RESOURCE PLANNING 2007

Nevada's Electricity Future: A Portfolio-Focused Approach

1.0 INTRODUCTION

Providing adequate supplies of affordable electricity with acceptable environmental impacts is a critical challenge facing the country. The western United States, and specifically the State of Nevada, now faces crucial strategic choices regarding the identification and development of new electric generation capacity to meet existing and forecasted demand.

Southern Nevada has a large capacity deficit and unless this need is addressed immediately, this deficit will escalate. Southern Nevada is dependent on natural gas and purchased power to meet existing demand. As a result of this deficit Nevada has some of the highest rates in the region.

Nevada's answer to these challenges is portfolio-focused planning. Portfolio-focused planning provides the opportunity for Nevada to increase diversity and thereby manage supply, environmental and price risks. Greater portfolio diversity will allow increased flexibility to respond to changing energy needs and availability, while still providing acceptable environmental impacts and affordable rates.

The Public Utilities Commission of Nevada's (Commission) regulates public utilities engaged in electric, natural gas, and water and sewer services by setting fair rates for those services. To ensure adequate planning to provide electric resources for that service, the Commission thoroughly examines evidence at hearings for the Companies' Resource Plans. Their decision in November 2006 to approve Sierra Pacific Power Company's (Sierra Pacific) and Nevada Power Company's (Nevada Power) 2006 Integrated Resource Plan (IRP) including a 1,500 megawatt (MW) coal plant (the Ely Energy Center or EEC), a 250-mile transmission line, 600 MW of new natural gas peaking capacity, aggressive demand-side management programs, and renewable energy was made to further the goal of portfolio diversity. In the Plan new coal remains an option as part of a balanced and diverse portfolio of resources.

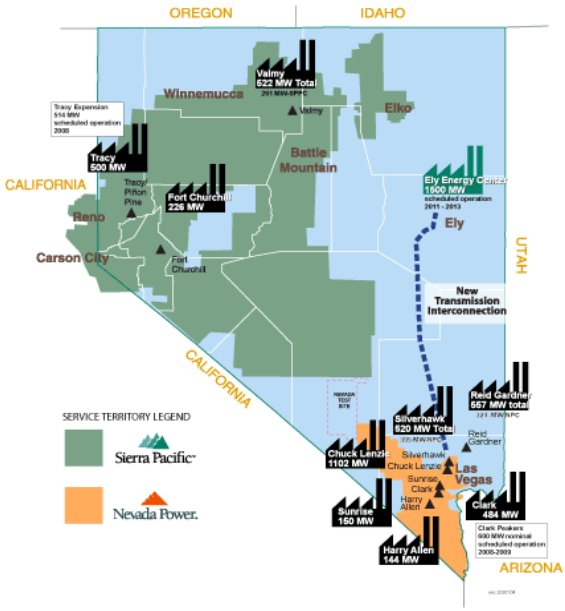
Several key legislative initiatives are currently being debated before Congress that could affect the economics of coal for power generation by penalizing greenhouse gas emissions. As the debate of greenhouse gas emissions unfolds, the interests of Nevada and its ratepayers is to ensure that adequate and affordable supplies of electricity are available today based on technologies that are both proven on a utility scale and commercially viable. Nevada seeks to have a dialogue with its neighbors to discuss how these ends can be realized.

2.0 NEVADA'S ENERGY CHALLENGE

2.1 Nevada Resources and Demographics

Nevada's electricity challenges are shaped by its land, natural resources and demographics. The state of Nevada covers 110,567 square miles, making it the 7th largest in terms of land area of the 50 states; however, over 80 percent of the state is owned by the federal government. Nevada is the driest state in the nation, averaging only 9 inches of precipitation annually[1]; sufficient water is always a concern. There are two population centers 500 miles apart.

