
Wind	\$85	\$95	\$95	\$105
Geothermal	\$81	\$91	\$92	\$102

Source: Synapse estimates based on review of solar studies, Wisser (wind) and AEO (geothermal). Costs include \$100/kW interconnection costs

E. Delivered Energy Costs

Estimates of the levelized cost of delivered energy from the generator in Nevada to the delivery point (i.e. California’s “Bucket 1”) are provided below, by scenario. These figures are based on the weighted average levelized costs of renewable generation (above) added to the costs of the associated transmission projects on a levelized basis. For the near term scenarios (1 through 3), we used the 2015 generation costs whereas for the long term scenarios (4 through 6), we assumed 2020 generation costs. (The difference between costs in 2015 and 2020 is that solar PV costs decrease over time.) These costs are a key input for evaluating the economic viability of the six scenarios.

¹² We assume that new geothermal units will predominantly use air-cooling, based on discussions with Ormat Technologies. Air-cooled geothermal resources are more sensitive to seasonal and diurnal swings in ambient temperature than water-cooled resources, which affects the level of energy output.

Table 7: Costs of delivered energy to California by scenario and funding type (\$2011/MWh)

Funding Type	Scenario 1	Scenario 2	Scenario 3	Scenario 4	Scenario 5	Scenario 6
Utility, w/o subsidy	\$116	\$140	\$123	\$99	\$114	\$122
Utility, w/ subsidy	\$93	\$109	\$97	\$89	\$99	\$102
Merchant, w/o subsidy	\$131	\$156	\$138	\$110	\$125	\$135
Merchant, w/ subsidy	\$105	\$122	\$109	\$100	\$109	\$113

Source: NEAC, NEITF, and Synapse

F. Transaction costs between the Nevada and California markets

The lowest possible costs of delivering renewable energy from Nevada to California would be realized if, in addition to using a lower cost of capital typical of regulated or public utility investments (as opposed to private investors) for both the renewable resources and the transmission infrastructure, all transaction hurdles to delivering power between the two states were eliminated.

Today, transactions across the border from the regulated utility region in Nevada to the California ISO-controlled grid face “hurdle rates” that are imposed according to the applicable transmission tariffs. Table 8 shows the approximate cost of obtaining firm, point-to-point transmission service, based on NV Energy’s Open Access Transmission Tariff, for each of the six development scenarios.¹³ In order to express these rates as a \$/MWh addition to energy costs, the transmission costs are levelized over the expected energy deliveries from each of the scenarios. If the actual energy deliveries were greater or less than those anticipated here, the effective \$/MWh costs would be lower or higher, respectively.

For this calculation, firm transmission service on the lines is assumed to be reserved at the full nameplate generation capacity for each scenario. The total energy delivered is calculated based on the average capacity factor for the energy resources in each scenario. We have estimated the costs for the following service components: Firm transmission service; scheduling, system control and dispatch service; reactive supply and voltage control; and regulation and frequency response service for generators selling outside of control area. 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. The necessity and specifics of such service requirements will depend on the details of the energy transaction such as generation source and sink, and service timing.

In Tables 8a and 8b, Zones A and B represent the service territories of Sierra Pacific Power Company and Nevada Power Company, respectively. As such, the energy from Scenarios 2 and 4 can be assumed to be subject to Zone A rates, and the other scenarios to Zone B rates. However, as noted above the exact cost of service will depend on the details of transmission scheduling and service paths.

¹³ Of necessity, these calculations should be considered approximate. Actual costs would depend on a large number of unknowable characteristics of each specific transaction, along with other considerations such as additional uses of the transmission infrastructure.

Table 8a: Ancillary service rates in Nevada

Service	Rate (\$/MW per month, unless otherwise indicated)	
	Sierra Pacific Power (Zone A)	Nevada Power Company (Zone B)
Scheduling, System Control and Dispatch	\$246.27	\$111.90
Reactive Supply and Voltage Control	\$100.97	\$158.05
Long Term Firm Point-To-Point Transmission (\$/kW)	\$34.08	\$16.80
Regulation and Frequency Response Service for Generators Selling Outside of Control Area	\$6,377.45	\$6,445.08
Total	\$6,758.77	\$6,731.83

Source: NV Energy Open Access Transmission Tariff, Schedules 1 - 11

Table 8b: Estimated hurdle rates for export by scenario based on current NV Energy tariff

Scenario:	1	2	3	4	5	6
Zone*	B	A	B	A	B	B
Maximum Capacity (MW)	1150	1500	450	500	750	875
Average Capacity Factor	45.91%	37.53%	41.89%	70.60%	48.00%	48.02%
Annual Energy (GWH)	4,625	4,931	1,651	3,092	3,154	3,681
Scheduling, System Control and Dispatch (\$thousands)	\$1,544	\$4,433	\$604	\$1,478	\$1,007	\$1,175
Reactive Supply and Voltage Control (\$thousands)	\$2,181	\$1,817	\$853	\$606	\$1,422	\$1,660
Long Term Firm Point-To-Point Transmission Service** (\$thousands)	\$19,320	\$51,120	\$7,560	\$17,040	\$12,600	\$14,700
Regulation and Frequency Response Service for Generators Selling Outside of Control Area (\$thousands)	\$889	\$1,263	\$348	\$421	\$580	\$676,733
Total:	\$23,935	\$58,633	\$9,366	\$19,544	\$15,609	\$18,211
Total Estimated Wheeling Costs (\$/MWH)	\$5.18	\$11.89	\$5.67	\$6.32	\$4.95	\$4.95

*Synapse assumption based on geographical focus of scenarios

**Based on billing demand, at 1.1% of Reserved Capacity

By today's transmission tariffs, the costs of delivering energy produced in Nevada outside the state would exceed production cost, on a per MWH basis, by amounts similar to those shown in Table 8b (in addition to the cost of losses). In examining any market opportunity for Nevada's renewable energy exports, these real costs would have to be included in any comparison against other local or export offerings to the same market.

A more conducive environment for sales of Nevada renewable (or conventional) energy to California could be produced by eliminating such hurdle rates, and allowing all energy to flow on

the basis of its economic merit without regard to grid control area of origin. This is the model used in multi-state RTOs such as the PJM Interconnection. For our calculations of the projected cost of delivering energy to California, we have assumed that the hurdle rates for delivering the power across state and balancing area lines have been eliminated. In other words, we assume that there are no additional integration or transmission costs for delivering power from Nevada's resources other than those that would be incurred were the power produced by an in-state or a California balancing area entity. Any additional costs—such as those identified in Table 8b—could lead to a competitive disadvantage for any potential external resources, including those in Nevada, to deliver into California.

One implication of this assumption is that while Nevada may realize substantial macroeconomic and employment benefits, along with sales and use tax benefits, associated with developing resources in-state, 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.



5. Market Opportunity

The delivered cost of Nevada renewable energy, discussed in the previous sections, must be economically competitive with alternative forms of RPS-eligible energy procurement options for renewable energy to be acceptable and attractive to California utilities. The potential cost savings from using Nevada resources, along with any operational benefits, represents the market opportunity for export of Nevada renewables to California.¹⁴

Renewable energy procurement is generally initiated through the public issuance of Requests for Proposals (RFPs); however, executed energy contracts and power purchase agreements are almost exclusively confidential in nature and, as such, the actual contract prices are seldom made available in the public domain. Although the cost of renewable energy at generator or delivered to load is clearly correlated to the quality of the resource, capital cost of generation, transmission and development costs, there is minimal information available to inform any forecasts or future contract prices.

California's major IOUs generally use Time-of-Delivery (TOD) periods and factors in power purchase agreements during solicitations of renewable energy. These are multipliers to the base or unadjusted price of delivered energy during specific timeframes of the day, such as periods of peak demand, which reward the specific renewable generation providing energy when it is required or valued the most (see Table 9). Renewable resources such as solar PV tend to benefit the most from this pricing construct due to the natural correlation between solar resource availability and periods of high demand.

¹⁴ The Market opportunity may also include aspects of transmission development and energy transactions that improve the reliability, balancing, resource diversity, and/or other system benefits. However, these are beyond the scope of this report.

Table 9: California IOU Time-of-Day factors

	Month	Period	Definition	TOD Factor	
Pacific Gas and Electric	June-September	Super-Peak	Hours Ending(HE) 13-20 - Weekdays(except NERC holidays)	2.38	
		Shoulder	HE 7-12, 21 & 22 - Weekdays(except NERC holidays)	1.12	
			HE 07-22 - Saturday & Sunday (and NERC holidays)	0.59	
		Night	HE 01-06, 23 &24 - All Days	0.59	
	October-February	Super-Peak	Period definitions as above.	1.1	
		Shoulder		0.94	
		Night		0.66	
	March-May	Super-Peak		1.22	
		Shoulder		0.9	
		Night		0.61	
Southern California Edison	June - September	On-Peak		Noon-6pm – WDxH	3.13
		Mid-Peak		8am-Noon, 6-11pm – WDxH	1.35
		Off-Peak		All other times	0.75
	October - May		8am-9pm -WDxH	1	
			6-8am, 9pm-Midnight - WDxH; 6am-Midnight WE/H	0.83	
			Midnight-6am	0.61	
<i>WDxH is defined as weekdays except holidays; WE/H is defined as weekends and holidays</i>					
San Diego Gas & Electric	July-October	On-Peak	11am-7pm - Weekdays	2.5	
		Semi-Peak	6am-11am, 7pm-10pm - Weekdays	1.34	
		Off-Peak	All other hours	0.8	
	November-June	On-Peak	1pm-9pm - Weekdays	1.09	
		Semi-Peak	6am-1pm, 9pm-10pm - Weekdays	0.95	
		Off-Peak	All other hours	0.68	
	<i>All hours during NERC holidays are considered Off-Peak</i>				

Source: CPUC

Other resources such as wind or geothermal do not tend to benefit from the TOD pricing construct. Wind power output is typically highest during periods of low demand and lower prices (at night) and geothermal generation has a significantly higher capacity factor than the other two resource types and can be operated as a base to intermediate load plant.

The CPUC's 4th Quarter 2011 RPS report to the legislature, in compliance with SB 836, provides weighted average time-of-delivery adjusted cost of all contracts approved from 2003-2011 for the three large IOUs. (Table 10)

Table 10: IOU average contract prices

California IOU Procurement	Total Weighted Average TOD-Adjusted Contract Cost (2003-2011)
Southern California Edison (SCE)	\$118/MWh
Pacific Gas & Electric (PGE)	\$119/MWh
San Diego Gas & Electric (SDG&E)	\$113/MWh

Source: CPUC

The report also provides a graphical representation of the historical weighted average TOD-adjusted cost of delivered renewable energy by year for the years 2003-2011 in dollars per kilowatt hours (\$/kWh).

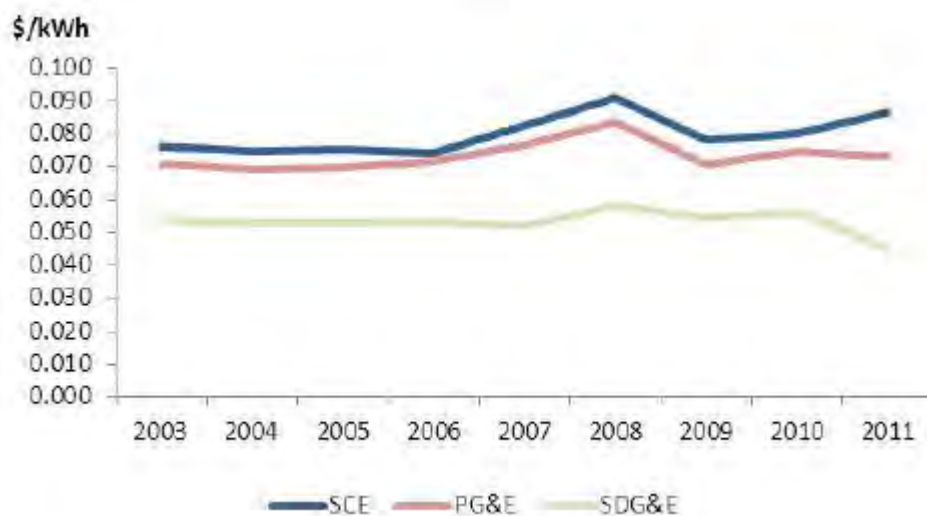


Figure 7: Weighted average TOD-adjusted cost of delivered renewable energy by year (2003-2011)

Source: CPUC

The CPUC report provides two plausible reasons for the increase in costs for 2008. First, during this year most of the procurement was from Qualifying Facilities (QF's) whose energy payments are correlated the cost of natural gas; second, 2008 was a low hydro year in which low-cost hydro generation did not factor into the average procurement costs.

