Status of Energy in Nevada

Report to the Governor and Legislature
March 30, 2007

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Executive Summary

Nevada statutes require the Director of the Nevada State Office of Energy (NSOE) to file a report each year to the Governor describing the Status of Energy in Nevada (see NRS 701.160). In odd-numbered years, this report must also be filed with the Nevada Legislature. This document has been prepared in compliance with this statute.

The 2005 Status of Energy in Nevada Report assessed the state's supply of electricity, natural gas and transportation fuels, described the activities of the NSOE, and updated the Comprehensive State Energy Plan (NRS 701.190).

The 2007 Report updates the electricity, natural gas and transportation fuels assessment, and describes the NSOE's new mandates. Armed with this information, the Report identifies the state's energy challenges and opportunities. The Comprehensive State Energy Plan will be updated at the conclusion of the 2007 Legislature.

National and Regional Energy Status

Nevadans need ample supplies of energy, at reasonable and affordable prices, to sustain and improve their quality of life as individuals, to provide a robust commercial environment that fuels economic growth and provides jobs. This needs to be accomplished in a way that balances our strong sense of individual and cultural freedom with the use of indigenous energy resources, with our magnificent but fragile environment, and with a proper sense of responsibility to the principles of good government.

Nevada exists electrically within eleven states, four Canadian provinces and northern Baja California, Mexico that together are known as the Western Interconnection. This is so because the United States, Canada and northern Mexico are divided into three separate and electrically isolated grids, the Western Interconnection, the Eastern Interconnection and, interestingly, most of Texas. These grids are virtually isolated from one another so that prices in one grid generally do not affect prices in another, nor is it practical for oversupply in one grid to serve the needs of another grid that may have insufficient generation. The Western Interconnection includes all of California, Oregon, Washington, Idaho, Nevada, Arizona, New Mexico, Utah, Wyoming, and Colorado; parts of Montana, Nebraska and Texas; the Canadian provinces of British Columbia and Alberta; and the northern region of Baja California in Mexico.

On the natural gas front, Nevada sits within a tightly integrated North American natural gas market that includes all 49 states on the continent, all of Canada and parts of Mexico. Supplies are interrelated through a system of international, interstate and intrastate pipelines, and prices are routinely "pegged" to the major collection point in Louisiana called "Henry Hub," or to one of a dozen or so regional hubs. The price of delivered natural gas is typically a commodity price linked to a hub and a transportation

price. There are a number of natural gas production areas in North America, each having its own costs and abilities to deliver gas. Importantly, natural gas demand in Nova Scotia, for example, can affect the price of natural gas in Nevada.

In terms of transportation fuels, Nevada exists within a loosely integrated and unregulated North American market for petroleum products. The supply of crude oil, the basic feedstock for petroleum products, comes from a number of international companies and countries. Prices for crude oil are generally set by marginal providers that are often state-owned oil companies in countries that belong to the Organization of Petroleum Exporting Countries (OPEC). The U.S. market for petroleum products is generally segmented by proximity to refineries; Nevada, Arizona, and parts of Oregon are largely served by California refineries. Supplies and prices, therefore, tend to be regional in nature because petroleum products are typically delivered to larger population centers, such as Las Vegas and Reno, through pipelines from the refineries.

National Energy Agenda

In assessing this agenda, Nevada benefits most by federal support of energy efficiency and conservation measures and continued support of renewable generation, both in the area of investment or production tax credits and in the area of regulatory reform to allow renewable generation more equitable access to the electric transmission system.

The long-term national agenda will be driven in significant measure by international issues. The most prominent will be the slow, but irreversible, decline in fossil fuels as the energy source of choice. This will become more evident in the types of investment decisions made by energy companies, investments such as in refineries. Big-ticket developments, requiring billions of dollars and decades to recover costs, will decline in the industrialized parts of the world and move to the growing economies of Asia, South America and Africa – largely because investment dollars can be recovered more quickly. The differential effect on Nevada will probably be small. Nevada has good renewable resources and is in the process of developing them and using them in a coordinated way with fossil fuels. As fossil fuels become more and more expensive, although continued volatility is expected, Nevada is in a good position to shift its fuel sources based on economics.

Another long-term national agenda item will be world pressure on the United States and a few other industrialized countries to act on global warming. To the extent that this pressure results in a reduction in the use of coal for power generation, or at least coal without carbon offsets of some kind, the U.S. will be harmed. More particularly, Nevada will be harmed if the most obvious response to limitations on coal plants is realized – the construction of new nuclear plants.

The other long-term change that will come as a result of increasing relative cost of fossil fuel is the change in attitude toward acting providently in energy matters. It is very difficult to be thrifty with energy – regardless of what may be considered "correct" – when the price of energy is cheap. As production declines and as demand grows, energy will become relatively more expensive and Americans will treat it accordingly.

Regional Energy Agenda

The western governors have set the short-term regional agenda by calling for 30,000 MW of "clean and diversified" energy, 20 percent improvement in energy efficiency, comprehensive evaluations of electricity and natural gas adequacy, and enhanced regional coordination in transmission planning the governors have made a clear statement of expectations for western states. Actions are already underway to implement these initiatives and meaningful results are expected within the next few years. Similarly, the governors have strongly opposed ceding such important local tools as eminent domain to federal regulators as FERC attempts to rewrite its own statutory authority.

The governors and other state and local regulators have also moved quickly to deal with two other potential problems with regional implications: continuing drought in the Colorado River basin and various threats to the west's fragile ecological systems. The economic vitality of the west demands not only ample energy, but also ample water and access to valuable renewable resources. Good management of western energy, air, water and wildlife are essential to that economic vitality, most of all in tourism driven economies in Las Vegas, Lake Tahoe and Reno.

Nevada's Energy Goal

Nevada's energy goal is to work with policy makers, utilities, industry, citizens and other stakeholders to develop energy programs which achieve the following:

- Measurable progress toward energy independence while protecting the state's delicate air shed
- Measurable progress toward energy security
- Use of Nevada's renewable energy resources to diversify the electricity and fuel supplies, stabilize electricity rates, create high-paying jobs, diversify the economy, offset the emissions created by fossil fuel plants, reduce the amount of water used to produce electricity, and in the case of biomass resources reduce the threat of wildfires
- Use of renewable energy research and development to attract renewable energy investors to the state, create high-paying jobs, and diversify the state's energy supplies, and
- The effective and efficient execution of all new NSOE statutory mandates and executive orders including:
    - Prioritize and facilitate the permitting of renewable energy projects
    - Preparation of a state energy reduction plan which will reduce grid-based energy purchases for state-owned buildings by 20% by 2015 (NRS 701.215)
    - Adoption of green building standards (NRS 701.217)
    - Adoption of regulations for energy conservation in buildings (NRS 701.220)
    - Assistance to renewable energy developers in their application for Industrial Development Revenue Bonds (NRS 701.170)

In recent months, the Governor has taken two actions toward achieving these goals. He has issued an Executive Order requiring all state agencies to prioritize and facilitate the permitting process for

renewable energy projects and he as called for the creation of the Nevada Climate Change Advisory Committee.

Achieving this goal will not be without its challenges. Some challenges can be controlled via the development and implementation of public policies, others cannot. Some of Nevada's larger energy challenges are identified below.