Exhibit 1
Sierra Pacific and Nevada Power Service Areas



[1] Colorado River Water Users Association http://www.crwua.org/nv/crwua_nv.htm (accessed September 7, 2007)

Nevada's population in 2006 was 2.6 million, approximately 20 percent higher than in 2000. In the period between 1990 and 2000, the population of Nevada grew by 66 percent, or by almost 800,000, from 1.2 million to approximately 2.0 million. Eight out of ten of these people settled in Southern Nevada communities in and around the Las Vegas area.[2] It is estimated that of the current population of the state, only 28 percent were born in Nevada, the lowest ratio in the US.[3]

The Nevada State Demographer projects continued growth for the state, and especially the Las Vegas area, over the next 20 years. The population of Nevada is expected to increase from the 2006 level of 2.6 million to approximately 4.4 million by 2026, of which 3.3 million are expected to reside in the Las Vegas area.[4]

Nevada Power and Sierra Pacific are the largest providers of electricity in Nevada, accounting for over 85 percent of retail electricity sales. Nevada Power serves approximately 800,000 customers in the Las Vegas area. Nevada Power's current peak demand is approximately 5,800 MW. Sierra Pacific serves approximately 360,000 customers in the Reno, the northern Nevada region and the Lake Tahoe area of California. Sierra Pacific's peak demand is approximately 1,700 MW. Both Nevada Power and Sierra Pacific are owned and operated by Sierra Pacific Resources. Although the companies are linked by a common parent, they are not linked electrically and therefore, cannot share supply resources as shown in Exhibit 1.

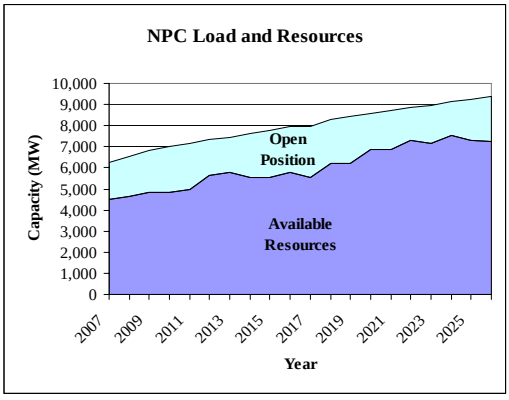
In terms of energy resources, Nevada has little or no natural gas, petroleum, or coal. Although the Hoover Dam is located in Nevada, the vast majority of electricity produced at this facility is allocated to California and Arizona.[5]

Nevada has an abundance of solar and geothermal resources.[6] Access to wind resources is limited in much of the state, although there are wind resources in Eastern Nevada. Much of the renewable energy resource base is located in isolated areas. In order to access these renewable energy resources, new transmission capacity needs to be developed to bring the electricity from where the resource is located to the load centers. These distances are substantial and typically measured in hundreds of miles, often involving access to federal lands.

2.2 Capacity Shortfalls

Both Nevada Power and Sierra Pacific need additional generation resources. In particular, Nevada Power has an immediate need for additional capacity. Exhibit 2 shows Nevada Power's position relative to available resources. These resources include both Nevada Power-owned generation and resources Nevada Power controls under long-term contracts. Nevada Power, with a peak of approximately 5,800 MW, currently has a large open position with respect to capacity of approximately 2,000 MW. The open position is now filled with short-term purchases in wholesale markets (see Exhibit 2).

Exhibit 2
Nevada Power Load and Resources



With respect to Exhibit 2, it is important to note the following details:

- Nevada Power's need for approximately 2,000 MW of additional capacity exists today.

[2] Nevada State Demographer's Office http://www.nsbdc.org/what/data_statistics/demographer/pubs/pop_increase/ (accessed September 19, 2007)
[3] Colorado River Water Users Association http://www.crwua.org/nv/crwua_nv.htm (accessed September 7, 2007)
[4] Nevada State Demographer's Office http://www.nsbdc.org/what/data_statistics/demographer/pubs/docs/NV_2006_Projections.pdf (accessed September 19, 2007)
[5] Nevada State Office of Energy http://72.14.253.104/search?q=cache:TpidI3l3LCQJ:energy.state.nv.us/2005%2520Report/Final%2520CD/Chapter%2520 2%2520-%2520Final.doc+hoover+dam+electricity+allocation&hl=en&ct=clnk&cd=9&gl=us (accessed September 5, 2007)
[6] US Energy Information Administration. http://tonto.eia.doe.gov/state/state_energy_profiles.cfm?sid=NV (accessed September 7, 2007)

- Without the addition of new capacity, the capacity shortfall will escalate to 4,000 MW by 2020.

- A substantial percentage of Nevada Power's existing generation assets, especially coal assets, are older and could reach the end of their useful lives as early as 2012.

There is a need for new capacity today and this need will continue to grow dramatically without the addition of new generation resources.