The market opportunity for the development and export of Nevada renewables to California depends largely on how the cost for developing and exporting Nevada's renewable resources, discussed in the previous section, stack up against the willingness to pay by California LSEs. 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. These include:

- The likelihood that a large fraction of "expected" in-state renewables will not materialize on time, or at all, consistent with historical experience.

- The likelihood that at least some California entities will not be able to procure all of their renewable requirements at the prices they now say they are willing to pay, and that this price will increase substantially as compliance deadlines near.
- The possibility that if the import of renewable energy from Nevada is clearly supported by Nevada and will be reliably deliverable to California, that this competition will drive certain California in-state projects from the market.
- The general expectation that California's 33% RPS is only the beginning, and that the requirement will grow in the future; this is also more likely if there is a clear option of obtaining low-cost, reliably deliverable renewable energy from Nevada.

On the other hand, the costs derived in this study should be considered the *lowest* expected cost of delivering renewable energy to California. This is consistent with the highest level of cooperation between the two states in delivering the energy—represented by the removal of all cost hurdles for delivering power across control area lines. In other words, we assume that there are no additional integration or transmission costs other than those that would be incurred were the power produced by an in-state entity in California. Any additional costs—such as the current hurdle rates (Table 8b), additional integration and balancing costs, or commitment and scheduling obstacles—would lead to a competitive disadvantage for any resource outside the state of California or a California balancing area, including Nevada resources. This means that in terms of benefits for Nevada's electricity ratepayers, there is a trade-off between benefitting from California LSEs' use of Nevada's transmission resources and the competitiveness of Nevada's renewables in the California market.

There are a number of drivers or policy considerations that are central to the consideration of the business case for export of Nevada renewables. Many of these considerations are discussed in the final section of this report.



6. Economic and Fiscal Impacts

A. Background

Economic impacts are a measure of an investment or policy's stimulus (or footprint) on a local economy. They are composed of:

1. Direct economic effects (e.g. spending on goods and services at a construction site or the purchase of a piece of new equipment), and
2. Multiplier effects, which include:
 - a. Spending on supporting goods and services by the firms providing that direct activity ("indirect" impacts), and
 - b. Re-spending of wages earned ("induced" impacts).

In addition, any energy resource development in Nevada would be subject to various taxes and fees, discussed later in this section. However, while we explore the revenues that would accrue to the public benefit associated with these taxes, we do not evaluate their macroeconomic impacts in this study.

The six scenarios evaluated in this study would generate economic impacts in Nevada through installation, operation, and maintenance of transmission, solar photovoltaic panels, geothermal plants, and wind turbines. The amount of spending and location of each investment, the supporting labor and materials required, and the extent to which each is provided determine the investment's economic impact on the state. In conjunction with the studies provided by NSOE, Synapse has used our estimates of capital and operations cost by resources (discussed previously).

It is also possible to study the industry impacts to developing a sustainable industry in the state. In the case of clean energy, manufacturing of renewable energy components, project development companies or drilling specialists are examples of industries that could find a critical mass if the renewable energy industry is robust, supported by the state and seen as long term. These impacts are not in the scope of this study but may be important considerations for the development of policy recommendations.

B. Direct spending in Nevada

Economic impacts are in part based on where the initial investment takes place. All of the renewable investment involves in-state generation of solar, wind and geothermal. Therefore, all of the costs associated with these investments count as direct spending in Nevada. However, as shown in Table 11, the transmission projects for Scenarios 4 through 6 cross state lines and thus a portion of the construction and operation of these projects will not accrue to Nevada. Scenarios 1 through 3 are entirely located in Nevada so all of the initial investment can be attributed to the state.

Table 11: Transmission investments – inside and outside Nevada

Scenario	% of Transmission in NV
1	100%
2	100%
3	100%
4	83%
5	46%
6	12%

Source: Tri-Sage et al., 2012

Table 12 shows the total construction and operations and maintenance costs for the transmission projects. These costs only account for the spending in Nevada and serve as the basis for the direct spending that in turn feeds their economic impacts.

Table 12: Total transmission costs in Nevada (\$2012, millions)

Scenario	Construction	Annual O&M
1	\$70	\$2
2	\$555	\$14
3	\$46	\$1
4	\$163	\$4
5	\$189	\$5
6	\$72	\$2

Source: Tri-Sage et al. 2012, West Connect 2011, NV Energy 2010 IRP, Brightsource Energy 2011, Lantz and Tegen 2011

The renewable generation investments are all located in Nevada and, therefore, the direct spending can all be attributed to the state. Table 13 shows the construction, operations and maintenance costs for renewable generation facilitated by each scenario's transmission projects.

Table 13: Total renewable generation costs in Nevada (\$2012, millions)

Scenario	Construction	Annual O&M
1	\$4,789	\$83
2	\$5,789	\$77
3	\$1,808	\$28
4	\$2,361	\$69
5	\$2,614	\$63
6	\$3,491	\$69

Source: NEITF, Synapse estimates based on review of solar studies, Wiser (wind) and AEO (geothermal). Include \$100/kW interconnection costs

Figures 8 and 9 show the breakdown of initial costs for construction and operations and maintenance by type of generation for each scenario. Geothermal has higher up-front costs per MW than wind and solar, since it requires exploration and drilling, followed by the construction of a steam plant. Geothermal also has higher operations and maintenance costs compared to the other renewable resources (see Table 5).

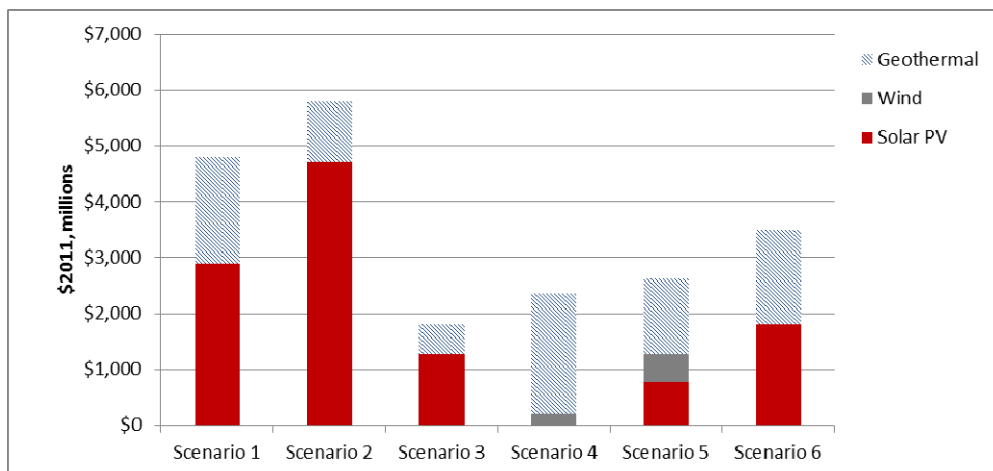


Figure 8: Renewable generation construction costs by scenario and resource (\$2012, millions)

Source: NEITF, Synapse estimates based on review of solar studies, Wiser 2012 (wind) and AEO (geothermal). Values shown assume a \$100/kW interconnection cost

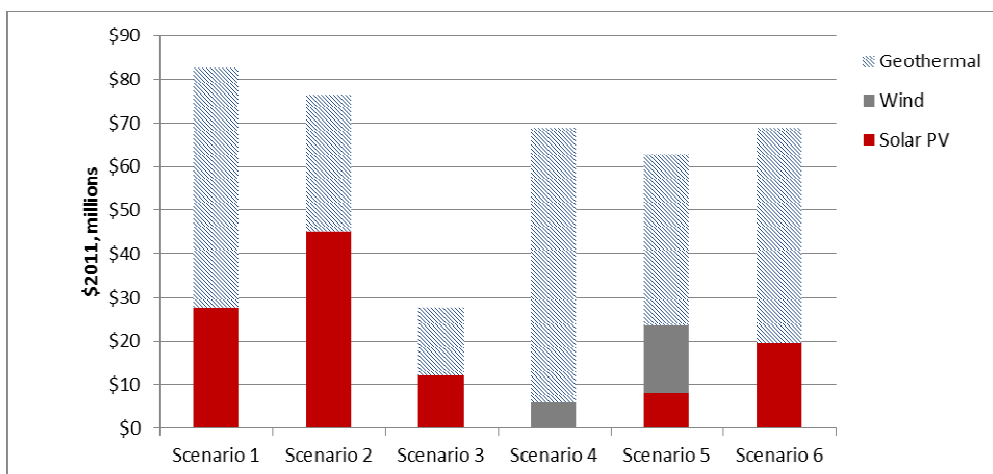


Figure 9: Renewable generation operations and maintenance costs by scenario and resource (\$2012, millions)

Source: NEITF, Synapse estimates based on review of solar studies, Wiser (wind) and AEO (geothermal). Values assume a \$100/kW interconnection cost

C. Modeling Assumptions

After developing estimates of the direct spending (discussed above), Synapse developed inputs for the IMPLAN model to estimate the total economic impacts which include direct (spending on-site), indirect (spending on local supplies) and induced (re-spending of workers' income related to the two previous categories). These impacts are often referred to as "multiplier" or "spin-off" effects since the spending of a dollar leads to more dollars of activity.

The IMPLAN model can estimate multipliers for more than 400 industries in terms of jobs, income and GSP (i.e. value-added). It has been calibrated specifically for the state of Nevada, capturing industry and household spending patterns. The most important aspects of developing inputs for

this type of modeling are determining: 1) the distribution of spending between labor and materials for a given activity and 2) the portion of in-state spending on each supporting industry.

Spending on supplies and services to support construction, operations and maintenance is modeled for the industries that are called upon (e.g. wind farms purchase turbines from those manufacturers). Spending on direct labor accrues to the related contractors and workers that operate and maintain the projects while they are up and running. These workers then re-spend these wages, further stimulating the local economy. Synapse estimated the split of labor versus materials spending for both construction and operations and maintenance for each renewable technology based on our previous research for solar, wind and geothermal, as well as research on transmission (WIRES; Lantz and Tegen) to determine the breakdown of materials and services required for each activity (Table 14).