Nevada's Energy Challenges

1. Terrorism that brings with it potential threats to our energy infrastructure and the need for increased energy security
2. World events that drive up the base price of crude oil and increase supply risk
3. The need to import approximately 60% of the electricity consumed in the state
4. Periodic severe droughts in the west, that threaten the supply and price of hydo-based electricity
5. The electricity shortage that places demands on Nevada's scarce water supplies and fragile air sheds to satisfy demand in Nevada and throughout the western states
6. Inadequate transmission to get electricity to markets throughout Nevada and the west,
7. Uncertainty about the long-term price and availability of natural gas, that results in fluctuating electricity bills
8. Limited availability of natural gas in eastern Nevada that undermines economic growth in that region
9. Electricity, natural gas, and petroleum prices that have risen to the point where the cost of electricity and transportation fuels brings hardship to Nevada's farmers, ranchers and rural businesses
10. Uncertainty about California electricity and fuel standards and the consequences those standards may have on Nevada's electricity and transportation fuel supplies
11. An inadequate number of transportation fuel pipelines and storage capacity to assure the security of the state's fuel supplies
12. An incomplete assessment of the state's renewable resources
13. The proposed expansion of the military's air space that limits the development of the state's wind resources

14. The potential interference of wind turbines on military radar that also limits the development of wind
15. The location of the vast majority of the state's renewable resources on federal lands which extends and complicates project development adding costs not associated with projects developed on private land
16. Nevada's mountainous geography which makes the development of renewable projects and transmission lines on ridge tops more expensive than projects developed in plains states
17. Wildfires that threaten the state's biomass resources
18. A tax structure which precludes the creation of state-based incentives to encourage the development of the state's renewable resources
19. The lack of a systems benefit charge to create a fund for supporting renewable energy projects, and
20. Endangered species and other wildlife and sportsman related complications that either preclude the development of the renewable resources or increase project costs

These—and other—challenges are, in part, balanced with opportunities that offer new and better solutions to our future energy needs. A few of these opportunities are described below.

Nevada's Energy Opportunities

1. To use Nevada's vast renewable resources to produce electricity, and other products, provide economic development opportunities, create high-paying jobs, and diversify the state's economy
2. To use renewable resources to produce electricity that does not produce greenhouse gases, or pollute the state's delicate air shed
3. To use the Nevada's wind resources to produce electricity that does not require the use of the state's precious water resources
4. To use renewable resources to stabilize the price of electricity and to help make the price of electricity more predictable
5. To keep electricity bills low by purchasing significant quantities of low to moderately priced electricity from power plants planned and under development in Nevada and the western interconnection
6. To work with the federal government and surrounding states to balance the need for low priced electricity with the need to maintain Nevada's air shed

7. To work with Nevada's policy makers, utilities, tourism industry, citizens and other stakeholders to establish greenhouse gas and other emission programs that protect the environment

8. To maximize the value of the coal brought into the state to generate low cost electricity by working with the utilities and leading research institutions to study other uses for this resource

9. To help the utilities meet their Portfolio Standard requirements by working with them to enhance the state's transmission infrastructure in order to move electricity from northern Nevada's rich geothermal fields to southern Nevada markets, and electricity from solar resources in southern Nevada to northern Nevada electricity markets

10. To work with the federal government and with surrounding states to develop the transmission capacity to export electricity generated from Nevada's energy plants

11. To work with the utilities to expand the number of fossil fuel and renewable energy distributed generation projects in the state to increase energy security

12. To work with the Department of Defense to balance the military's need for air space and radar with the need to develop the state's renewable resources

13. To work with Fish and Wildlife, the Department of Transportation and Nevada's sportsmen to secure the safety of renewable energy projects in remote locations

14. To work with federal agencies to secure the use of Nevada's biomass resources on federal land, reducing the risk of wildfires

15. To use the biomass resources on federal land to generate electricity, develop new bio-fuels, and create other products

16. To recycle municipal waste to generate electricity and to develop other biomass-based products

17. To leverage the creation of Nevada's federally-funded Renewable Energy Centers to attract federal grants and private investments to develop and commercialize new renewable energy technologies, desert southwest architectural innovations, and new transportation fuel products

18. To leverage the continuation of relatively low interest rates that favor an even more aggressive approach to performance contracting to increase energy efficiency and the number of on-site renewable energy projects

19. To work with the utilities to expand and increase the number of net-metered projects in Nevada to increase energy security and stabilize electricity bills

20. Implementation of improvements in the efficiency and efficacy of monies allocated for low income weatherization and assistance programs to increase energy efficiency and energy conservation

Given our challenges and opportunities, the status of energy in Nevada is rapidly improving.

Status of Energy in Nevada

1. The state's regulated utilities are once again financially healthy. This will help the utilities reduce the financing costs associated with the development of new low-cost electricity generation projects. It will also help renewable energy project developers finance projects based on power purchase agreements with the utilities.

2. The state's regulated utilities are on track to meet the Nevada Portfolio Standard. As a result, by the end of 2007 Nevada will have more solar capacity installed per capita than any other state.

3. Steps are being taken to tie our northern and southern electric grids together. This will help electricity from northern Nevada's rich geothermal resources get to markets in southern Nevada and throughout the west. It will also help southern Nevada's world class solar resources get to markets in northern Nevada and throughout the west.

4. Multiple electricity generation projects are in various stages of development throughout the state. All these projects will reduce the amount of electricity imported from other states. The projects based on renewable resources will help diversify the state's electricity portfolio. The projects based on fossil fuels will help keep electric bills low. Is this necessarily true?

5. The state's regulated utilities are implementing a wide variety of energy efficiency and energy conservation programs that will help reduce electric bills.

6. The SolarGenerations program, designed and implemented by the Nevada Legislature, has been wildly successful. The program is consistently oversubscribed, has achieved national recognition and is now being imitated by other states.

7. Improvements to Sierra Pacific Power Company's natural gas system will allow the company to meet customer demands for the next several years.

8. Southwest Gas' system improvements have increased their ability to meet their customer's demands.

9. The Clark County Board of County Commissioners' Blue Ribbon Commission to Improve the Reliability of Southern Nevada's Fuel Supply has published a report offering a variety of measures designed to improve the southern Nevada's fuel supplies.

In the coming year, the NSOE will open a dialog with Nevada's policy makers, utilities, industry, citizens and other stakeholders to identify and develop positive, creative programs to help the state achieve energy independence and energy security. Energy independence, and energy security will provide Nevadan's with high-paying jobs, create economic growth, diversify the economy, create a cleaner environment, reduce the strain on our water resources, stabilize electricity bills, and provide access to a more stable supply of diversified transportation fuels.

Balancing energy needs with secure supplies continues to be an important issue, not only in Nevada, but in the rest of the United States as well.

Organization of the Nevada Energy Status Report

Chapters 1, 2 and 3 describe the status of electricity, natural gas and petroleum products in Nevada today. Each chapter assesses the situation of the companies providing services for the respective types of energy, including production or generation, transportation to Nevada, opportunities for energy efficiency and energy conservation, and then the short-term and long-term adequacy of resources and infrastructure for our state.

The final chapter looks at the organization and responsibilities of the Nevada State Office of Energy.

Chapter 1 Electricity Assessment

Nevada's electric power systems operate almost entirely within two control areas; the Sierra Pacific Power Company (Sierra Pacific) control area located in Northern Nevada, and the Nevada Power Company (Nevada Power) control area located in Southern Nevada. Several rural electric cooperatives, municipal power companies and general improvement districts also provide electricity service in Nevada. A list of these companies is provided in the report section, 'Other Electric Service Providers'.