2.3 Rate Stabilization

Electric rates in Nevada are higher than the national average and higher than those in the immediate region, except for California (see Exhibit 3). Important factors contributing to this disparity are the rapidly rising price of natural gas and the construction budget required to meet the demand associated with high growth. The cost of natural gas has increased more than 200 percent since 1999. These increases are reflected in customer rates. Consequently, rate stabilization is a key concern for Nevada as the state works to maintain an economically competitive position with respect to other states in the immediate region and the country as a whole.

Exhibit 3
Retail Electricity Rates[7]

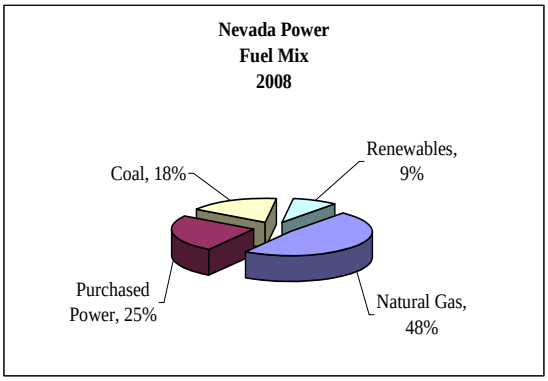
	Residential		Commercial		Industrial	
	Feb-07	Feb-06	Feb-07	Feb-06	Feb-07	Feb-06
Average U.S.	**9.88**	**9.8**	**9.28**	**9.04**	**6.2**	**5.87**
Mountain	**8.5**	**8.36**	**7.39**	**7.32**	**5.33**	**5.28**
Arizona	8.46	8.15	7.5	7.06	5.6	5.33
Colorado	9.15	9.2	7.37	7.97	5.91	6.09
Idaho	5.76	6.14	4.83	5.38	3.16	3.55
Montana	8.17	8.23	7.89	7.83	5.05	4.97
Nevada	**11.36**	**10.88**	**10.24**	**9.87**	**7.53**	**7.01**
New Mexico	8.71	8.99	7.87	7.67	5.4	6.17
Utah	7.92	7.29	6.34	5.82	4.23	3.85
Wyoming	7.25	7.13	5.99	6.12	4.13	3.99

2.4 Fuel Diversity Issues

All fuels to generate electricity must be transported great distances to the state. Fuel diversity is a material reliability goal of integrated resource planning. In Nevada, the risks associated with price volatility are borne directly by ratepayers. One half of the rate for customers is due to cost of fuel and purchased power. Both Nevada Power and Sierra Pacific have experienced the increased price pressure in natural gas since 2000. Further, both Nevada Power and Sierra Pacific continue to experience the financial effects of the Western Energy Crisis of 2000-2001.

As Nevada considers future generation options, it is important to recognize that the system is currently highly dependent on natural gas fired generation and purchased power, the price of which is highly correlated with the price of natural gas. Diversity in generation fuel is a risk management strategy to mitigate both energy supply and fuel transportation risks, as well as fuel price risk in the near and long-term future.

Exhibit 4
Nevada Power Fuel Mix 2008



3.0 OPTIONS TO MEET CHALLENGES

Nevada Power and Sierra Pacific are required by Nevada Statute to submit IRPs every three years. The IRP process requires the review of alternative plans to meet customer demand. The IRP process considers various combinations of new resources to meet future demand – coal, natural gas, purchased power, renewable energy resources and demand-side management. As provided by Nevada Statute, the Commission is required to assess an IRP by a number of criteria, including reliability, diversity of fuel, economic impact, and environmental impact.

In June 2006, Nevada Power filed its 2006 IRP with the Commission. The Plan described

[7] EIA

the steps the company intends to take to meet its service obligations over the next 20 years. The 2006 IRP and its recommended actions focused on strategies to address the large open position, the heavy reliance on natural gas and price volatility, and affordable rates.

Nevada Power analyzed 15 different alternatives to meet future demand and identified a "Preferred Plan." These analyses considered Nevada Power's load forecast, purchased power price forecast, fuel price forecast, and the capital cost and performance characteristics for the generation options. The analyses also considered levels of renewable energy necessary to fulfill Nevada's stringent renewable energy portfolio standard.[8]

As required by Nevada Statute, the Commission conducted consumer sessions and hearings on the IRP. Comments were received from the public. Testimony and supporting evidence were received from Sierra Pacific and Nevada Power, the Commission's technical staff, the Bureau of Consumer Protection, large commercial customers and a coalition of environmental groups.