Table 14: Portion of project spending on labor and materials by activity

Activity	Source	% Labor	% Materials and Supporting Services
Construction			
Solar PV	a	13%	87%
Wind	a	15%	85%
Geothermal	b	27%	73%
Scenario 1 Transmission	c	49%	51%
Scenario 2 Transmission	c	49%	51%
Scenario 3 Transmission	c	57%	43%
Scenario 4 Transmission	d	64%	36%
Scenario 5 Transmission	d	56%	44%
Scenario 6 Transmission	d	59%	41%
O&M			
Solar PV	a	55%	45%
Wind	a	22%	78%
Geothermal	a	44%	56%
All Transmission	c	10%	91%

Sources: (a) Synapse 2011, (b) Wahlstrom and Associates 2011, (c) Lantz and Tegen 2011, (d) Tri-Sage et al.2012

Spending on labor or materials from outside the state is not captured in the economic impact results. Therefore, the extent to which the activities above are provided or located in Nevada determines the magnitude of the economic impacts and must be accounted for at the industry level (e.g. the portion of wind turbines that are manufactured in Nevada). Synapse assumed that 100% of operations and maintenance jobs were in Nevada since full-time workers would most likely live in-state. Per the RFP, Synapse assumed that 80% of the labor for construction and 50% of the soft costs (mainly architecture and engineering) were provided by Nevadans. Where the percentage of local materials by industry was not available, Synapse used IMPLAN's estimates for

the portion of each industry's demand that is met by Nevada suppliers.¹⁵ Table 15 summarizes the estimated percentage of labor and materials that would come from Nevada.¹⁶

Table 15: Portion of labor and materials provided in Nevada by activity

<i>Activity</i>	<i>% of Labor from NV</i>	<i>% of Materials and Supporting Services from NV</i>
Construction		
Solar PV	80%	19%
Wind	80%	13%
Geothermal	80%	23%
Transmission - Scenario 1	80%	18%
Transmission - Scenario 2	80%	18%
Transmission - Scenario 3	80%	5%
Transmission - Scenario 4	80%	19%
Transmission - Scenario 5	80%	18%
Transmission - Scenario 6	80%	18%
O&M		
Solar PV	100%	63%
Wind	100%	16%
Geothermal	100%	63%
Transmission	100%	80%

Source: NEITF, IMPLAN data

D. Economic Impact Results

Synapse developed economic impact multipliers for each renewable resource type for Nevada, as well as for three different transmission types (500kv, 230kv, and transformer only) to estimate the economic impacts of all six scenarios. These impacts are based on the short term and long term spending on the associated transmission and renewable generation activities. Construction spending would impact the state's economy only during the short term (i.e. construction period) while the operations and maintenance spending would provide long term impacts during the project's useful life.

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.

¹⁵ This is often referred to as the Regional Purchase Coefficient (RPC).

¹⁶ Synapse has not run impacts assuming that more manufacturing of these materials takes place in Nevada pending input from the NEITF.

However, the economic impacts of construction and operation of these projects in Nevada will be similar regardless of whether the funding comes from a private developer or utility, since the same labor and infrastructure would be required. It is these impacts that are the focus of our economic analysis.

Table 16 presents the calculated construction impacts in terms of job-years¹⁷ for the construction period. Our projected construction-related jobs range from 10,000 for Scenario 3 to nearly 35,000 for Scenario 2. These job-year impacts would be spread out over the construction periods of the associated projects.

- Scenario 2 has the largest impact compared to other scenarios in part because it involves the most new MW of renewable generation (1,500 MW) and the second largest capital investment in transmission (\$555 million), and the transmission is entirely located within Nevada.
- Scenario 3 involves the lowest amount of renewable generation (450 MW) and the lowest capital investment in transmission (\$46 million) which only includes the replacement of a transformer.

Within each scenario, the impact from renewable generation is higher than for transmission because a much higher investment is required for renewable projects (between \$1.8 billion and \$5.8 billion, see Table 13). This is the “leveraging” benefit of state policies that encourage or fund transmission for renewables, assuming they succeed in enticing the investment in renewable energy that creates many more jobs.

Table 17 presents the annual long-term jobs associated with operating and maintaining the transmission and generation projects once they are in-place.

- Scenario 2 again has the highest impacts with nearly 1,300 jobs.
- Scenario 3 has the lowest impacts with 400 jobs.

Between scenarios, the renewable impacts dominate the transmission impacts because the former require more continual maintenance. These impacts will recur annually as long as each project is operational.

¹⁷ A job-year is the equivalent of full-time work for one person for one year.

Table 16: Construction job-year impacts by scenario

	Scenario 1	Scenario 2	Scenario 3	Scenario 4	Scenario 5	Scenario 6
Direct						
Renewable Generation	10,800	10,900	3,800	7,600	6,600	8,400
Transmission	400	3,400	300	1,300	1,300	500
<i>Sub-Total</i>	<i>11,200</i>	<i>14,300</i>	<i>4,100</i>	<i>8,900</i>	<i>7,900</i>	<i>8,900</i>
Indirect and Induced						
Renewable Generation	15,700	18,500	5,800	8,000	8,200	11,600
Transmission	300	2,000	200	700	800	300
<i>Sub-Total</i>	<i>16,000</i>	<i>20,500</i>	<i>6,000</i>	<i>8,700</i>	<i>9,000</i>	<i>11,900</i>
All Impacts						
Renewable Generation	26,500	29,400	9,600	15,600	14,800	20,000
Transmission	700	5,400	500	2,000	2,100	800
Total	27,200	34,800	10,100	17,600	16,900	20,800

Source: Synapse estimates using IMPLAN model and data.

Table 17: Annual O&M job impacts by scenario

	Scenario 1	Scenario 2	Scenario 3	Scenario 4	Scenario 5	Scenario 6
Direct						
Renewable Generation	540	570	190	340	320	430
Transmission	2	18	1	5	6	2
<i>Sub-Total</i>	<i>542</i>	<i>588</i>	<i>191</i>	<i>345</i>	<i>326</i>	<i>432</i>
Indirect and Induced						
Renewable Generation	590	550	200	470	390	490
Transmission	18	152	9	45	54	18
<i>Sub-Total</i>	<i>608</i>	<i>702</i>	<i>209</i>	<i>515</i>	<i>444</i>	<i>508</i>
All Impacts						
Renewable Generation	1,130	1,120	390	810	710	920
Transmission	20	170	10	50	60	20
Total:	1,150	1,290	400	860	770	940

Source: Synapse estimates using IMPLAN model and data. Direct jobs calculated based on income per worker from NREL JEDI model (wind and solar), Lantz and Tegen (transmission), and jobs per megawatt for geothermal from Ormat 2011.

Figures 10 and 11 show the breakdown of short term job-years and long-term jobs, respectively, by each type of renewable resource and scenario. The relative job-creation impact is similar to the relative costs presented in Figures 8 and 9. However, the job impacts vary among resource types on a per MW basis due to differences in the activities necessary to build and operate each type of generation. For short term jobs, geothermal creates a total economic impact of 37 job-years per MW, solar PV creates 17 job-years per MW, and wind creates 8 job-years per MW. For long-term jobs, geothermal creates a total economic impact of two jobs per megawatt, solar PV creates 0.6 jobs per megawatt and wind creates 0.4 jobs per megawatt.

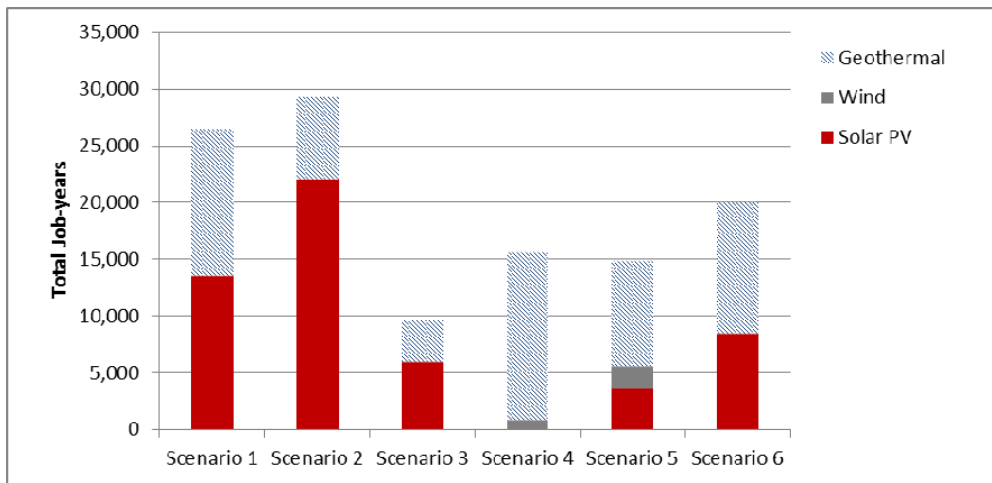


Figure 10: Renewable generation construction job-year impacts by scenario and resource
 Source: Synapse estimates using IMPLAN model and data.

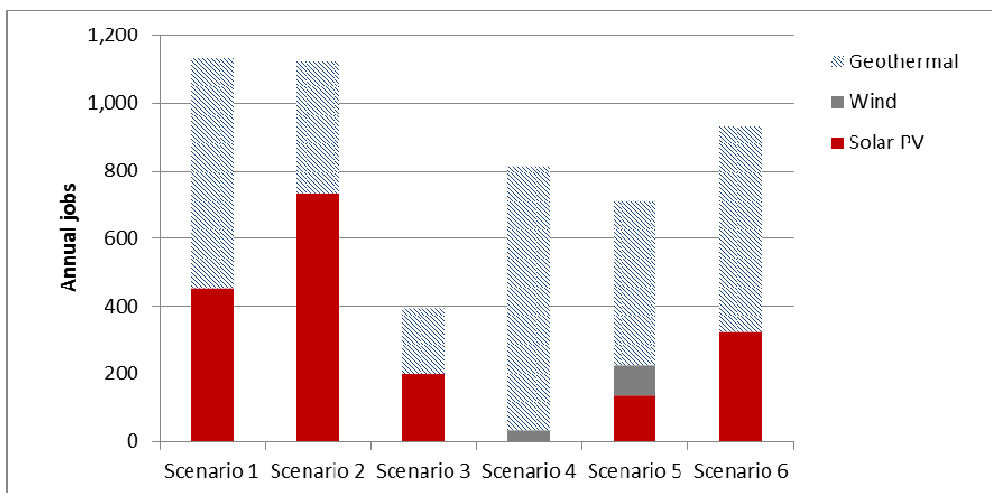


Figure 11: Renewable generation operations and maintenance job impacts by scenario and resource
 Source: Synapse estimates using IMPLAN model and data. Direct jobs calculated based on income per worker from NREL JEDI model (wind and solar), Lantz and Tegen (transmission), and jobs per megawatt for geothermal from Ormat 2011.

The induced economic impacts shown previously are caused by workers re-spending wages in the state's economy. This spending is mostly directed towards local retail and household services. Figure 12 shows a distribution of the additional job impacts by industry from household spending.

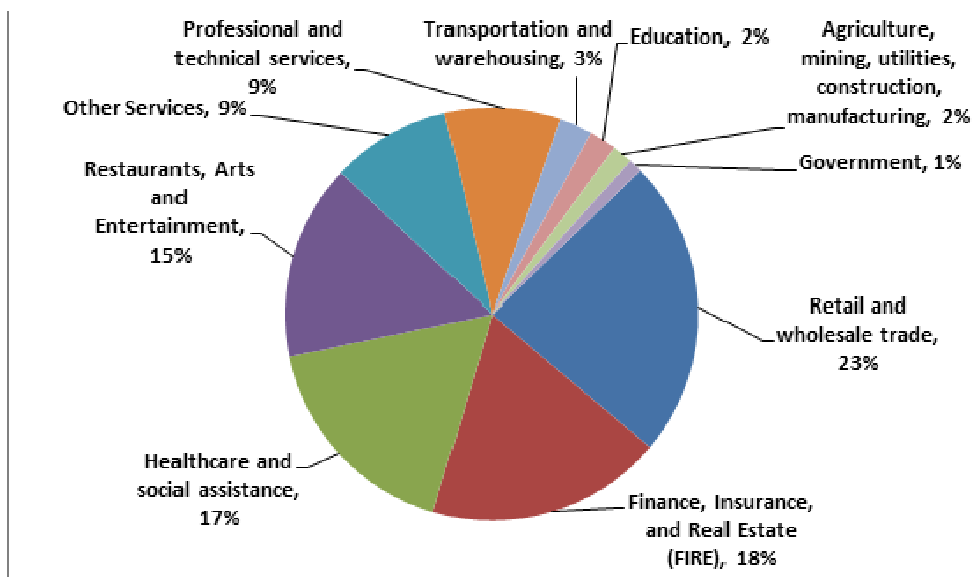


Figure 12: Distribution of job impacts by industry induced by household re-spending

Source: Synapse estimates using IMPLAN model and data.

Tables 18 and 19 show the associated wages paid to the workers discussed above.