Sierra Pacific and Nevada Power serve 93% of Nevada's electrical demand and the other smaller electric providers collectively serve the remaining 7%. Sierra Pacific and Nevada Power are not directly interconnected; therefore in evaluating the adequacy of electricity in Nevada it is appropriate to focus on the adequacy of supply in the two control areas separately. However, at least two potential transmission projects are being considered that would connect the two systems, resulting in enhanced opportunities for renewable energy development and improved system reliability.

Sierra Pacific Power Company

Sierra Pacific Power Company (Sierra Pacific) is a wholly owned subsidiary of Sierra Pacific Resources, an investor owned corporation with operating subsidiaries engaged in energy and utility services. Sierra Pacific's electric division serves customers in a 50,000 square mile region of Northern Nevada and Northeastern California.

Load Forecast

Sierra Pacific forecasts its summer peak demand (including a planning reserve margin) to increase from 1,844 MW in 2007 to 2,732 MW by 2026, or 888 MW for an average annual growth rate of 2.1%. System energy requirements are projected to grow from 8,627 GWH in 2007 to over 12,593 GWH by 2026, for an average annual growth rate of 2.0%. The number of residential customers increases over the same 20-year period from 313,801 to 448,576, for an average annual growth rate of 1.9%. These projections are summarized in Table 1-1 and include forecasted energy savings from conservation and demand-side management (DSM) programs.

Table 1-1
Sierra Pacific
Peak Demand, Annual Energy Requirements and Customers

	2007	2011	2016	2021	2026	Change
MW *	1,844	2,112	2,290	2,498	2,732	888
GigaWh	8,627	9,466	10,426	11,532	12,593	3,966
Residential Customers	313,801	338,321	371,667	408,303	448,576	134,775

* Includes planning reserve requirements.

Generation Resources

Sierra Pacific meets its customers' needs through a combination of electricity generated at company-owned facilities and also with energy purchases from other electric generators. Electricity purchased from other utilities is usually imported into Sierra Pacific's system from Idaho (Midpoint Substation), Utah (Gonder Substation), or California (Hilltop Substation). These import ties are discussed under the Transmission System section below. Electricity may be also purchased from non-utility generators located within the Sierra Pacific transmission system or may be delivered from IPP's through these import gateways. A summary of Sierra Pacific's plan to meet forecasted peak demand requirements is shown in Table 1-2.

Table 1-2
Sierra Pacific
Forecast of Planned Resources

	2007	2011	2016	2021	2026
Demand (MW)	1,844	2,112	2,290	2,498	2,732
Generation (MW)					
Existing (net of retirements)	1,029	1,029	893 Explain reduction	780	427
Planned		717	1,124	1231	1,231
Generation Total	1,029	1,746	2,017	2,011	1,658
Purchases (MW)					
Existing Long-Term	85	85	84	40	4
New Contracts	730	174	206	261	306
Purchases Total	815	259	290	301	310
Available Resources	1,497	2,005	2,307	2,312	1,968
Open Position	-	107	0	186	764

Explain what this is

Fossil Generation

The fossil generation resources owned by Sierra Pacific are listed in Table 1-3. The 522 MW coal-fired Valmy facility is co-owned with Idaho Power Company. Its 50% output share of 261 MW may at times be available for purchase by Sierra Pacific when Idaho Power has excess generation at this facility.

Additionally, Table 1-4 lists existing and proposed fossil generation resources located within the Sierra Pacific system, but not owned by the utility. These include the existing natural gas-fired facilities of Naniwa Energy and Western 102, and also the Boulder Valley coal-fired project under construction in Eureka County.

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Table 1-3
Sierra Pacific

Fossil Generation Resources

Plant Name/ County	# of Units	Type	Summer Cap (MW)	Operating Status	Notes
Valmy/ Humboldt	2	Coal Steam	261 Base load	In service	50% ownership share shown
Tracy/ Storey	3	Gas/oil Steam	244 Intermed.	In service	
Pinon Pine/ Storey	1	Gas Combined Cycle	104 Base/Intermed.	In service	Originally designed as coal gasification
Clark Mtn/ Storey	2	Gas/oil Comb Turbine	132 Peaking	In service	
Tracy/ Storey	1	Gas Comb Turbine	514 Base/Intermed.	Under Construction	
Ft Churchill/ Churchill	2	Gas/oil Steam	226 Intermed.	In service	
Ely Energy/ White Pine	2	Coal Steam	300 Base	Planned	750 MW in service Dec 2011; 750 MW in service June 2013. Sierra Pacific ownership of 150 MW in each of the two units.
Various small Various sites	16	Gas/Oil, Diesel	62 Peaking	In service	

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Table 1-4
Sierra Pacific
Non-Utility Generator In-System Resources --Privately Owned

Plant Name/	# of	Summer Cap	Operating

County	Units	Type	(MW)	Status	Notes
Naniwa/ Storey	6	Gas/oil Comb Turbine	306 Peaking	In service	Naniwa Energy LLC
Western 102/ Storey	14	Gas Reciprocating	118 Base load	In service	Barrick Mining
Boulder Valley/ Eureka	2	Coal Steam	203 Base load	Under Construction	Newmont Mining
WP Power Sta./ White Pine	3	Coal Steam	1600 Base load	Planned	LS Power

Resource Planning Strategy

Sierra Pacific has the task of planning how best to meet the resource needs of electricity customers in northern Nevada. These plans are thoroughly reviewed by many public and private stakeholders via regulatory proceedings before the Public Utilities Commission of Nevada (PUCN). The PUCN evaluates the utility's proposals and issues rulemakings regarding these energy resource plans for the state of Nevada.

A strategy is being pursued that provides a balance of generation supply and customer demand-side resources to best meet the state's growing energy needs and serve the public interest of Nevadans. These resources include fossil fuel-fired generation, renewable energy generation, energy conservation and efficiency, demand-side management programs, and power purchases using intrastate and inter-state transmission assets.

Near-Term

Sierra Pacific currently expects to have sufficient resources to meet its customers' energy requirements in 2007. Resource challenges could periodically arise if regional energy supplies decline, for example as a result of a lower than expected hydro generation year in the Pacific Northwest and California; or customer demand is much greater than forecasted, for example, as during the unusually hot weather event that occurred in California during the summer of 2006.

Long-Term

Sierra Pacific has new generation planned inside its control area during its three-year action plan, including a 514 MW combined-cycle facility at Tracy that? is currently under construction for 2008, and a 300 MW ownership share in the proposed 1,500 MW coal-fired Ely Energy Center (750 MW in-service in 2011 and 750 MW in-service in 2013). The utility is also studying the material condition of its existing power plants.

Sierra Pacific's long-term planning indicates the need for additional base load generation, also spurring a feasibility study for adding capacity at the Valmy Power Station. Further, non-utility entities are proposing new fossil-fueled and renewable generation located in Nevada. The construction of renewable energy facilities, the completion of the Falcon to Gonder transmission project which facilitates power imports, and the possibility of other projects in northern Nevada should ensure an adequate electricity supply.

Programs that aim to reduce electrical consumption of customers are also very important to a long-term resource strategy. The plans for demand-side management projects and other energy saving initiatives are more fully discussed in the section, Energy Efficiency and Conservation Opportunities.

The adequacy of Sierra Pacific's resource plans depends in significant part on the utility's ability to implement its action plan. The financial condition of Sierra Pacific and other utilities in the west as well as their access to capital and energy markets following the western energy crisis in 2001 continues to improve.