Nevada Power's Preferred Plan, which was accepted by the Commission, contained the following major elements:

- 600 MW of new high-efficiency gas peaking units to be located in the Las Vegas area. These units are intended to address Nevada Power's summer peaks.
- The development of a 1,500 MW base load coal plant to be located in Eastern Nevada near Ely, in partnership with Sierra Pacific.
- A 250-mile transmission line to electrically link Nevada Power's and Sierra Pacific's systems for the first time and allow for the distribution of power from the Ely Energy Center and further the development of renewable energy resources in Eastern Nevada.
- Systematic retirement of less efficient plants, including the retirement of Nevada Power's coal units at Reid Gardner 1, 2, and 3, reducing overall emissions.
- Full and complete compliance with a renewable energy portfolio requirement of 20 percent by 2015, with Nevada Power planning to expend over $2.0 billion between 2007 and 2015 to achieve this goal.
- Material increases in demand-side management programs resulting in a trebling of budgets since 2004.

The portion of Nevada Power's plan which has garnered the most attention has been the proposal for a new state-of-the-art coal plant and associated transmission line. In reviewing this aspect of Nevada Power's Preferred Plan, the Commission considered several key factors and alternatives, including: availability of power in the southwest power wholesale market; the availability of natural gas supply and transportation; the cost and availability of renewable energy; the cost and availability of coal resources; and energy efficiency. These alternatives were evaluated within the contexts of reliability and cost of services as required by Nevada Statute.

3.1 Projected Shortages in the Southwest Purchase Power Market

In the accepted Preferred Plan, Nevada Power will fill its capacity shortfall through short-term purchases in wholesale markets. An obvious alternative that was considered was to continue this practice. Participation in wholesale markets offers a number of potential advantages to both buyers and sellers in terms of facilitating the matching loads and resources. This approach is workable so long as adequate capacity reserves exist in the immediate region and transmission capacity is available to deliver energy to the load center when it is needed.

The Commission received testimony and evidence from Nevada Power, the Commission's technical staff, Southern Nevada Water Authority, and Nevada Resort Association projecting capacity shortages and/or declining reserve capacity margins in the Southwest beginning as early as 2010. The shortfall is due to continued growth in the Southwest as well as the closing of power plants such as Mohave

[8] The current obligation is 9 percent of sales in 2007 and will increase every second year until it reaches 20 percent in 2015. Nevada Power reported that the cost of meeting its renewable energy portfolio standard obligation between 2007 and 2015 would be in excess of $2.0 billion and in addition to $105 million of new conservation expenditures between 2007 and 2010.

Station[9] in 2005. Nevada Power, as well as other owners of the plant, has to replace this capacity.

The evidence in the IRP proceeding indicated that the availability of purchased power in the wholesale market in the Southwest will decrease in the near future. Any decrease in available power will almost certainly be accompanied by higher prices for this power. Consequently, continued reliance on wholesale purchases in the future could be both very costly and could impair system reliability. These factors coupled with Nevada's experience during the Western Energy Crisis of 2000-2001 caused the Commission to reject plans which included greater reliance on purchased power.

3.2 Natural Gas Options–Fuel Diversity Issues and Resource Adequacy

Natural gas generation offers some distinct advantages over other fossil fuels, such as coal, for generation of electricity. Advances in the efficiency of gas generation technology have significantly lowered the volume of fuel necessary to generate electricity. Previously, the low construction costs and their environmental impacts made gas plants more attractive options for new plants. Equally important was the relatively low price and abundance of natural gas in the period between 1990 and 2000. This explains why during this period 90 percent of the new generation in the West was fueled by natural gas. Looking ahead, however, it appears that the low cost and ready availability of natural gas can no longer be relied upon solely as the fuel to generate electricity.

Nevada Power's IRP considered in detail a 1,200 MW natural gas plant to be developed in the Las Vegas area. Both Nevada Power and Sierra Pacific are highly reliant on natural gas to generate electricity. Currently, natural gas is used to generate most of Nevada Power's electricity. If purchased power is considered, natural gas reliance represents approximately 80 percent of the Nevada Power's portfolio.

Between 1999 and 2005 the price of natural gas purchased by Nevada Power increased over 200 percent, while the price of coal only increased by approximately 35 percent during the same period. This fuel cost increase is the primary reason why rates in Nevada are higher relative to the region.