Table 18: Construction wage impacts by scenario (\$2011, millions)

	Scenario 1	Scenario 2	Scenario 3	Scenario 4	Scenario 5	Scenario 6
Direct						
Renewable Generation	\$700	\$710	\$240	\$490	\$430	\$550
Transmission	\$30	\$220	\$20	\$80	\$80	\$30
Sub-Total	\$730	\$930	\$260	\$570	\$510	\$580
Indirect and Induced						
Renewable Generation	\$730	\$870	\$280	\$360	\$370	\$530
Transmission	\$10	\$80	\$10	\$30	\$40	\$20
Sub-Total	\$740	\$950	\$290	\$390	\$410	\$550
All Impacts						
Renewable Generation	\$1,430	\$1,580	\$520	\$850	\$800	\$1,080
Transmission	\$40	\$300	\$30	\$110	\$120	\$50
Total	\$1,470	\$1,880	\$550	\$960	\$920	\$1,130

Source: Synapse estimates using IMPLAN model and data.

Table 19: Annual O&M wage impacts by scenario (\$2011, millions)

	Scenario 1	Scenario 2	Scenario 3	Scenario 4	Scenario 5	Scenario 6
Direct						
Renewable Generation	\$39	\$39	\$14	\$29	\$25	\$33
Transmission	\$0.2	\$1.3	\$0.1	\$0.4	\$0.5	\$0.2
<i>Sub-Total</i>	\$39	\$40	\$14	\$29	\$25	\$33
Indirect and Induced						
Renewable Generation	\$27	\$24	\$9	\$22	\$18	\$23
Transmission	\$1	\$9	\$1	\$3	\$3	\$1
<i>Sub-Total</i>	\$28	\$33	\$10	\$25	\$21	\$24
All Impacts						
Renewable Generation	\$66	\$63	\$23	\$51	\$43	\$55
Transmission	\$1	\$10	\$1	\$3	\$3	\$1
Total	\$67	\$73	\$24	\$54	\$46	\$56

Source: Synapse estimates using IMPLAN model and data.

Tables 20 and 21 show the economic impacts in terms of Gross State Product (GSP) in Nevada which measures the value-added of the state's industries.¹⁸

Table 20: Construction GSP impacts by scenario (\$2011, millions)

	Scenario 1	Scenario 2	Scenario 3	Scenario 4	Scenario 5	Scenario 6
Direct						
Renewable Generation	\$860	\$870	\$300	\$600	\$530	\$670
Transmission	\$0	\$300	\$0	\$100	\$100	\$0
<i>Sub-Total</i>	\$860	\$1,170	\$300	\$700	\$630	\$670
Indirect and Induced						
Renewable Generation	\$1,200	\$1,390	\$440	\$640	\$630	\$890
Transmission	\$100	\$100	\$0	\$100	\$100	\$100
<i>Sub-Total</i>	\$1,300	\$1,490	\$440	\$740	\$730	\$990
All Impacts						
Renewable Generation	\$2,060	\$2,260	\$740	\$1,240	\$1,160	\$1,560
Transmission	\$100	\$400	\$0	\$200	\$200	\$100
Total	\$2,160	\$2,660	\$740	\$1,440	\$1,360	\$1,660

Source: Synapse estimates using IMPLAN model and data.

¹⁸ The value-added is the difference in an industry's revenue from its intermediate inputs or its "mark-up." Therefore, it is mainly made up of wages and profits.

Table 21: Annual O&M GSP impacts by scenario (\$2011, millions)

	Scenario 1	Scenario 2	Scenario 3	Scenario 4	Scenario 5	Scenario 6
Direct						
Renewable Generation	\$70	\$70	\$20	\$60	\$50	\$60
Transmission	\$2	\$12	\$1	\$4	\$4	\$2
Sub-Total	\$72	\$82	\$21	\$64	\$54	\$62
Indirect and Induced						
Renewable Generation	\$50	\$40	\$20	\$40	\$40	\$40
Transmission	\$1	\$13	\$1	\$3	\$4	\$1
Sub-Total	\$51	\$53	\$21	\$43	\$44	\$41
All Impacts						
Renewable Generation	\$120	\$110	\$40	\$100	\$90	\$100
Transmission	\$3	\$25	\$2	\$7	\$8	\$3
Total	\$123	\$135	\$42	\$107	\$98	\$103

Source: Synapse estimates using IMPLAN model and data.

E. Fiscal Impacts

A final benefit that must be considered is the direct revenues to the state and local jurisdictions in the form of taxes and fees. The value of new construction for transmission and renewable energy generation would generate additional property taxes for the state and local governments. The materials purchased for construction, operations, and maintenance would generate tax revenue through sales and use taxes—most of the impact on these taxes would come during the construction period. Sales and use taxes are estimated here based on Tri-Sage’s assumption of a combined state and local rate of 7% applied to materials and services (not direct labor).

Table 22: State tax impacts by scenario (\$2011, millions)

	Scenario 1	Scenario 2	Scenario 3	Scenario 4	Scenario 5	Scenario 6
Sales and Use Tax	\$182	\$215	\$65	\$122	\$110	\$143

Source: Synapse estimates, Tri-sage, NV Department of Taxation

Property taxes are assessed by the counties in which the project is located, or can be centrally assessed if the project crosses multiple local jurisdictions in the state. Property tax impacts are presented in Table 23 for the entire life of the project. These estimates are based on recent fiscal impact analyses of renewable projects by Nevada Department of Taxation, accounting for the state’s 55% property tax abatement (assuming this policy persists and that no new property tax incentives are instituted in Nevada).¹⁹

¹⁹ <http://www.energy.state.nv.us/energy-efficiency/reap.html>

Table 23: Property tax impacts by scenario (\$2011, millions)

	Scenario 1	Scenario 2	Scenario 3	Scenario 4	Scenario 5	Scenario 6
Property Taxes	\$360	\$470	\$140	\$190	\$210	\$270

Source: Synapse estimates, NV Department of Taxation

The “net proceeds of minerals tax” is required for geothermal generation and other mining operations in Nevada based on the difference between gross proceeds and costs of excavation. The estimated minerals tax impacts for geothermal operators is shown in Table 24 for the entire life of the plants. These figures were estimated based on data from the Nevada Department of Taxation’s 2010-2011 Net Proceeds of Mineral Bulletin. Synapse calculated the average net proceeds of minerals tax per MW of existing geothermal generation and then applied this to the projected MW of new geothermal generation in each scenario.

Table 24: Mineral tax impacts by scenario (\$2011, millions)

	Scenario 1	Scenario 2	Scenario 3	Scenario 4	Scenario 5	Scenario 6
Mineral Taxes	\$11	\$6	\$3	\$12	\$8	\$10

Source: Synapse estimates, NV Department of Taxation

F. Comparison of Impacts to Initial Investment

The economic and fiscal impact results discussed above apply to a range of upfront investments required--between \$1.8 billion to \$6.3 billion for transmission and renewable generation by scenario. In order to provide a meaningful comparison between scenarios, the impacts can be presented on a “per dollar of investment” basis. We present this analysis based on both *total* investment (i.e., transmission and renewable energy investments) and for investment in transmission alone, assuming that this latter is the public policy focus.

Figure 13 shows the projected construction and O&M job-years²⁰ per million dollars of upfront costs for renewable generation and transmission projects for each scenario. Scenario 4 has the largest impact among scenarios with nearly 7 job-years per million dollars for both construction and O&M. Scenario 4 includes mostly geothermal generation which requires more hands-on activity, and therefore more O&M spending, than solar and wind. In general, those scenarios with a higher mix of geothermal also generate more O&M job-years since geothermal requires more hands-on activity than solar or wind (Figure 15).

²⁰ O&M jobs are translated into job-years by simply multiplying the annual O&M jobs by the years of operation (20 years). With this measure, we have a comparable basis to estimate the total job-year impacts in all stages.

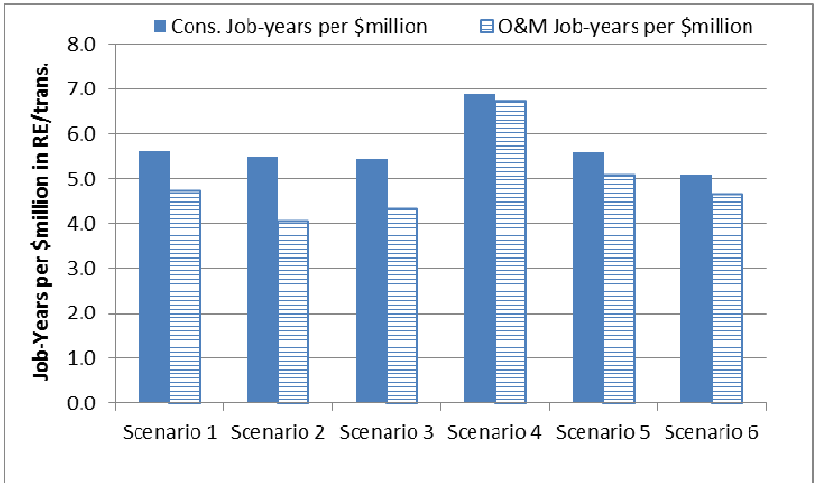


Figure 13: Total job-years per million dollars of spending on renewable and transmission construction

Source: Synapse estimates using IMPLAN model and data.

Figure 14 shows the projected total job-year impacts per dollar of transmission investment. Scenarios 1 and 3 involve low cost transmission projects yet are expected to leverage 1150 and 450 MW of generation, respectively. Therefore, these scenarios look attractive since they induce heavy economic activity through small initial investments in transmission. The other scenarios involve large-scale transmission infrastructure yet leverage a similar range of renewable generation compared to Scenarios 1 and 3. Among the long term scenarios, Scenario 4 is attractive using the measure of job-years per dollar spent on transmission, largely due to its reliance on labor-intensive geothermal technology.

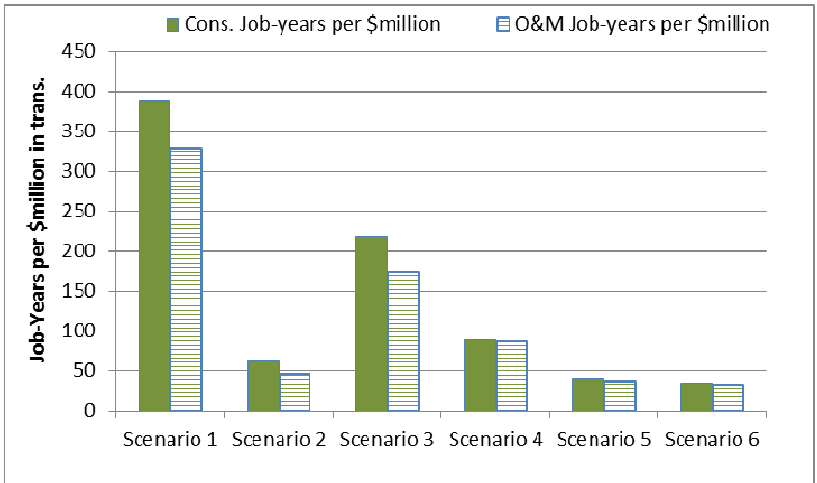


Figure 14: Total job-years per million dollars of spending on transmission construction only

Source: Synapse estimates using IMPLAN model and data.

Figure 15 shows the job-year impacts per dollar of spending on renewable energy for each renewable technology. As mentioned previously, geothermal provides more employment activity for operations as well as construction—approximately seven job-years in both categories per million dollars spent on construction. Wind and solar generate between four and five job-years per

million dollars of installation spending, respectively. The differences in activity level required for each explain the differences in impacts by scenario seen in Figures 13 and 14.