Renewable Generation

Table 1-5 lists the renewable generation resources currently under contract with Sierra Pacific and Nevada Power, as well as those pending approval before the Public Utilities Commission of Nevada as of March 1, 2007. Figure 1-1 also provides a map of these facilities.

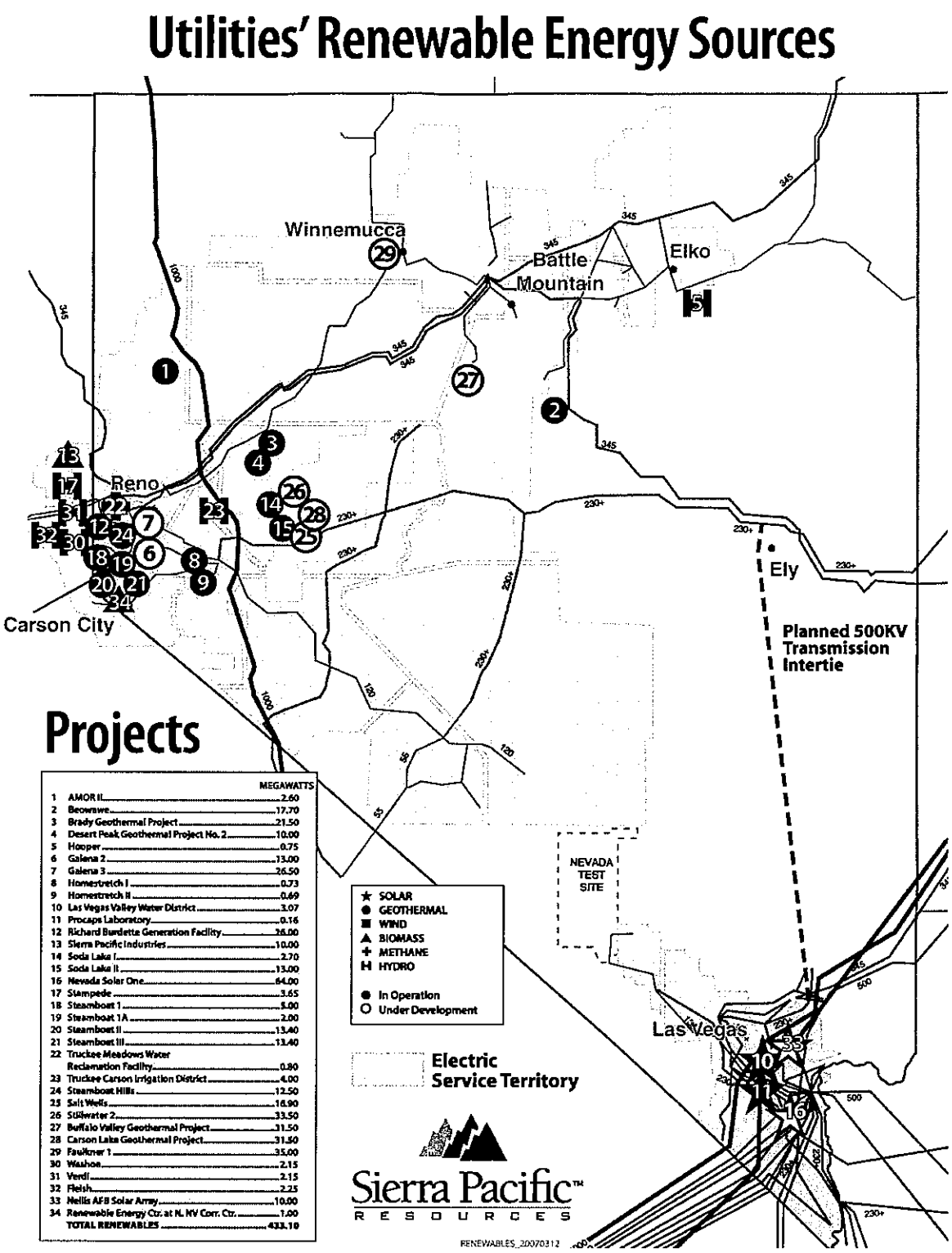
Table 1-5
Sierra Pacific
Sierra Pacific and Nevada Power—Renewable Generation Resources

Plant Name County	Type	Nameplate Capacity (MW)	Status
AMOR II Empire, Nevada	Geothermal	2.60	In Operation
Beowawe Beowawe, Nevada	Geothermal	17.70	In Operation
Brady Geothermal Project Desert Peak, Nevada	Geothermal	21.50	In Operation
Desert Peak Geothermal Project No. 2 Churchill County, Nevada	Geothermal	10.00	In Operation
Homestretch I Yerington, Nevada	Geothermal	0.73	In Operation
Homestretch II Yerington, Nevada	Geothermal	0.69	In Operation
Richard Burdette Geothermal Project Steamboat Springs, Nevada	Geothermal	26.00	In Operation
Steamboat Hills Steamboat, Nevada	Geothermal	12.50	In Operation
Steamboat I Steamboat, Nevada	Geothermal	5.00	In Operation
Steamboat IA Steamboat, Nevada	Geothermal	2.00	In Operation
Steamboat II Steamboat, Nevada	Geothermal	13.40	In Operation
Steamboat III Steamboat, Nevada	Geothermal	13.40	In Operation

Stillwater II Fallon, Nevada	Geothermal	33.50	In Operation
Soda Lake I and II (2 units) Fallon, Nevada	Geothermal	15.70	In Operation / Under Development
Buffalo Valley Geothermal Project Lander and Pershing Counties, Nevada	Geothermal	31.50	Under Development
Carson Lake Geothermal Project Near Fallon, Nevada	Geothermal	31.50	Under Development
Faulkner 1 Blue Mountain, Humboldt, Nevada	Geothermal	35.00	Under Development
Galena 2 Churchill County, Nevada	Geothermal	13.00	Under Development
Galena 3 Steamboat, Nevada	Geothermal	26.50	Under Development
Salt Wells Fallon, Nevada	Geothermal	16.90	Under Development
Fleish Sierra County, California and Washoe County, Nevada	Hydroelectric	2.25	In Operation
Hooper Elko, Nevada	Hydroelectric	0.75	In Operation
Stampede Little Truckee River, Nevada	Hydroelectric	3.65	In Operation
Truckee Carson Irrigation District Lahontan, Nevada	Hydroelectric	4.00	In Operation
Verdi Washoe County, Nevada	Hydroelectric	2.15	In Operation
Washoe Washoe County, Nevada	Hydroelectric	2.15	In Operation

Procaps Laboratory Las Vegas, Nevada	Solar PV	0.16	In Operation
Las Vegas Valley Water District (6 sites) Las Vegas, Nevada	Solar PV	3.07	In Operation / Under Development
Nellis AFB Solar Array Las Vegas, Nevada	Solar PV	10.00	Under Development
Nevada Solar One Eldorado Valley, Nevada	Solar Thermal	64.00	Under Development
Sierra Pacific Industries Loyalton, California	Biomass	10.00	In Operation
Renewable Energy Center at the N. Nev. Correctional Center Carson City, Nevada	Biomass	1.00	Under Development
Truckee Meadows Water Reclamation Facility Reno, Nevada	Methane	0.80	In Operation
Total		**433.10**	