Looking forward, increased demand for natural gas-fired generation in the West is likely to continue given California's recent greenhouse gas emissions policies.[10] The Las Vegas area receives natural gas from interstate pipelines that draw gas from wells in the Rocky Mountains, the San Juan Basin of New Mexico, and the Permian Basin of west Texas. Two of the Basins are either producing the same amount of gas as in years past or are producing declining amounts of gas.

There is a great deal of uncertainty about the timing and cost of natural gas from promising new resources in the Rocky Mountains, Alaska, and the MacKenzie Delta in Canada. Also, the development of facilities in the West to process imported Liquefied Natural Gas (LNG) has been stalled by local opposition to terminals to off-load and process the LNG. Further, there are issues regarding the geopolitical implications to consider in relying on imported natural gas to operate power plants.

These factors led the Commission to conclude that increasing reliance on natural gas generation was not the best strategy to assure reliability and minimize the cost of providing service to ratepayers.

3.3 Renewable Energy

Nevada has one of the most aggressive Renewable Energy Portfolio Standards (RPS) in the region and in the country, as shown in

[9] The Mohave Generating Station located approximately 90 miles southeast of Las Vegas, in Laughlin, Nevada, was operated between 1971 and December 2005. The 1580 MW coal-fired plant was owned by a consortium of utilities: Southern California Edison Company (operator), 56% (885 MW) - Salt River Project, 20% (316 MW) - Nevada Power Company, 14% (221 MW) - Los Angeles Department of Water and Power, 10% (158 MW). It was closed in December 2005 as part of a 1999 agreement between the plant's owners and several environmental groups. http://www.sce.com/PowerandEnvironment/PowerGeneration/MohaveGenerationStation/ (accessed May 14, 2007)

[10] On January 25, 2007, the California Public Utilities Commission (adopted an interim Greenhouse Gas Emissions Performance Standard. The Emissions Performance Standard is a facility-based emissions standard requiring that all new long-term commitments for base load generation to serve California consumers be with power plants that have emissions no greater than a combined cycle gas turbine plant. That level is established at 1,100 pounds of CO2 per megawatt-hour. http://www.cpuc.ca.gov/static/energy/electric/climate+change/070411_ghgeph.htm (accessed August 27, 2007)

Exhibit 5 below. The RPS standard was enacted in 2003 and was revised in 2005, increasing the total requirement to 20 percent of sales by 2015. The requirement for 2007 is 9 percent of total sales must be generated from renewable energy resources.

Exhibit 5:
Renewable Energy Portfolio Standards in the West

State	Renewable Requirement	Year
Arizona	15%	2025
California	20%	2010
Colorado	20%	2020
Montana	15%	2015
New Mexico	20%	2020
Nevada	**20%**	**2015**
Oregon	25%	2025
Washington	15%	2020

Nevada Power included plans in its IRP to spend over $2.3 billion between 2007 and 2015 to achieve full compliance with the RPS. These plans called for development of additional geothermal, wind and solar resources through competitive bidding and direct utility investment.

Geothermal resources were considered as a replacement base load resource. Nevada has abundant geothermal resources and currently ranks second in the nation in electricity generated from geothermal resources. Nevada's existing geothermal power capacity is 276 MW from 15 power plants developed over a 20-year period. The total planned capacity additions will be 310 MW during the next decade. The cost of electricity generated by existing geothermal plants in Nevada is attractive; however, the projected cost of new green field plants will be higher than existing geothermal plants and conventional generation resources. These resources are dispersed widely throughout Northern Nevada and will require substantial investments in order to be delivered to Southern Nevada.

The greatest demand exists in Southern Nevada. Currently, there is no economic means to transport northern Nevada renewable energy to the Las Vegas area, and the cost to develop a transmission line to only deliver this energy would be prohibitively expensive. When the cost of transmission is shared with a large base load facility, the economics of transmission of renewable energy generated electricity becomes feasible. This is why 20 percent of the proposed 250-mile transmission line will be dedicated to electricity generated by renewable energy resources.

The State of Nevada, with its abundant solar resources, expects to be the first in the nation in solar watts per capita and solar as a percentage of retail sales by the end of 2007. Included in this ranking are four notable solar projects:

- Nevada Solar One, a 64-megawatt solar-thermal plant, is located in the Eldorado Valley near Boulder City, Nevada. Nevada Solar One went online June 27, 2007.