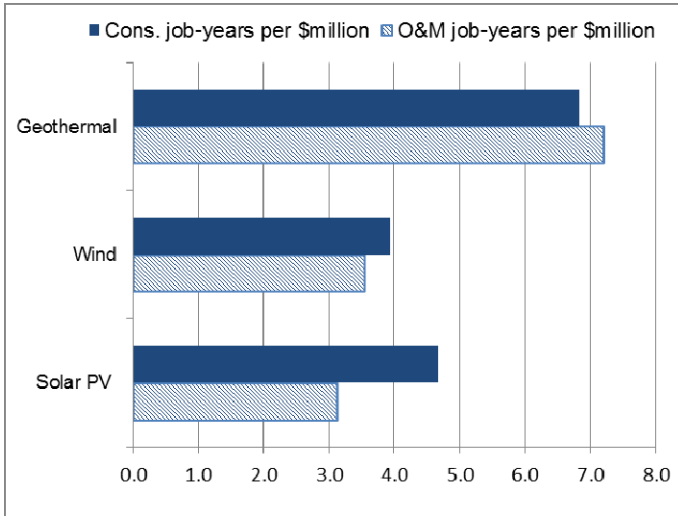


Figure 15: Total job-years per million dollars of spending on renewable generation
Source: Synapse estimates using IMPLAN model and data.

7. Conclusions and Policy Considerations

The State of Nevada has abundant and diverse renewable energy resources that hold the potential for the development of large scale renewable energy generation projects. As of May 2012, Nevada hosts approximately 800 MW of installed renewable energy capacity from geothermal, solar, wind, hydroelectric, landfill and biomass projects, providing about 4 million MWh of energy per year.

Nevada has a RPS goal of 25% energy from renewable sources by 2025. The state's regulated utility, NV Energy, is currently compliant with the interim RPS goals and is expected to remain compliant through 2020, provided all approved energy contracts materialize.

The Nevada State Office of Energy has estimated that the state holds the potential for the development of over 4000 MW of additional renewable energy installed capacity, or for producing over 16 million MWh of energy from renewable sources per year—equivalent to almost 75% of Nevada's 2011 retail sales.

Nevada's renewable energy resources are spread across the state, and are often located in remote regions that would require significant investment for transmission access. In addition to public policy, economic development or environmental goals that drive the overall requirement for renewable energy, there are also considerations such as rate impacts, location of demand, resource quality and availability, ease and timing of permitting, available subsidies, and financing models that determine the viability of any resource for meeting the needs of any given LSE. Many of these considerations can be characterized as follows:

- **Demand Drivers**
 - Potential national energy policy and goals
 - Nevada's RPS and its future beyond current goals
 - California's RPS and its future beyond current goals
 - Dynamics, reliability, and integration of renewable energy in the region
 - Replacement generation for coal plants and OTC retirements in California and elsewhere
- **Regional Electric System Coordination**
 - Electric system configuration and operation of each Balancing Authority (BA)
 - Motivation, benefits and requirements of forming a regional BA or tighter regional coordination of BAs
 - Mechanics of enhanced and coordinated regional dispatch, including an Energy Imbalance Market
- **Project Sponsorship and Financing**

(Note that the NEITF has a subcommittee devoted to the transmission financing and planning issues and these types of options are being further reviewed at a high-level to gauge interest, in conjunction with this memorandum, in making recommendations to Governor Sandoval.)



- Feasible economic structures to support development of transmission and renewable energy projects
 - Policies affecting cost allocation, including subsidies, for regional and/or export-oriented transmission projects
 - Formation of public-private partnerships and regional infrastructure authorities
 - Trade-off between transmission charges (benefiting ratepayers) and the desire to keep the cost of exporting energy low
- **Permitting and Environmental Impact**
 - Development of policies conducive to the development of large scale generation and transmission projects.
 - Appropriate timing of permitting to capture market opportunity.
- **Benefits and Risks**
 - Economic benefits to Nevada from investments in infrastructure
 - Economic benefits to contracting entities from procurement of Nevada renewable energy
 - Direct tax and fee revenues to the state and communities
 - Risk of failure to attract investment in renewables, despite investments in transmission infrastructure
 - Risk that incremental costs will not be offset by incremental transmission fees

Our analysis quantified the substantial economic, employment, and fiscal benefits that both transmission and renewable energy investments can provide for Nevada. We find that, among all of the scenarios, Scenarios 1 leverages the most economic activity per dollar of transmission investment in the construction (short term) and O&M (long term) stages, followed by Scenario 3.

Among the long term scenarios, Scenario 4 leverages the most economic activity per dollar of transmission investment, due mostly to the reliance on geothermal generation which creates more jobs per dollar in Nevada than solar or wind; this dynamic could shift if Nevada gains traction in manufacturing to support the solar and wind generation industries.

State policies that support transmission investments could be an effective way to stimulate job creation because every dollar spent on transmission can enable many more dollars of private investment in generation, but such a strategy does entail substantial risk—and an important feature of state policy will be the management of that risk; and, ultimately, how it is allocated among taxpayers, ratepayers, and private investors.

The economic impact and fiscal impacts by scenario investigated here are only one consideration in evaluating renewable energy development scenarios. To the extent that the success of such a policy hinges on exports to the regional market, the demand for, deliverability of, and price competitiveness of Nevada's renewable resources will be key factors.

The impacts identified in this report are based on the assumption that if any of the projects are built, private investment in the indicated amount of renewable energy and long-term purchase contracts for that energy will follow. However, this investment will occur only if required market conditions exist for the sale of that energy, and if all other necessary technical, political, siting and land use, and electric system factors were in place. To reduce this uncertainty, greater

cooperation and coordination within the state and between Nevada and California at the policy-making level may be the best way to ensure that a viable market opportunity exists for Nevada's renewable resources, prior to putting ratepayer or taxpayer funds at risk.



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Comments on the October 3, 2012 Synapse Report

The Synapse Report dated October 3, 2012 shall be reviewed in concert with the following comments and transcript dated October 9, 2012.

In addition to the comments reflected in the minutes and transcript of the October 9, 2012 meeting of the New Energy Industry Task Force Subcommittee on Business Case (which follow beginning on page 18), the following written comments were added to the record:

Table of Contents

- Comments Submitted By John Candelaria, Aspen Environmental Group page 1
- Comments Submitted By Jim Baak, Vote Solar page 5
- Comments Submitted By Dan Jacobsen, BCP page 9
- Comments Submitted By Brian Whalen, NV Energy page 13
- Comments Submitted by Stacey Crowley, Task Force Chair page 15
- Comments Submitted by Ian Rogoff page 17
- Verbatim Transcript from October 9, 2012 Business Case Subcommittee meeting page 18

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

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, Bureau of Consumer Protection

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

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.

NVEnergy 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

COMMENTS ON SYNAPSE REPORT BY STACEY CROWLEY

Key takeaways that can provide direction to the Task Force

1. The renewable energy potential in Nevada far exceeds the amount required to meet the state's current Renewable Portfolio Standard (RPS) requirement. As such, it provides an opportunity to explore the potential economic benefits of further developing these resources for export.
2. Large-scale development of Nevada renewables dependent on the expansion of the transmission system, both to connect renewable energy zones to the Nevada grid, and to expand the export capability to the neighboring demand areas.
3. While numerous other factors may affect the business case, such as permitting and construction schedules, and technological diversity, the delivered costs must be competitive with other offerings from within the target market for an economic development strategy based on renewable energy exports to succeed.
4. Substantial benefits are provided by the transmission and renewable energy construction and operation to the state. For example, Scenario 3 benefits include:
 - o 400-500MW of additional geothermal and solar capacity in the near term
 - o Transmission upgrade yields \$46M in capital costs
 - o Renewable energy capital costs are estimated at \$1.8B
 - o Delivered cost of energy averages \$117/MWh
 - o Short term construction jobs total \$10,100 job years averaging \$57,000 annual salary
 - o Project brings in \$740M in Gross State Product
 - o Taxes revenue impact expected to be \$208 over the life of the project, or \$10.M/year
5. The highest level of cooperation between CA and NV will lead to the greatest market opportunity. In this case, this could include:
 - o Reducing or eliminating hurdle rates or other transaction charges
 - o Formation of a regional Balancing Authority or tighter regional coordination
 - o Enhanced and coordinated regional dispatch, or Energy Imbalance Market
 - o Development of policies affecting cost allocation
 - o Formation of a public/private partnership, or bi-state partnership

Key deficiencies of the Report

1. The important connection to the idea of resource sharing as a potential benefit to both CA and NV is only mentioned briefly and without any detail.
2. The report does not fully detail or describe the "utility" versus "merchant" advantages, nor does it describe the "subsidies" that are included in the report.
3. We asked Synapse to assume a market existed, yet they spent a large portion of their time and resources investigating the potential market in CA.

4. Nevada's renewable energy tax abatements are not considered in the report but provide tremendous value to developers in Nevada. Many have stated that they would likely not be doing business in Nevada without the incentives as well as the ease of permitting (also not addressed) in the state.
5. A summary of the most promising Scenario would have helped to analyze the benefits and impacts. A summary of Scenario 2 could include items such as:
 - Capital investment in transmission and renewable energy totals \$6.3B
 - 34,800 job-years created during construction or 23.2 per MW with an average annual salary of \$54,650.
 - Provides 1,290 jobs annually during O&M with an average annual salary of \$57,500.
 - Cost of delivering energy ranges from \$109 to \$156/MWh
 - Yields \$34.5M per year in tax revenues to the state, or \$14.4M with tax abatements
6. The rate impact or rate payer risk was only briefly mentioned but inclusion caused confusion. There was no analysis of how each scenario would impact NV Energy rate payers, but comments were made to suggest that there would be little or no rate payer benefit for the use of NVE's infrastructure. This is not something that we could submit to the Governor, or other decision makers, that would allow them to make rational decisions on transmission planning policy.
7. Cost comparison between NV and CA renewables is not an "apples to apples" comparison and needs updated numbers.

COMMENTS ON SYNAPSE REPORT BY IAN ROGOFF

Stacey, hi – you have captured my key feedback in your word doc attached (merchant vs utility, apples-to-apples, etc). There was only 1 point I didn't see in there, but it's an important one because it's the link between us, GOED and NSHE.

I've talked about this a lot before, but just for the record, they didn't address a key reason NV would spend any significant time, effort or \$ on this initiative. Namely, they didn't describe any impact on the project development economic cluster in NV. They didn't talk about project development jobs at all. We asked them to tell us about direct jobs – not just induced economic benefits, and the most important direct jobs are the project development ones because they're higher educational attainment jobs. Unfortunately, in their analysis they failed to note any impact on a project development economy. I even asked Ezra about this. This analysis was to be a big part of our outreach to NSHE and economic development so we could jointly make the case for the higher educational attainment positions that could be home-grown or attracted to NV through developing our resources and because renewables are one of the targeted industries from GOED.

Ian Rogoff
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MINUTES AND TRANSCRIPT

New Energy Industry Task Force (NEITF)

Subcommittee on Business Case

(Development of Key Metrics, Draft RFP and Manage Business Case)

October 9, 2012

4:00 p.m.

The meeting was held via conference call

- 1. Call to order and Roll Call.** Ian Rogoff, Co-Chairman opened the meeting at 4:00 p.m. and opened this agenda item.

<u>Member Names</u>	<u>Present</u>	<u>Absent</u>
Ian Rogoff, Co-Chair	X	
Jason Geddes, Co-Chair	X	
Ellen Allman		X
Tom Morley		X
John Candelaria	X	
Alex Gamboa		X
Dan Jacobsen	X	
Paul Thomsen		X
Joni Eastley	X	
Kathleen Drakulich	X	
Jim Baak	X	
James Settelmeyer		X
Jack McGinley	X	
Stacey Crowley	X	

2. Public comments and discussion.

Members of the public in attendance: Phil Williams, Don Johnston, Wendy Ellis; Luke Busby, Mike Hazard, and Dagny Stapleton.

Chairman Ian Rogoff noted that public comments will be permitted on agenda matters which are before the Subcommittee for consideration or action. He asked that comments be limited to three minutes.