Figure 1-1
Nevada Renewable Energy Sources



Projects

		MEGAWATTS
1	AMOR II	2.60
2	Beowawe	17.70
3	Brady Geothermal Project	21.50
4	Desert Peak Geothermal Project No. 2	10.00
5	Hooper	0.75
6	Galena 2	13.00
7	Galena 3	26.50
8	Homestretch I	0.73
9	Homestretch II	0.69
10	Las Vegas Valley Water District	3.07
11	Procaps Laboratory	0.16
12	Richard Burdette Generation Facility	26.00
13	Sierra Pacific Industries	10.00
14	Soda Lake I	2.70
15	Soda Lake II	13.00
16	Nevada Solar One	64.00
17	Stampede	3.65
18	Steamboat 1	5.00
19	Steamboat 1A	2.00
20	Steamboat II	13.40
21	Steamboat III	13.40
22	Truckee Meadows Water Reclamation Facility	0.80
23	Truckee Carson Irrigation District	4.00
24	Steamboat Hills	12.50
25	Salt Wells	16.90
26	Stillwater 2	33.50
27	Buffalo Valley Geothermal Project	31.50
28	Carson Lake Geothermal Project	31.50
29	Faulkner 1	35.00
30	Washoe	2.15
31	Verdi	2.15
32	Fleish	2.25
33	Nellis AFB Solar Array	10.00
34	Renewable Energy Ctr. at N. NV Corr. Ctr.	1.00
	TOTAL RENEWABLES	433.10

2006 was a watershed year for Sierra Pacific's and Nevada Power's renewable energy program. The utilities moved forward with a three-pronged strategy for compliance with the state of Nevada's Portfolio Standard (PS) by: 1) accelerating their renewable energy procurement ("RFP") process, 2) ramping-up DSM, and 3) direct utility investments in the development of renewable energy facilities. As shown in Table 1-5 and Figure 1-1 above. These efforts have resulted in more new renewable energy power purchase agreements and new renewable project development activity than at any time in the past.

In addition, as shown on Table 1-6 the utilities have added a number of customer-scale PV systems. These systems have provided the utilities with a useful test-bed to reveal the kinds of practical issues that may be encountered by customers and PV contractors in installing such systems.

Table 1-6 Can the boxes be shrunk to put the subtotal and total on this page?
Sierra Pacific and Nevada Power
Utility Owned Renewable Generation

	Date of Initial Operations	Capacity (kW)
Nevada Power		
Clark Amonix System	April-06	75
		115
Ryan PV System	Feb 07	115
Pearson PV System	May-05	19
UNLV PV-1	June-05	14
Subtotal		**213**
Sierra Pacific		
Sierra Plaza PV	November-06	75
Sierra Plaza Tracking PV	November-06	1.2
Sierra Plaza Wind Generator	November-06	10
Subtotal		**86.2**

Total	**309.2**

Solar Energy

In February 2006 ground was broken on the 64 MW Nevada Solar One (NSO) Project, the largest solar project undertaken in the U.S. in over 15 years. Sierra Pacific has contracted to purchase 32 percent of the total output of the NSO project and Nevada Power has contracted with the remaining 68 percent. To further reinforce and diversify the utilities' solar supply portfolio, Nevada Power contracted to purchase portfolio energy credits from the 10 MW Nellis Air Force Base SolarStar photovoltaic (PV) project. SolarStar is the largest single photovoltaic project in the U.S. It is scheduled for completion by the end of 2007.

2006 also marked the completion of four large PV projects at sites owned by the Las Vegas Valley Water District in Las Vegas.

When these projects go into service in 2007 Nevada will be ranked number one in use of solar energy as measured in watts per person and percent of retail sales (kWh). Nevada's leadership in the development and use of solar energy sources was recognized in an award given by the Solar Energy Industries Association in October, 2006.

SolarGenerations

The Solar Energy Systems Demonstration Program (SolarGenerations) was created by the 2003 Nevada Legislature to encourage the development of a Nevada solar photovoltaic industry. The program provides customers in three categories with rebates for installing solar photovoltaic systems. The customer categories are: residents, small businesses, schools and other public buildings.

The SolarGenerations program is consistently oversubscribed. There are not enough kilowatt hours or customer categories to meet the demand. Demand is so strong that when program year four opened for applications, the applications poured in at an astonishing rate of two per minute. The residential/small business category was fully subscribed within eight hours and the entire program was fully subscribed within 24 hours.

On March 22, 2007, the Public Utilities Commission of Nevada approved 562 applicants for participation in program year four. The number of applicants continues to increase over the previous year and participation by schools and public buildings exceeds the program cap with a significant waiting list. Among the years four applicants was the Legislative Counsel Bureau and the Nevada State Printing Office.

The number of solar contractors and consultants in Nevada continues to grow as a result of the SolarGenerations program and the quality of the installations is getting better as evidenced by the reduction in the issues discovered during final inspections. In addition training classes for building officials and inspectors have resulted in an increased level of confidence in various building departments. Building officials now quickly and routinely review and approve project plans. Training continues to be a high priority for all jurisdictions in the state.

Geothermal Energy

Geothermal development began a resurgence in Nevada last year. During 2006 the utilities completed negotiation and filed for PUCN approval of long-term power purchases from six new geothermal plants that will total over 120 MW when completed. In addition, as part of their long term strategy of promoting geothermal development in Nevada, the utilities are pursuing acquisition of geothermal leases and other development assets, and plan to enter into joint development arrangements with geothermal companies that involve the utilities investing in geothermal projects.

Based on its existing portfolio Nevada ranks as the number one state in geothermal energy use measured in watts per capita, and second in percent of kWh sales. The state's leadership in geothermal development should continue into the future as projects currently in the development pipeline are completed.

Wind Energy

Consistent with the renewable energy development plans laid out in Nevada Power's 2006 Integrated Resource Plan (IRP) filing to help ensure a robust pipeline of wind projects, the utilities are negotiating joint development arrangements with several wind developers. The utilities are also in the process of acquiring the rights to sites with a potential capacity of 200 MW, installing anemometers, and conducting analyses to determine the potential viability of those sites.

Table 1-7
Sierra Pacific
Renewable Energy Credit Position (2006)