- Solar Star, a 12-megawatt project is currently under construction at Nellis Air Force Base. Solar Star is the largest solar-photovoltaic project in the country. It is anticipated that Solar Star will be completed and online by year-end 2007.

- The Las Vegas Valley Water District ("LVVWD") has built solar power generating systems at six facilities in Clark County, Nevada. LVVWD's 3.1 megawatt Distributed Solar Array project is one of the largest solar projects ever built in the U.S. by a public agency.

- Barrick Gold Corporation is currently constructing a 1 megawatt energy farm in northwestern Nevada that is expected to be completed by year-end 2007.

Other solar capacity in Nevada comes from residential, commercial, and school/public building installations that are part of the Net-Metering/Solar Generations programs.

The cost of solar power can vary based on numerous factors. The cost range for solar thermal capacity and energy is 11-21 cents per kilowatt hour (kWh) and the cost of solar photovoltaic capacity and energy is approximately 111 cents per kWh. Solar resources currently are best suited for peak applications given that the availability of solar resources closely matches peak demand. Solar technologies have limited base load applications at this time and will not be practicable for this application until cost-effective storage technologies are commercially available.

The Commission continues to be very supportive of renewable energy. To rely on the renewable sources for this much capacity by the beginning of the next decade is not a solution to Nevada's current electricity requirements. It would not be available and would raise rates beyond a customer's ability to pay. Also, additional research and development is needed to make geothermal resources more economically efficient.

3.4 Energy Efficiency

Nevada's RPS was revised in 2005 to allow up to 25 percent of the annual RPS energy requirements to be achieved through utility-sponsored energy efficiency and conservation programs. As a consequence, total funding for Nevada Power's Demand-Side Management (DSM) programs has grown from about $9 million in 2002-03 to over $24 million in 2006. Program sophistication and resulting energy savings and peak demand reduction also has grown steadily over the past four years. Nevada Power, during its current 3-year budget cycle, plans to spend $105 million for demand-side management programs or an annual average of $35 million per year between 2007 and 2009. Nevada Power is spending over four times the amount for energy efficiency than prior to 2005. Additionally, Sierra Pacific included in its 2007 IRP proposals that would double the level of spending in each of the next three years over existing levels.

The PUCN considered an alternative DSM budget in the IRP case. This proposed budget called for spending levels of $47 million per year between 2007 and 2009. The proposed increases would not avoid the need to construct new base load capacity on the scale necessary to meet existing demand.[11]

The Commission has supported utility-sponsored conservation and energy efficiency programs since 1984. The companies have greatly increased the spending levels for demand-side reduction programs. The population of the state and the load shape of the non-residential large customers shape the limits of total savings. Smaller blocks of capacity and energy savings during peak periods potentially offer substantial opportunities to reinforce system reliability and reduce peak period costs, especially in the Las Vegas area. Nevada's Renewable Portfolio Standard offers the companies the opportunity to earn additional credit toward Renewable Portfolio compliance by targeting conservation and efficiency measures to reduce peak demand.

3.5 The Coal Option

Coal has been the generation resource of choice for over 100 years in the U.S. Coal is a secure and abundant domestic source of energy. While the cost to construct a coal plant is substantially higher than a gas plant, the associated fuel cost savings is projected to be lower operating and total life-cycle costs. The cost of coal has been far less volatile than the cost of natural gas.

One aspect of the companies' Preferred Plan included a request for approval for construction of a 1,500 MW supercritical pulverized coal (SCPC) plant and associated transmission facilities in White Pine County, Nevada. This project is known as the Ely Energy Center (EEC). This project will be financed by the utilities and will be the largest electricity generation project in Nevada since the construction of the Hoover Dam. The Preferred Plan has requested the costs of this project to be allocated to each utility, with Nevada Power assuming 80 percent of the total costs and Sierra Pacific assuming 20 percent of the total costs. Although the scale of the EEC project is large, it is only one part of the total Plan.