Mr. Hazard commented on the Synapse draft report and wanted to make note of the fact that the report identifies California as a sizeable market for renewable energy, but that he has not heard from anyone in California who is ready to buy; that a renewable energy company in Las Vegas laid people off; and that a viable market should be identified before putting ratepayer funds at risk. He also said he believed that RPS standards should be capped at their current level of 15 percent. He noted an article at energy.aol.com that reports that natural gas prices are trending down, according to Ron Norman with PA Consulting Group, which threatens the state's RPS. He concluded that these comments should be kept in mind when considering a business case.

Ms. Ellis, Las Vegas, commented that the impacts identified in the Synapse report are based on the assumption that if any projects are built, private investments will follow if required market conditions exist, and that a viable market opportunity should be identified before putting taxpayer funds at risk. She stated that she did not think this was a good deal for taxpayers or ratepayers and that it sounds like the RPS requirement will be increased. She noted that power purchase agreements may not come from California and that if the project is built in Nevada, then the RPS is increased and expensive renewable energy will be purchased.

3. Review and Approval of Minutes from September 19, 2012 Business Case Subcommittee meeting.

Because the draft minutes were not received before the meeting, this item was deferred.

4. Discussion and possible action regarding Synapse Draft Report.

Verbatim transcription follows:

CHAIR:

Thank you. Let's move to item four, Discussion and Possible Action Regarding the Synapse Draft Report. Let's start by saying what I'd like to do is go around the call for each subcommittee member, just like we did last time, and get your feedback, positives, negatives and an indication of whether you can accept the report or not. We're going to try to take a vote today whether to accept the report, not whether we agree with it, not whether we disagree with it, but whether we accept it and recommend it to the overall task force. So I don't want to presuppose what your conditions are for accepting or rejecting, I'd like to hear it from you, from each of the members of the subcommittee. And it's open mike, so please feel free to detail what you think is acceptable, what you think is unacceptable. You may choose not to approve the report or accept the report, excuse me, for passing along to the Task Force based upon whatever conditions that you think are important. So to summarize what we're going to try to do today is determine whether we accept the report, again not whether we agree with it or disagree, just whether we accept it and whether we're going to pass it on to the

Page 19 of 36

The Synapse Report dated October 3, 2012 shall be reviewed in concert with the comments contained herein and the transcript dated October 9, 2012.

overall Task Force. Let's just go around the subcommittee, and I'm going to go based upon the roll and try to get everybody's feedback as to how you feel about the report and whether or not you would vote to accept it; and if not, let me ask you this, you could just indicate what it would take or there's no way. Jim Baak, can we start with you?

MR. BAAK:

Sure. First off, let me start by saying I think that the report really didn't meet my expectations. I have to say I think it missed the mark. I think that it really just is one-sided in that it presumes that --- you know, the entire point of this was to merely look at the export potential for Nevada, and I understand that this is trying to develop the business case for Nevada. But the business case really is broader than that. It requires looking at what the potential benefit to Nevada is as well as what the potential benefit to a trading partner. Why wouldn't California as a potential trading partner be dealing with Nevada? I don't think it really does that. I think it falls short for me on that.

I also don't agree with some of the assumptions. I know this isn't about agreeing with results of the report or not, but you know, for me, again, I think it just misses the mark. I don't think that it does a good enough job in really evaluating the potential exchange between California and Nevada. So right now at this point I would be leaning towards not accepting the report.

CHAIR:

All right, thanks Jim. John Candelaria, would you like to go next?

MR. CANDELARIA:

I'm not sure that I'd like to go next, but other than that --- first of all, accepting the report, I'm not sure what that means. I definitely don't agree with a lot of the information that's in the report. I had made several suggestions at the last meeting. It appears that none of them are taken. And I just don't really feel like there is an "apple to apples" comparison on developing renewable energy and transmission in Nevada versus California. We still have a situation where we have new transmission development, new renewable energy development, compared to average historical cost of renewable energy in California. And that just doesn't make sense to me. I agree with what Jim Baak was saying about this missed the mark. I think there is some valuable stuff in here. If it's corrected and, you know, there is an "apples to apples" comparison made. Also, I see that we don't have the meeting minutes. I didn't have a chance to look at them, because they're not available. I don't know what was ultimately given to Synapse to change. I tried to compare the two reports today to see where changes were made. And you know, I'm at a loss for why they made changes in certain areas. I just don't understand, what was their charge when we gave them our comments. And again, I could go through and make a list of all the stuff, all the areas where I have problems, but that would take a long time. I think just bottom line is as far as using the report for certain purposes, I think we could if it was --- if we could define those purposes and say this is one piece of a business case for Nevada and

maybe there's other things that we can do. As far as accepting the report in total, I'm not sure I would do that at this point. That's all I have.

CHAIR:

Just to clarify, your "apples to apples" feedback was provided to Synapse. Kathleen, would you like to go next?

MS. DRAKULICH:

Well, I think that the later you go on this call and provide your input, the more persuaded you are going to be by the fact that colleagues you respect have issues with the report. I was one of these people that weighed in on the last call and seconded the motion or the suggestion by John Candelaria regarding the comparison. And my concern about the comparison not having been done was that the report is vulnerable. John asked a rhetorical question, but I guess I would like, Ian, maybe for you to be a little more specific about it. What does it mean if we accept the report today?

CHAIR:

Ok, John had the same question. The business case subcommittee, the combination, let's say, of the two subcommittees was tasked with putting together a business case for developing renewable resources and determining what the economic impacts, benefits, downside would be to developing those renewable resources in the State of Nevada and agreed principally that was under the scenario of export. And, a consultant has been hired and has gone to work on that problem, or that question and has submitted their report. They feel that they have done the best that they could do. They feel that they've done a good job. If you think that there's additional work that could be done, that fell outside the scope of what was in the original RFP, but they're loathe to change their report too much for scope reasons as well as integrity reasons. And we've got to make the decision whether we say, okay, we issued an RFP, we selected a vendor, a consultant, they provided us a report, we're not happy with this report and we're not going to send it on to the full Task Force with either an endorsement or without. And, in effect, we're saying to the Task Force, we do not have a business case one way or another. That doesn't preclude us from coming up with our own work. It doesn't preclude us from doing the policy work. It doesn't preclude us from anything else. It just says that this report doesn't meet our standards to forward to the Task Force to form the basis of any further work that we do. We can do the other work. We can do the policy work. We can do anything else we want, but what we'd be saying effectively is that this report doesn't form the basis in fact for that following work; does that make sense?

MS. DRAKULICH:

Yes, I think so. My concern is that we spent taxpayer dollars putting this report together. And I'm wondering if they feel constrained by the big prize, you know. I would never suggest to a consultant or to anyone, regardless of their station or their expertise, that they change conclusions that they've reached based on information they've reviewed if that was their conclusion and they feel it's well-supported. I don't think the issue is changing the report to compromise their integrity. I don't hear anybody saying that. I think the issue is including

those things that, you know, collectively --- and we're just on the third member of the committee right now --- but collectively that we thought and indicated to them, and I'm happy you provided us with information, that they were given the suggestion by John that they do the comparison of the two states. My concern isn't that what they've done here should be challenged and to compromise their integrity. My concern is that what we asked them to do from what I can tell wasn't done.

CHAIR:

Let me just counter upon that quickly. I wasn't meaning to imply that there was any integrity issues with the "apples to apples" as John raised it. That fell into the scope creep. They did feel that that was scope creep. I went back to look at the RFP, and you could argue it both ways. I didn't mean to imply in any way that that fell into the integrity. I simply was providing the two conditions that they gave. And I think both conditions are fair. But they didn't identify any specific requests from any single person from the State Energy Office or members of the subcommittee or anybody that asked them to compromise their integrity. I'm just reading through my notes, and those are the feedback that they gave. So I'm not trying to ascribe any motives at all.

MS. DRAKULICH:

All right, maybe I misspoke because I tend to agree with everything you just said. So I just don't want them to think that by asking, you know, to supplement the report, to do additional things, to include certain comparisons, to mean you know that we don't agree with the conclusions that they reached in the report. Anyway, I'm getting far afield here. The point I think really is, as I hear you just explain it, Ian, is do we have a difference of opinion about the scope of the RFP?

CHAIR:

I think it's fair to say that. I had a separate private conversation with Synapse where I made the case that John had made so well, which was if you can't do an "apples to apples" comparison, then what is the economic advantage? And you know, I thought John made that case very well, and I tried to represent that case as best I could to Synapse. Their feeling was that we didn't lay that out effectively in the RFP. And I went back and I looked, our intent is certainly there. I'm not going to question our intent at all, because I've been very gratified with the level of participation and thoughtfulness and conscientiousness in this subcommittee. But I can see also their point of view, which was we didn't explicitly lay out the calculation that we would have been satisfied with. So I'm not trying to equivocate. I'm just saying that, you know, we put that express request in. They met most of our requests. When we said take out the unsupported opinions, they went and did that. When we said rank the scenarios, they went back and did that. You know, we gave them some very specific feedback, and John's feedback was part of it. That was one of the things they felt was out of scope, but they certainly agreed that would be something important to do.

MS. DRAKULICH:

Ok, so, I mean, I just would maybe want to table my position on this for the time being, but you also said that we could present the business case to the Task Force and supplement it. In other words, it would only be reviewed --- let's say we agree in the subcommittee to supplement it. We agree that there's sufficient information out there that we could independently gather or provide or review and come to some consensus about or not, but information that we would want maybe as part and parcel of the submission to the full Task Force. Are we eligible to do that along with this report?

CHAIR:

I'm going to defer that to Stacey. Stacey, are you still on the call?

MS. CROWLEY:

Yes, I am.

CHAIR:

Did you hear Kathleen's question? I think it's a good one.

MS. CROWLEY:

To rephrase it, you wanted to know what the Task Force would do with this information.

MS. DRAKULICH:

In our conversations here we talked about what the report does and doesn't do. And the changes that they've made and the things that are included that members of the subcommittee thought were very important to have in the business case. And I understand now that there's an issue regarding maybe the scope of the RFP, what they viewed as included and what our specific intent was, and those don't coincide. My question was can this report be submitted to the full subcommittee as supplemented by information produced by --- I'm sorry, the full Task Force as supplemented by information provided by the subcommittee regarding the business case? And I don't know that we're in a position to develop that with the people have. That's what we hired the contractor for. But, you know, I don't want to see the thing hit the cutting room floor and not be used for any purpose.

MS. CROWLEY:

Yes. I'm going through that in my mind as well. I think we have the ability to do that. The question is, and I asked this, what would we need to see in order to make this a valuable exercise and what additional information would we need? There is information in the report that can be used in my opinion to help us get to some scenario, or some policy discussions that could develop into scenarios. If we went to the utility model, it would look like this. But they don't get there in this report. Is that something we can do within our body, our subcommittee? It's a good question. I would like to try. And some of you may recall that the scope of work was for just under \$100,000 for the Synapse Report. We have \$125,000 for this work. So we do have some additional funds. If the

committee felt that those additional funds could go to a very specific purpose, we could go that route. Timing is of concern. We want to get the right set of information in a timely manner. So, to answer your question, I think the committee could supplement this with anything, whether it is something that the committee does itself or requests an outside source to do. We have limited funds. We could seek additional funds. We have that ability.

MR. BAAK:

Stacey and Ian, this is Jim Baak. A question for you following that comment, Stacey, thank you, is that if we vote not to accept the report, in my mind that means that we don't feel that the report met our expectations, but that doesn't preclude us from taking the elements of the report that we think are valuable and useful and using that. So I think that I need to make sure that I'm clear that the consequences of accepting versus not accepting a report on use of the information contained in the report.