(000 PCs)	2007	2008	2009	2010	2011	2012	2013	2014	2015
Total Retail Sales (000 kWh)	8,079,510	8,392,687	8,712,688	8,780,806	8,899,959	9,158,909	9,276,081	9,399,018	9,683,808
RPS %	9%	9%	12%	12%	15%	15%	18%	18%	20%
Total PC Requirement	727,156	755,342	1,045,523	1,053,697	1,334,994	1,373,836	1,669,695	1,691,823	1,936,762
Non-Solar Requirement	690,798	717,575	993,246	1,001,012	1,268,244	1,305,145	1,586,210	1,607,232	1,839,924
Solar Requirement	36,358	37,767	52,276	52,685	66,750	68,692	83,485	84,591	96,838
DSM Allowance	181,789	188,835	261,381	263,424	333,748	343,459	417,424	422,956	484,190
COMPANY-OWNED									
Non-Solar	0	0	0	0	0	0	0	0	0
Solar	505	755	748	740	733	725	718	711	704
Subtotal	505	755	748	740	733	725	718	711	704
PRE-EXISTING CONTRACTS									
Non-Solar Total	965,361	965,361	965,361	965,361	965,361	965,361	965,361	802,899	801,711
Solar Total	0	0	0	0	0	0	0	0	0
Subtotal	965,361	965,361	965,361	965,361	965,361	965,361	965,361	802,899	801,711
NEW CONTRACTS									
Non-Solar									
Beowawe	127,020	127,020	127,020	127,020	127,020	127,020	127,020	127,020	127,020
Richard Burdette Generation (ORNI 7)	170,000	170,000	170,000	170,000	170,000	170,000	170,000	170,000	170,000
Truckee Meadows Reclamation Facility	3,600	3,600	3,600	3,600	3,600	3,600	3,600	3,600	3,600
Non-Solar Total	300,620	300,620	300,620	300,620	300,620	300,620	300,620	300,620	300,620
Solar									
Solargenix	43,572	52,286	52,286	52,286	52,286	52,286	52,286	52,286	52,286
Solar Total	43,572	52,286	52,286	52,286	52,286	52,286	52,286	52,286	52,286
Subtotal	344,192	352,906	352,906	352,906	352,906	352,906	352,906	352,906	352,906
NET METERED									
Non-Solar	4	4	4	4	4	4	4	4	4
Solar (divide by 2.45 before adding)	6,506	9,088	11,541	10,963	10,415	9,895	9,400	8,930	8,484
Subtotal	6,510	9,092	11,545	10,967	10,419	9,899	9,404	8,934	8,488
NON-SOLAR SUMMARY									
Carried Forward	209,861	0	0	0	0	0	0	0	0
Non-Solar PCs	1,265,985	1,265,985	1,265,985	1,265,985	1,265,985	1,265,985	1,265,985	1,103,523	1,102,335
DSM PCs	51,322	78,146	103,631	128,781	151,472	168,540	182,444	196,348	210,252
Sale to Nevada Power	(836,370)	0	0	0	0	0	0	0	0
Total Non-Solar PCs	690,798	1,344,131	1,369,616	1,394,766	1,417,457	1,434,525	1,448,429	1,299,871	1,312,587
Non-Solar Requirement	690,798	717,575	993,246	1,001,012	1,268,244	1,305,145	1,586,210	1,607,232	1,839,924
Surplus / (Open Position)	0	626,556	376,370	393,754	149,213	129,380	(137,781)	(307,361)	(527,337)
SOLAR SUMMARY									
Carried Forward		14,225	38,587	50,886	62,190	58,874	8,548	(8,548)	8,548
Solar PCs	50,583	62,129	64,575	63,989	63,434	62,906	62,404	61,927	61,474
Total Solar PCs	50,583	76,354	103,162	114,875	125,624	121,780	70,952	53,379	70,022
Solar Requirement	36,358	37,767	52,276	52,685	66,750	68,692	83,485	84,591	96,838
Surplus / (Open Position)	14,225	38,587	50,886	62,190	58,874	53,089	(12,533)	(31,212)	(26,816)

Note: Retail Sales MWh from the Renewable Annual Report, Docket 06-04002, filed with the Public Utilities Commission of Nevada, 4/3/2006.

Energy Efficiency and Conservation Opportunities

Table 1-8 provides a list of the energy efficiency and conservation programs currently offered by Sierra Pacific. More information is available on the utility's web site at http://www.sierrapacific.com/

Table 1-8
Sierra Pacific
Energy Efficiency and Conservation Programs

Program	Description
ENERGY STAR Lighting and Appliances	This program provides upstream buy downs for the costs of compact fluorescent bulbs and direct cash incentives to customers purchasing energy-efficient qualified appliances.
High Efficiency AC Rebate	This program provides rebates to home builders and homeowners for the installation or retrofit of high efficiency air conditioning equipment with a 14 SEER rating or higher, duct sealing, and quality installation assurance measure.
Low Income Weatherization for Single and Multi-Family	This project provides home weatherization measures to low income customers with family incomes that are between 150% of the Federal Poverty level and 60% of the county median income. These "gap customers" are not eligible for other weatherization programs. The program also provides participants with basic energy conservation education.
Market and Technology Trials	This program evaluates new or innovative energy-efficient technologies for potential energy conservation benefits. The target is to identify potential new projects to include in program offerings to customers as a part of the demand side management portfolio or for promotion through education programs.
Non-Profit Grants	This program assists non-profit organizations with energy efficient improvements in new and existing building projects. Grants are awarded based on the highest energy savings potential from the applications submitted.
Second Refrigerator Collection and Recycling	This program helps customers reduce their energy consumption by removing a second refrigerators or freezers from their residences. Each refrigerator or freezer is dismantled and all materials are either recycled or safely disposed of in an environmentally correct manner.
SureBet Commercial	The program facilitates the implementation of cost-effective and

Incentives	energy efficient lighting, HVAC, motors, refrigeration, and other energy efficiency measures for commercial, industrial and institutional facilities through a comprehensive incentive program (Prescriptive and Custom) and energy efficiency engineering services targeted at both customers and contractors.
SureBet New Construction	This program provides incentives and engineering design assistance for new buildings that are designed and constructed to achieve energy efficiencies at least 10% better than the efficiency required by code. LEED-based incentives are also available.
SureBet Schools	This project facilities energy efficiency and peak demand reduction in public schools by providing design assistance, technology assessments, case studies, and financial incentives for installed energy efficiency measures.
Energy Education	This program provides energy education and efficiency outreach to customers through: Home and Trade Shows – Energy experts are available for speaking engagements and public events to provide information to customers and assist customers with energy related questions. Residential and Commercial Builders Support – Energy experts are available through public events and workshop opportunities to educate train the builder community regarding energy conservation. Energy Star Homes are promoted. Facility Operator Certification for Utility Systems (FOCUS) – A collaborative effort of Nevada Power, Sierra Pacific Power, the Community College of So NV (CCSN) and the Management Assistance Partnership (MAP) of the University and Community College System of Nevada. This program trains building facility operators on how to incorporate energy conservation in daily operations and how to evaluate, develop, and see lot management energy conservation upgrade projects for their businesses. Need to make visible the bottom line in box

In completing an integrated resource plan, Nevada utilities are required to treat energy efficiency and energy conservation as if these programs were potential generation resources. This is a reasonable approach because it treats avoided consumption as if it had been actual consumption supplied by an internal generator. There are generally two types of consumption to be avoided: energy consumption and peak capacity consumption. The two are treated differently because the costs associated with energy and capacity are different and they are billed differently to larger customers.