SCPC technology uses coal that has been crushed to the consistency of a fine powder and then conveyed with air into the boiler, where it is combusted at 1,800-3,000°F. The heat of combustion is then transferred to the boiler tubes, which are filled with water. The water is converted to high pressure steam, which is piped to a steam turbine, turning the turbine blades. The turbine is directly connected to a generator; as the generator spins, it generates electricity. The term "supercritical pulverized coal" relates to the high pressure at which the boiler operates and the steam is produced. Supercritical boiler technology has several advantages over

[11] In Southern Nevada, space cooling is a major contributor to summer peak demand. Residential makes up about 40 percent of sales, but contribute to 65 percent of peak system sales. The Energy Star Program reports that in 2006, Nevada had the highest penetration of Energy Star Homes in the country, reporting a market penetration rate of 71% of new single family homes in 2006. This was achieved in the absence of rebates from a utility-sponsored DSM program.

conventional coal units including increased efficiency and lower emissions.

In terms of SCPC technology, any carbon capture will likely occur during post-combustion. At this time, there are no commercially available post-combustion technologies that can be adapted to SCPC plants.

A promising future alternative to SCPC for carbon capture is Integrated Gasification Combined Cycle (IGCC)[12] technology. IGCC has the potential to allow for the capture of CO_2 prior to combustion, which may be more economical than post-combustion processes. Nevada Power commissioned a study into that issue, which concluded that IGCC technology was not commercially available at this time and would not be so until 2015, at the earliest.[13]

During the 2006 IRP proceedings, the Commission considered the total emissions of the Preferred Plan. The generation, transmission, and distribution of electricity by any resource will impact the environment. It should be noted, however, that there are very crucial differences in the environmental impacts of new state of the art plants and older plants, and that by replacing older coal plants, the EEC will improve air quality in Nevada and in neighboring states. These effects are shown in Exhibit 6 below.

In terms of emissions of sulfur dioxide and oxides of nitrogen, the emission rates from the approved Preferred Plan with the proposed EEC will place Nevada below the average emissions rates for every state in the region except California. For those emissions currently regulated, the EEC will be vastly cleaner than Reid Gardner coal Units 1 and 2, which may be retired in 2012, and Reid Gardner Unit 3, which may be retired in 2016.[14]

Exhibit 6
Emissions Factors in the West by State 2005[15]

	SO_2	NO_x	CO_2
USA	5.2	6.6	1,366
Ely Energy Center	**0.545**	**0.545**	**2,050**
Nevada Power 2005	**2.32**	**3.12**	**1,882**
Arizona	1.0	1.6	1,116
Colorado	2.6	3.8	1,815
Idaho	1.0	.4	272
Montana	1.7	3.0	1,543
New Mexico	1.8	4.4	2,054
Utah	1.8	3.7	2,074
Wyoming	4.2	4.0	2,198

Second, the Commission considered the cost of CO_2 restriction schemes being studied or authorized by various policy makers. The 109th Congress is reviewing a number of bills to penalize CO_2 emissions. The likely cost of a capture program of the type now under review would be approximately $8 per ton of CO_2 emitted. These estimates were factored into the total cost of the EEC. The estimates will likely be higher as bills move through the legislative process.

Carbon emission capture technology for new plants is not commercially available at this time. Indeed, given the current level of appropriations in the federal budget of approximately $100 million, it is questionable whether this technology will be commercially available by 2015. Issues related to carbon transport need to be addressed. Estimates of cost adders to new Nevada coal-fired generation plants should be approximately $8 per ton of CO_2. As matters stand today, SCPC is the state-of-art for coal plants. The total Nevada emissions from the Preferred Plan reduces overall Nevada emissions and actually improves air quality.

[12] IGCC uses high pressure and temperatures to transform coal into a gas prior to combustion. The resultant gas can be cleaned of pollutants prior to firing a turbine. Conventional coal technology burns coal in a boiler, and pollutants must be stripped out after combustion in the exhaust, which is a more difficult and expensive process.

[13] There are two electricity IGCC plants in the US and both were a part of the U.S. Department of Energy's demonstration projects in the 1990s. Conoco-Phillips and Cinergy jointly operate the Wabash River Generating Station in West Terre Haute, Indiana. The Polk Power Station is run by Tampa Electric Company in southern Florida. SPPC's Piñon Power Plant was also a technology funded by this program. The Piñon Pine gasification plant was never economical and will be dismantled in the near future; the combined-cycle unit operates on natural gas.

[14] Reid Gardner Unit 4 is owned by Southern California Edison and operated by Nevada Power.