MR. GEDDES:

This is Jason. I just want to add onto that. You know, we had two separate subcommittees. We merged them pending the outcome of the business case, because the group didn't want us to go down a path without having the work of the business case subcommittee done. And we have that not quite as done as people would like it, but we have that. I think, to answer the earlier question, we can supplement or disregard any of the suggestions in there. Really it's to provide our policy discussion with a framework. If we think their data didn't go far enough or it went too far, or their conclusions went too far, that's up to this subcommittee to decide and recommend to the full Task Force and for the full Task Force to decide and move forward. I think personally that we should accept the report. We should ask that either the minutes or comments from people with their issues and concerns with the report be submitted in writing, and we can attach it to the report and give that to the full Task Force. But I think there's a lot of information in this report that will guide the full Task Force, and they will need to be able to have a discussion at that level. So I'd prefer to give them --- to accept the report, to add in letters or critiques or comments or the minutes that show where we missed the boat on "apples to apples." Then this group can have policy discussions and recommendations. And then we can provide all that to the full Task Force for its review and recommendations.

MR. MCGINLEY:

And Ian, this is ---.

CHAIR:

That sounded like Jack. Please, go ahead, Jack.

MR. MCGINLEY:

I was going to say, why don't you go through the rest of the members and see what their opinions are? We kind of stopped on one or two. And maybe we should listen to everybody and then draw some conclusions.

CHAIR:

I was just inferring to our counselor again. Kathleen, did you have any more feedback that you wanted to provide?

MS. DRAKULICH:

I did not, but I agree with Jack McGinley. I do think we should hear from everyone, but yes, thank you very much for that and for those of you who provided input. I really appreciate it.

CHAIR:

Thanks, Kathleen. Why don't we go to the next --- Joni, are you on the call?

MS. EASTLEY:

Yes, I am. I guess my input is going to be questions and confusion. Were we not clear when we issued the RFP in terms of the scope of work and what we expected the outcome to be? I thought we were very clear.

MS. CROWLEY:

This is Stacey. Yes, the RFP went kind of above and beyond normal RFPs. We provided, with the help of Western Grid Group, quite a bit of detailed information for the respondent. The respondent was a qualified respondent. Although, they didn't understand the California market like we might have thought they would. So they spent, I think, more time understanding the market than getting down to the real specifics. They did in part respond to the scope of work. I think as Ian said, there could be some argument as to how in-depth they would go. So I think we were clear in our scope of work.

MS. EASTLEY:

Well, then, it would seem to me just based on what I'm hearing from my colleagues on the subcommittee, that they delivered a product that didn't meet out specifications based on the scope of work. So in that regard, I would have to agree that the product they delivered to us was unacceptable.

CHAIR:

I think, Joni, it's fair to say that it's not as good as we would have liked.

MS. EASTLEY:

Okay. Yes.

CHAIR:

I think it's also fair to say that we built the RFP as a committee and a couple of consultants and did as good a job as we can. And when I read the RFP, I look at it and I say how can you possibly have come up with a business case if you didn't compare delivered costs from one state to the other? You look at it and you say that's a plausible conclusion. If you're the consultant reading that, and we didn't explicitly lay that out, I can see how --- and I'm simply saying this trying to represent a middle ground. And, in all candor, I'm on the same side of the fence as you are. I'm simply pointing out if you're the consultant reading it, and you've gone through it and as Stacey pointed out, you did a lot of work, I can see their statement. I can see their claim. And as much as I disagree with it, I can see why they say that. And, I don't think it's cut and dry. I think that if you look through the report, they've given us pretty good information about the scenarios. They've ranked them. I'm not going to defend more than I already have where we are. But where we are is where we are. And I sort of agree with Kathleen's point about the cutting room floor and Jason's point about how we can augment and modify and supplement the report. There is good information in here. I don't think the lack of apples to apples disqualifies the report in my mind, just to answer your question. But I have issues with the report just like everybody else on the call. The question is do you want to throw the baby out with the bathwater?

MS. EASTLEY:

Is it worth \$100,000? And the reason I ask that, Ian, is because I have to look at --- I'm looking at this the only way that I can, which is through the eyes of somebody in my position on the Board of County Commissioners. And if I was absolutely confident that the RFP that was issued was explicitly clear in what we wanted the product to look like and what we wanted the outcomes to be, then I would be saying to the vendor, you didn't give us what we asked for. And to me, if we have to spend more money to fix what we've been given or if we have to do additional work ourselves as a committee to augment the report, then we didn't get what we asked for.

CHAIR:

Well, I will say this, I think Stacey and Sue and others did a heroic job in making ---

MS. EASTLEY:

I absolutely agree with that.

CHAIR:

Yes, making the case to Synapse that this material needed to be included. Please, don't think that it was glossed over or anything like that. People reinforced that point you're making numerous times. And I'm simply pointing out that I think that a credible reading, a conscientious reading of it, you could have an argument. And it's just a document. And you could see how we ended up here. But I don't want you to lose sight of the fact that there's a lot of information here, notwithstanding the fact that we think they've missed some important things. They captured a lot of important things. Is it worth \$100,000? It's not for me to say. Everybody in their own mind can make that calculation. But

I do want to emphasize that there's a lot of very good information here. Let's analyze the various scenarios, their impacts, and that's even with understanding that we don't have some of the data that we were looking for. That was a wishy-washy way of saying I pretty much agree with everything you said. And then we still need to make a decision on what we want to do about it.

MS. EASTLEY:

What we want to do about it or what we can do about it? Isn't this a time-sensitive issue?

CHAIR:

Yes. Let's just continue --- I think it is, but let's go around the call and get everybody's feedback and figure out can we come to a consensus on the next steps? But yes, I think it is a time-sensitive situation.

Dan Jacobsen, are you still on the call?

MR. JACOBSEN:

I am. Thank you for an opportunity to comment. You know, I think the criteria or at least one of the criteria we ought to use is, if this were handed to policymakers, is it clear enough that they could use it to make good, well-informed decisions? And as I read through the report, I just think this could be very confusing to policymakers and probably in the legislative process, all the different sides of the debate on issues would claim that it means --- you know, it supports their side of it. But let me quickly go through some of the things that jumped out at me. Page 23, there's a discussion about the assumption is --- they made assumptions to arrive at the lowest possible cost for Nevada Energy. I don't know how realistic that is. Other people have commented about the fact that there's no direct comparison between that cost and what it costs in California. There are --- in scenarios four, five and six, there's quite a bit of facilities that are going to be built in California. I don't see anything in the report about how facilities in California get built. And I'm hoping that there isn't a presumption that those would go into Nevada's energy rate base. There is some --- the report acknowledges that there's uncertainty about what California is willing to pay. It also acknowledges that there's great uncertainty about whether California actually would buy out of market. And it expresses hope that there would be, but that hope seems to be based on a presumption or the notion that maybe California won't be able to get the prices they think they're going to get or maybe the California providers won't deliver or maybe the law will be changed in California to increase the RPS. But in my mind, that's a huge uncertainty. There's a presumption that all energy generated in Nevada would come out of bucket one. And I know that that's being looked at, but again, I think there's great uncertainty around that. I'm not sure what a policymaker does with that. Somebody threw in a statement on page 18 that maybe some of the California load-serving entities would actually build things in Nevada and fund them. And I don't know where that comes from. There is a statement that showed up in this version that I didn't see in earlier versions, it's on page 19, that suggests that maybe the way to address --- to handle the fact that ratepayers are potentially going to bear a lot of risk is to give them any profits that are generated above Nevada Energy's return on equity. And while I could see how that might be used to help policymakers feel good about ratepayers assuming risk, but on page 25 of the report, Synapse goes to great

Page 27 of 36

The Synapse Report dated October 3, 2012 shall be reviewed in concert with the comments contained herein and the transcript dated October 9, 2012.

lengths to say that there is no ratepayer benefit for doing this over Nevada Energy's network. There are no surplus rents to be collected based on their judgment. So in my mind, that's really contradictory and could be very confusing to legislators, and again, subject, perhaps, to a lot of different interpretation. The economic impact analysis, you know, they ran everything through a model to come up with the economic impact analysis. But my sense is that it's kind of biased because --- and they acknowledge that while they looked at what the multiplier effect of spending money on construction and O&M, they acknowledged that they did not analyze what the impact is of raising electricity rates in Nevada. So that's kind of biased. There are a few other things in here. I would say this, the last thing I want to mention is the conclusion at the very end of the report seems to say that, well, the way to address the problems are better cooperation between California and Nevada. And they finish the whole thing off by saying, and it's really important to resolve issues by better cooperation before ratepayer and taxpayer funds are put at risk. I don't know how that's done. I mean, I don't know, if you hand this to a legislator or a policymaker and say to them, here's the report, here's the conclusion, I don't see how you're going to resolve some of these uncertainties before the next legislative session, before ratepayer or taxpayer funds are put at risk. So it seems to me that the final conclusion doesn't --- may not be realistic. So given all of that and the criteria I'm suggesting, I just don't --- I wouldn't support handing this to or using this report as the basis for policymaking. And I suspect that comes as no surprise to anybody on the call. That's all I have.

MS. CROWLEY:

Who is next? Who would like to make a comment? I don't have the list in front of me. Who haven't we heard from?

CHAIR:

Jason, did you want to add anything?

MR. GEDDES:

No, I said all I had to say.

CHAIR:

Senator Settlemeyer is not on the call, I believe. And Paul Thomsen is not on the call either; correct? Ellen Allman, is Ellen on the call? Sue, correct me if I'm wrong, but I think everybody from the subcommittee as at least made an initial comment.

MS. CROWLEY:

How about Jack?

MR. MCGINLEY:

Well, you know, I got to tell you, just from a high level, when we first embarked on this thing I had a lot of issues, I've got to tell you, like the scope of work and all that. But we supported it. I supported it. And then we get to the point where we've gone a couple rounds with the consultant. I feel like

somewhere we've tied their hands with the budget. We gave them a limited budget. These things --- I think I mentioned this before, when we've hired consultants to do similar type of work for us, it's considerably more money for them to do this type of analysis. We're the ones who defined the scope of work, the tasks, the scenarios. They gave us a draft report. We all didn't like it or different elements of it. We told them that. They've kicked back a draft that quite frankly I think with some work we could probably make work and I could accept it. We have some specific comments that we can funnel through to you, and maybe we'd do it through Jason's suggestion where we attach them or, you know, there are corrections that could be made. Is this thing going to come out with a finite policy decision to say, you should build this line? No. But I don't think we asked them to do that. And I guess in a way I've got to stand up and back the consultants. I think they were given a difficult task, and they did it given what we've given them and the framework around it. So rather than just trash this thing --- I got to tell you, I disagreed with several of you as we developed the scope of work and how it evolved. Originally it was just exporting. I know we've had a dispute over that. Then it became something a little more like an energy imbalance market, which was never contemplated, but that's how this thing worked. And now we're seeing a report that identifies these things, and we're not all going to agree. That's why we have different perspectives, and we come from different areas of the business. So I just feel like to now just toss in the report and say like they didn't do their job, I think is grossly unfair. I find it really ironic that I'm defending the consultants given everything that's gotten to this point. But I do. And I think there is some --- I think it's up to us to come up with policy direction and decisions as a result of this, not the consultants. What they did is what they did. And I think there ought to be some value that we find out of the report given the fact that we put constraints on them. And I just --- I find it disappointing that in all I'm hearing is negative comments, and we're about ready to just turn this thing in. Quite frankly, I'm a little surprised. And I think we should try and fix it. That's my comment.

CHAIR:

Thanks, Jack. I think that was well said. Well said. Sue, are we missing anybody?

MS. STEPHENS:

I'm sorry, I'm not sure because I can't remember who's spoken up so far.

MS. CROWLEY:

Sue gave me the list. I think it looks like we've gotten everybody.