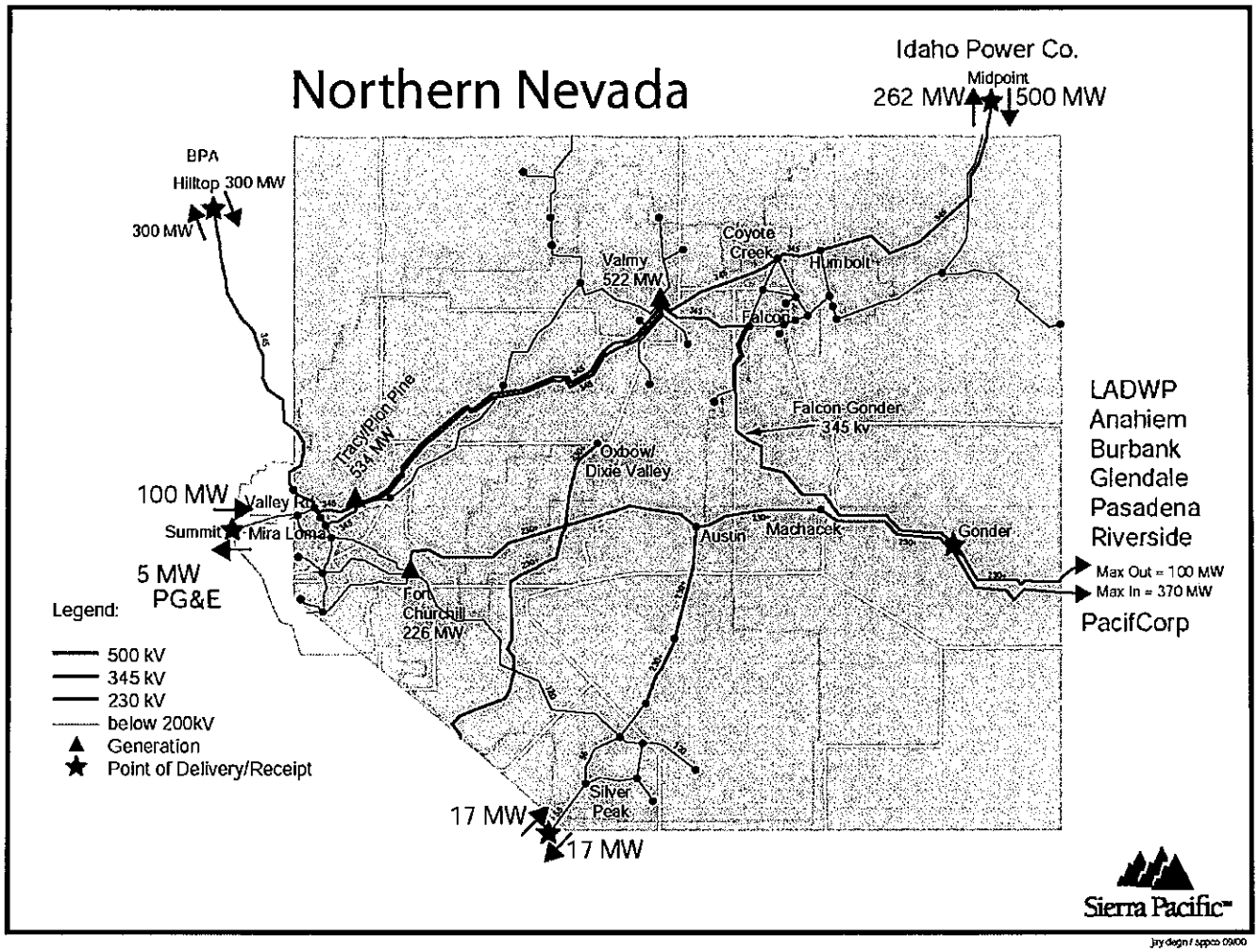
The Sierra Pacific system has a relatively high load factor, meaning that the difference between peak energy demand (peak capacity) and the lowest energy demand is fairly small. This is important because it follows that it will be relatively difficult to reduce the peak capacity. Accordingly, Sierra Pacific's energy efficiency and conservation programs are aimed at reducing energy consumption throughout the year, i.e., not only during peak times.

In the future the relationship between peak demand and minimum demand is expected to change because one mining company has completed construction of a new power facility (Barrick) and a second is also constructing a new power plant (Newmont). This is relevant because the mines are generally Sierra Pacific's highest load factor customers and when they supply their own power, the load factor for the remainder of the system will decrease. This will have the effect of improving the payoff for efforts to reduce peak demand in the future.

Transmission System

The Sierra Pacific bulk transmission system is depicted in the map in Figure 1-2. The system primarily consists of a 345 kV line from North Valley Road and Mira Loma to Tracy; a pair of 345 kV lines from Tracy to Valmy; and a 345 kV line from Valmy to Gonder. Additionally, a 230 kV line runs from Ft. Churchill (Yerington) to Gonder (Ely). Numerous smaller capacity 120 kV and 60 kV circuits complete the transmission system.

Figure 1-2
Sierra Pacific
Transmission System



As the transmission system control area operator, Sierra Pacific is responsible for balancing electric supply and demand in real-time. Table 1-9 lists the major transmission inter-ties between the Sierra Pacific system and neighboring systems, including transmission line voltages and non-simultaneous transmission line capacities. The transmission "capacity" refers to the non-simultaneous amount of electricity that each of the inter-ties can import or export on an individual basis.

Table 1-9
Sierra Pacific
Transmission Inter-ties & Non-Simultaneous Design Capacities

Inter-tie	Control Area	Voltage (kV)	Capacity In/Out (MW)	Notes
Humboldt Line	Idaho Power	345	500/262	
Summit Line	CAISO PG&E	120 (2) & 60	100/120	
Alturas Line	COB/ BPA System	345	300/300	BPA has 110 MW cap into Sierra System
Utah Intertie	Gonder to PacifiCorp/Pavant and to LADWP et.al. /Intermountain PP	230	370/235	Need to darken bottom line of box

A more detailed description of these four major inter-ties with neighboring utility systems is provided below.

Sierra to Idaho (the Humboldt to Midpoint 345 kV line) – The Humboldt to Midpoint 345 kV line connects the Sierra Pacific system to Idaho Power Company. This is Sierra Pacific's largest inter-tie, with a capability of transferring 500 MW from Idaho to Sierra Pacific and 262 MW from Sierra Pacific to Idaho. Sierra Pacific and Idaho Power jointly own the line with ownership rights ending at the Idaho/Nevada border. Sierra Pacific has rights to the transmission capacity from Midpoint into Nevada. Idaho Power has rights to the transmission capacity from Humboldt to Idaho to move its 50% ownership of the Valmy power plant to Idaho.

Sierra to California/Oregon (the Alturas line) – The Bordertown to Hilltop 345 kV line connects Sierra Pacific to the energy-trading hub at the California – Oregon Border (COB) via a Bonneville Power Administration (BPA) 230 kV line from Alturas to COB. The Alturas inter-tie is capable of transferring 300 MW between COB and Sierra Pacific in both directions. The inter-tie is wholly owned by Sierra Pacific. BPA has rights to 110 MW of the capacity from COB to Sierra Pacific to serve its contracts with Wells Rural Electric.

Sierra to Utah (the Utah Inter-tie) – The Utah Inter-tie is composed of two 230 kV lines. One extends from the Gonder Substation (located near Ely, Nevada) to PacifiCorp's Pavant Substation. The other extends from Gonder to the Intermountain Power Project Substation (owned by the Los Angeles Department of Water and Power and others). These lines, in combination, are capable of transferring 240 MW east to west and 80 MW west to east.

Sierra to California (the Summit line) – The Summit inter-tie is composed of two 120 kV lines and one 60 kV line extending from Sierra Pacific over Donner Summit to the Pacific Gas and Electric (PG&E) system operated by the California Independent System Operator (ISO). These lines are capable of transferring ~100 MW to and from California.

The total import capacity via these four inter-ties that Sierra Pacific's control area can rely on at any given time (i.e., that can deliver firm imported power) is referred to as the simultaneous capacity. The simultaneous import capacity of the Sierra Pacific system is 1,000 MW, i.e., much lower than the summation of the four non-simultaneous line capacities. Simultaneous import ratings are developed under operating scenarios in which one of these transmission inter-ties is taken out of service due to an unforeseen fault condition. Import limits are thereby established so that a loss of the most critical inter-tie will not overload the remaining inter-ties and cause cascading outages.