[15] DOE Energy Information Administration

3.6 Seeking Solutions: Portfolio-Focused Approach

After considering the available alternatives to meet existing demand, stabilize rates, and further fuel diversity goals, the Commission found that Nevada Power's Preferred Plan best fulfilled these objectives.

The results of the Preferred Plan will be a more balanced portfolio of resources that will mitigate many of the risks associated with reliance on natural gas and purchased power. The Preferred Plan will increase the proportion of coal resources to 45 percent and reduce the proportion of natural gas generation from 45 percent to 21 percent by 2015. Additionally, purchased power will comprise only 14 percent of Nevada Power's fuel generation mix by 2015.

The Preferred Plan projects a nominal average system cost increase from 11.10 cents per kWh to 13.97 cents per kWh by 2026. The average cost increase over the 20-year period is 1.3 percent per year, which is well below the assumed rate of inflation, indicating a decrease in real system costs.[16] This would avoid rate instability.

The Preferred Plan will add 1,800 MW of new coal and add 600 MW of natural gas capacity to the system and will reduce Nevada Power's critical capacity shortfall. While this will not eliminate the shortfall completely, it will close the gap between resources and customer needs. Further, some of the new capacity will be used to permit the retirement of older, less efficient, and polluting units such as those at Reid Gardner, thereby lowering emissions overall as well as provide improved air quality in the Las Vegas area and the West.

The proposed transmission link between Northern Nevada and Southern Nevada will reinforce reliability and allow for the more efficient use and dispatch of all generation resources on both systems. The transmission line is critical to the development of renewable resources in Nevada by bringing wind power from the east to population centers in the north and south; solar power from south to north; and geothermal power from north to south.

[16] NPC IRP, Volume VI at 173.

When considering the issue of CO_2 and other greenhouse gas emissions, it is important to recognize that the Preferred Plan includes large investments in renewable energy and demand-side management. Thus while the CO_2 emissions associated with the EEC will be higher than a gas plant, Nevada Power's total CO_2 emissions in 2015 will be 5.6 percent lower than its CO_2 emissions were in 2005, even though forecasted energy sales are expected to increase by 31 percent over this ten-year period. Thus, while there are no technological alternatives to reduce CO_2 emissions from coal plants, there are policy tools available today that can reduce the total CO_2 emissions of electric utilities.

Exhibit 8
Nevada Power CO_2 Footprint
2005, 2015

Year	Generation and Purchased Power MWH	Metric tons CO_2 per MWH	CO_2 Emissions Metric Tons
2005	20,992,882	0.853	17,920,985
2015	27,769,000	0.609	16,916,341
	32.2%	28.6%	-5.6%

The portfolio-focused approach adopted by the Commission will not only result in a greater, more diverse portfolio, reduced reliance on power purchased in wholesale markets, and less price volatility, but it will also result in lower aggregate CO_2 emissions by 2015 as compared to 2005.

4.0 CONCLUSION

Electric utilities and regulatory bodies must ensure that electricity continues to be generated in an environmentally responsible manner that is both affordable and maintains system reliability. The National Association of Regulatory Utility Commissioners (NARUC) has issued the following resolutions as guidance for Congress to incorporate. It is a set of principles developed by NARUC's Task Force on Climate Policy and states that climate change legislation should:

- Be implemented economy-wide as part of a comprehensive national energy and energy security policy.
- Be transparent, consistent, predictable and equitable.

- Avoid compromising electric and natural gas system reliability and ensure the availability of an adequate supply of electricity and natural gas.

- Impose the minimum economic cost necessary to achieve the desired environmental objectives in a timely manner.

- Minimize the cost impact on electric and natural gas ratepayers.

- Refrain from usurping the states' traditional responsibility for making generation resource decisions and avoid preempting states that take more stringent actions to reduce greenhouse gas emissions.

- Ensure the continued ability of states and regions to deploy a diverse portfolio of cost-effective generating resources based on the unique circumstances of those states and regions.

- Be realistic and based on existing and reasonably foreseeable electricity generation, transmission and distribution technologies, greenhouse-gas emission control and sequestration technologies and efficiency technologies.

- Include support for the development of more efficient generation, transmission and distribution technologies, energy efficiency and greenhouse gas emission control and sequestration technologies through various means, including: increased funding for research, tax credits, bonding and more efficient national appliance standards.

- Recognize state or regional efforts already undertaken to limit greenhouse gas emissions.