CHAIR:

Why don't we do this? I realize there's reservation about this report and I'm going to detail a couple of mine just so that everybody knows I share a lot of the concern. I have commercial evidence that the numbers that were used are not where they should be, whether it's the cost of generating or the

cost to build generating facilities or the transmission. I think that some of the conclusions are still in there that I think could be regarded as unsupported. I agree with Jack, that it's not their job to put in the policy recommendations. Jason has laid out a very nice path forward for us, notwithstanding our reservations with the reports. There is good material in the report, particularly on the direct revenues. I don't know if it's accurate, I'd like to get a sense of that. How do people feel about accepting this report with the caveats as Jason described, and submitting it as a package from the subcommittee to the Task Force, while pointing out many of the points that Jason and Jack made, but keeping in mind the concept that Kathleen put out there, which is maybe the whole thing doesn't belong on the cutting room floor. And with all temerity and humility, let me offer that as a potential path forward. And if folks have a very strong discomfort with that, believe me, I completely understand. Let me throw that out and see if that's a path forward. And you know, we can all write our various pieces that we're not comfortable with. But let me throw that out as a proposal for a path forward, once again it would be to wrap the report with our concerns and caveats but to vote to accept it and forward it to the Task Force for the overall Task Force's consideration.

MR. BAAK:

Ian, this Jim Baak; if I could jump in and respond?

CHAIR:

Yes, please. Thank you.

MR. BAAK:

I can certainly agree to that. One further clarification though is, if we're going to be forwarding this to the full Task Force, are we going to be including any recommendations, and if we're including recommendations, would the recommendation then be to take elements of the report --- are we going to suggest specific elements from the report to take and are we going to recommend a course of action for the full Task Force to build on the pieces that we think are usable out of the report in order to move forward? Are we going to have any specific recommendations from this subcommittee?

MR. GEDDES:

This is Jason. As it flips back to the policy side, I would say that we give the whole report to the committee and that we don't go through the report and say what we like and what we don't like other than in the comments that people prepare on where it may have missed the boat. But I think we use it as a background for the discussion to forward policies to the full group, not necessarily if they're supported or not supported in that business case, per se, but policies that this subcommittee agrees upon. Some of them would be in business case; some of them may not. We had several ideas that were put to the group before we merged that we should say, this was addressed by the business case, this wasn't, is this policy to forward, is it not, and have that discussion

separate. But I wouldn't say that we say what in the report we would pull policy from or that we develop policy using the report as a basis.

MR. BAAK:

And Jason, I guess my question on recommendations is a recommended course forward for how do we move forward with this, not specific policy recommendations, not to preclude or presume anything that the Task Force, full Task Force might decide upon, but recommending a course forward that we need to --- we need this additional information in order to make an informed decision, this is what we recommend doing moving forward. Just a question.

MS. CROWLEY:

Well, we would have to pose those recommendations, you know. I think if members of the committee had recommendations about certain pieces that they did not want to go forward or would like the full Task Force to not consider, I think it's up to the committee. I know people have some very specific ideas about some of the discomfort or some of the things that we should take forward and maybe embellish upon or add to. And I don't know how we do that. Do we ask for a memo from each of the Task Force members or do we try to pull together the notes, the meeting minutes best that we can, Sue and I, and then distribute that out and say aye or nay? I'm not sure what the committee would like to do, or how they would like to do that. But, I don't know if we can make recommendations without getting specific.

MR. CANDELARIA:

Stacey, this is John Candelaria. I just wanted to ask, do we have to accept the report or can we just say Synapse has completed the report and then provide recommendations as Jim Baak recommended about what's good in the report and then what further work is required so that we can get to the business case that we all thought we were headed towards in the RFP that we prepared?

MS. CROWLEY:

Yes.

MR. CANDELARIA:

Synapse is not going to do anything else; right?

MS. CROWLEY:

Right.

MR. CANDELARIA:

They're done. And so really our only option is to say, okay, well there's some stuff in the report that we think is good and there's some

further --- there's some recommendations on what needs to be done to complete the steps of creating a business case to determine whether it makes sense to have some type of mutual benefit, mutual resource sharing arrangement.

MS. CROWLEY:

Can you get specific on that? I've got notes here of things that I'm asking myself when I read the report where I think we can take some of those numbers and turn them into some business case questions, but it would likely take a little more work. And that's fine. We can either try to do that internally or find folks who can help us with that.

MR. CANDELARIA:

And Stacey, I guess what I was suggesting was kind of that, where we accept the report where we think they're factually inaccurate or we've -- individual members believe that they've made conclusions that are not supported. I think we need to attach that as an addendum, so that the full Task Force has this full report and all the numbers. And we say, well we think they're wrong here, but then as we take the next step in the policy recommendations to the full group we poll a recommendation and say, this is supported by the report, this is not supported by the report or this is good policy, the report doesn't support it.

But these are the numbers that we have that can dispute what's in the report and why we think it's good policy anyway. Or that we have no policy recommendations. But I think we just need to get the full report to everybody. If there are factual issues with it, then we attach those so the full committee has that. But then we have a discussion about policy and what to bring to the full group for discussion and their consideration.

MS. CROWLEY:

I guess one thing to consider is this is still a draft. It's considered a draft. I have a little issue with it being --- well, I don't know, I want the group to decide.

MR. JACOBSEN:

This is Dan Jacobsen. Could I jump in here? I really couldn't vote to accept the report in any way. I mean, there's a place in the report that says the kind of wording that gives the reader the impression that the analysis suggests that building these lines is a plausible opportunity. There's another place that says this is an attractive economic development opportunity for the state. And I just don't think the report is solid enough to support those kinds of conclusions. So maybe I'll be the only one that wouldn't vote to accept it and move it forward. I mean, frankly, I think the other members of the committee, of the Task Force probably should see what's here. But I couldn't vote to accept it for this and many other reasons. And by the way, I do have a memo, a three-page memo, I'd be happy to email.

CHAIR:

That's exactly what we would be looking for, would be your comments attached to travel with the report? But you're saying that you want them to see it, but you don't want them to see it. So I'm not quite ---.

MR. JACOBSEN:

Here's the thing. I'm not opposed to them seeing it. It's a big Task Force, and they probably would benefit from seeing it. But to vote to accept it, to give it the kind of credence and say, you know, we approve this, ---.

CHAIR:

Well, how about the vote is really nothing more than we vote to pass it onto the Task Force. I don't want to ascribe your --- I don't want to attach your approval to it. I'm not trying to do that at all, just so we're really clear. The main thing is whether we --- cutting room floor or with comments, caveats, three-page memos, do we forward it to the overall Task Force.

MS. EASTLEY:

Mr. Chairman?

CHAIR:

Yes.

MS. EASTLEY:

It's Joni Eastley. Are we concerned at all that this report could be passed along, I mean, once it becomes public without all of the attached explanations and caveats that we've been discussing this afternoon?

MS. CROWLEY:

This is Stacey. That's a concern.

MS. EASTLEY:

Yes, and I am very concerned about that. And then I'm also concerned that I don't want this subcommittee to be open to being accused of cherry picking any of our pet conclusions.

CHAIR:

Well, we're over our time. Stacey, I'm going to request guidance from you on this. I don't think we have a consensus on this call. I'm not even sure I want to use the word yet. But we don't have a consensus. I'm sure we can call a vote to see what people want to do. I don't know whether you want to

do that or not. But if there is more time for us to think this through, I think it may be beneficial. I think you've got a lot of strong arguments on both sides. There are a lot of good arguments on both sides. So you may have the votes to forward it on, but you certainly don't have the good will of the subcommittee to do that yet.

MS. CROWLEY:

What if we requested those comments from the committee members; look at them; group them into chapters, if that makes sense, and maybe some suggestions on what we would do going forward. Like John was mentioning, and Jim, if some of this is useful, and I think some of it is, what can we do with it? I would say, for example, I don't want to get into too much detail here, but maybe we just request the comments from the subcommittee members and take that into consideration, maybe try to hold another call, if people don't mind. When we talk about timing, it has to make sense and feel right to the Task Force. If it doesn't, then there's no sense rushing something. Synapse probably will do no more work on this. They have reached their budget. So we just decide what to do as a Task Force, or as a subcommittee. Can we use some of this report, some of the information in the report, to move forward and how do we do that? So perhaps we can ask committee members to supply us with their thoughts on that today and try to get back together in a week; would that be reasonable?

CHAIR:

I think that's a great idea. I'll add this. I think that seeing everybody's comments in writing will really inform the discussion. I think it will go a long way towards helping us figure out do we have enough comments surrounding this that we can feel okay passing it forward or, to Joni's point, are we too nervous about this report out there on its own that we still don't feel comfortable with accepting it? So I think that's a great idea. Is there anybody that has an objection to that part forward?

MR. BAAK:

No objection from me.

MS. CROWLEY:

Can we get some comments in a timely manner? I want to find out what folks' schedules are like; what if we ask for comments by the end of the week; is that reasonable?

MS. EASTLEY:

Yes.

MS CROWLEY:

And you can just email them to Sue or me. We can compile them and maybe send out an email with regarding what we want to do next. I want

to suggest something. There was the NEAC report, which is referred to in this report, and that, for those who don't remember, is a transmission routing study that was done; it also had a bit of a financial analysis that was done as a supplemental report to the transmission routing study. That report has some financial information that could benefit the Task Force. And it was considered to be sensitive information, but not confidential. I would like to ask the NEAC Board if we can share that information with this group and use that in addition to the numbers that the business case created and see if that helps folks understand or see a way forward to create a business case. Is that acceptable?

CHAIR:

I think that would be extremely helpful, yes.

MS. CROWLEY:

It's a very complicated set of numbers, and I want to figure out how best to do it. Perhaps I would host a webinar or conference call to go over one or two of the spreadsheets line by line, so that people understand it. And maybe I can offer that for next week.

CHAIR:

Are we having an in person meeting next week?

MS CROWLEY:

Our full Task Force meets Wednesday, October 17th at 1:00 p.m. in both Vegas and Carson. We could try to get together again like we did last time for those who could before that meeting. Ian and Jason, I think, Jason, you're going to be unavailable; is that right?

MR. GEDDES:

Yes.

MS. CROWLEY:

And Ian, you're going to be in Las Vegas?

CHAIR:

Yes.

MS. CROWLEY:

I could go over that as an agenda item for the full Task Force.

CHAIR:

Stacey, I think that's a wonderful idea.

MS. CROWLEY:

We'll do that, we'll add that to the agenda and I'll make sure that that information gets out to everybody and posted properly. And just know that it's kind of a complicated set of documents, and I'm happy to walk everybody through it. And if we could get comments by Friday, I would love it. Thank you so much, Ian and Jason, and everyone who has commented. We know this is not exactly what we thought it would be, but I think we can glean some value out of it.

CHAIR:

Agreed. At the risk of pushing this along, I'm going to close discussion on item four on the agenda and move to item five and say that is deferred until we make a decision on the actual report. Given that we're late, I'm going to move straight to item six. And Stacey just laid out the next steps. Please get your comments in by Friday, and we'll look to have a discussion of the NEAC economics next week.

End of verbatim transcription.

5. Discussion and possible action regarding list of policy topics.

This agenda item was deferred.

6. Discussion of future agenda items and announcements.

This agenda item was deferred.

7. Set time and date of next meeting

The next meeting was scheduled for Tuesday, October 9, starting at 3:00 p.m.

8. Public Comment and Discussion.

Mr. Hazard stated that the endeavor was supposed to prove once and for all that there was a business case for a transmission line, which had value; however, he said he believed that, based on today's comments, the decision was made the day that the Governor issued his Executive Order and that it was just being justified. He also stated that he thought the draft report was very thorough and stating the risks, the unknown, the costs to all including ratepayers, and recommended that the committee not "cherry-pick" parts of the report that they do not like; otherwise, he believed that it would not be a fair and equitable process. He thanked the committee.

Ms. Ellis commented that she agreed with Mr. Hazard. She also said that she enjoyed reading the Synapse draft report because it identified what is attractive and what might not be and discussed the unknowns and perhaps a legitimate case does not exist, and that it would be honest to tell the Governor this. She said that she found the reference in the report to the CPUC website, and her concern was that people will not necessarily read the entire report. She concluded by saying that she was looking forward to the NEAC report, and that the consultant did their job and that you may not be able to find out what California's intentions are. She thanked the committee for the opportunity.

9. Adjournment.

The meeting was adjourned at 5:25 p.m.