The import limit can also vary depending upon how much power is actually flowing on each of the four inter-ties. The 1,000 MW simultaneous limit describes the system condition when actual import flows are optimized. However it is important to note that it is not always possible to achieve the optimal flows for maximum import; for example, if a relatively large amount of power is imported on the Summit Line, the total system capacity can be less than half of the 1,000 MW simultaneous limit. Additionally, ambient temperatures can also affect total system capacity; for example, higher temperatures reduce the amount of power that can be transported because of thermal loading limitations inherent in the type and size of conductor used in the transmission line. As a practical matter, Sierra Pacific maintains a series of nomographs that visually display the load limits for control area operators.

Import Capability

Sierra Pacific has approximately 283 MW of import capacity commitments under long-term contract to wholesale and retail access transmission customers. The remaining import capacity (of the 1,000 MW limit) which would be available for use by Sierra Pacific's native load customers is therefore 717 MW. This import capacity value represents the maximum amount of off-system purchases that Sierra Pacific can import into its system to serve its native load requirements.

Export Capability

In addition to the limitations outlined in Table 1-9, there is a total system export limit of approximately 500 MW out of Sierra Pacific's control area. Currently, Sierra Pacific does not export a great deal of power to wholesale customers; however this could change in the future as more internal generation is added to Sierra Pacific's system and also with the planned interconnection of the Sierra Pacific and Nevada Power control areas via the 500 kV EN-ti Project in 2011. Such an interconnection would allow for the interchange of power between the two control areas. Moreover this proposed interconnection will also serve to increase the existing import and export limits on the Sierra Pacific system. The following section describes the EN-ti Project in more detail.

Planned Additions

Current and planned transmission resources for the Sierra Pacific system are expected to be adequate to reliably serve customers in northern Nevada. Sierra Pacific is in the process of upgrading its transmission facilities to serve load growth in Reno, Sparks, Carson City, and other nearby communities. The demand for new and upgraded distribution facilities is among the highest in the west - for example, last year Sierra Pacific added some 10,000 new meters, a common measure of distribution growth.

Among the intrastate projects that are currently being discussed is a north-south Inter-tie from Robinson Summit near the Gonder Substation to the Crystal or Harry Allen Substation near Las Vegas (EN-ti Project). The completion of this or a similar link between the two systems is quite important. Not only does such a line provide needed operational flexibility for the utilities, but it also provides a path for renewable generation which is largely located in the northern part of the state to access the larger market in the southern part of the state.

Nevada Power Company

Nevada Power Company (Nevada Power) is a wholly owned subsidiary of Sierra Pacific Resources, an investor owned corporation with operating subsidiaries engaged in energy and utility services business. Nevada Power's electric division serves a population of approximately 1.5 million people in portions of Clark and Nye Counties in southern Nevada. The service territory continues to be one of the fastest growing areas in the nation due to the strong growth in population and commensurate growth in the number of electricity customers. Energy usage also ranks among the highest in the nation due primarily to the dependence on cooling during hot summer months. The substantial growth in demand over the last decade is expected to continue, although perhaps at a slower rate in the coming decade.

Load Forecast

Nevada Power's forecast for 2007 summer peak demand (including a planning reserve margin) is anticipated to increase from 6,344 MW in 2007, to 9,427 MW by 2026, or 3,083 MW for an average annual growth rate of 2.1%. System energy requirements are projected to grow from slightly over 22,710 GWH in 2007 to over 33,589 GWH by 2026, for an average annual growth rate of 2.1% under base case load forecast assumptions. The number of residential customers increases over the same 20-year period from 728,373 to 1,116,583, for an average annual growth rate of 2.3%. These projections are summarized in Table 1-10 and include forecasted energy savings from conservation and demand-side management (DSM) programs.

Table 1-10
Nevada Power
Peak Demand, Annual Energy Requirements and Customers

	2007	2011	2016	2021	2026	Change
MW *	6,344	7,174	7,988	8,763	9,427	3,083
GigaWh	22,710	25,918	28,487	31,208	33,589	10,879
Residential Customers	728,373	848,849	982,467	1,086,516	1,116,583	438,210

* Includes planning reserve requirements.

Generation Resources

Nevada Power meets its customers' needs through a combination of electricity generated at company-owned facilities and also with energy purchases from other electric generators. For example in 2006 Nevada Power met 46% of its energy requirements (MWH) through power purchases. Electricity purchased from other utilities is usually delivered into Nevada Power's system from the Mead and McCullough substations in the Eldorado Valley. The control area import ties are discussed in the Transmission System section below. Electricity may be also purchased from non-utility generators located within the Nevada Power transmission system or may be delivered through the ties with

neighboring systems. A summary of Nevada Power's plan to meet forecasted peak demand requirements is shown below in Table 1-11.

Table 1-11
Nevada Power
Forecast of Planned Resources

	2007	2011	2016	2021	2026
Demand (MW)	6,344	7,174	7,988	8,763	9,427
Generation (MW)					
Existing (net of retirements)	3,509	3,509	3,155	3,005	2,503
Planned	21	803	2,306	3,538	4,731
Generation Total	3,530	4,312	5,461	6,543	7,234
Purchases (MW)					
Existing Long-Term	305	305	305	305	
New Contracts	2,509	386	37	37	37
Purchases Total	2,814	691	342	342	37
Available Resources	6,344	5,003	5,803	6,885	7,271
Open Position	-	2,171	2,185	1,878	2,156

Fossil Generation This should be on the next page. Darken bottom line of box

The fossil generation resources owned by Nevada Power are listed in Table 1-12. Three of these facilities are jointly owned. The Southern Nevada Water Authority owns a 25% share of the Silverhawk combined-cycle natural gas plant; also the coal-fired Reid Gardner Unit 4 is jointly owned with the California Department of Water Resources; and the coal-fired Navajo plant located in Arizona has six regional co-owners including Nevada Power.

Table 1-12
Nevada Power
Fossil Generation Resources

Plant Name/ County	# of Units	Type	Summer Cap (MW)	Operating Status	Notes
Clark/ Clark	2	Gas Combined Cycle	430 Base/Intermed	In service	
Clark/ Clark	1	Gas Combustion Turbine	54 Peaking	In service	
Sunrise/ Clark	1	Gas Steam	80 Intermediate	In service	
Sunrise/ Clark	1	Gas/Oil Combustion Turbine	70 Peaking	In service	
Harry Allen/ Clark	2	Gas Combustion Turbine	144 Peaking	In service	
Chuck Lenzie/ Clark	2	Gas Combined Cycle	1,102 Base/Intermed	In service	
Silverhawk/ Clark	1	Gas Combined Cycle	395 Base/Intermed	In service	NPC has 75% interest. Total capacity 520 MW
Navajo/ Arizona	3	Steam Coal	255 Base	In service	NPC has 11.3% interest. Total capacity is 2,250 MW
Reid Gardner/ Clark	4	Steam Coal	324 Base	In service	RG Unit #4 co-owned by CDWR; 32.2% owned by NPC. NPC will own 100% of RG #4 in 2013 (add'tl 233 MW)

Reid Gardner		Steam Coal	233 Peaking		233 MW of peaking capacity available to NPC from CDWR share of RG #4 through 2012, under contract through 2012.
Clark Peaking Units/ Clark	12	Gas Combustion Turbine	642 Peaking	Under Construction	8 units 428 MW scheduled to be in service sum 2008, 4 units 214 MW scheduled to be in service sum 2009
Ely Energy/ White Pine	2	Steam Coal	1,200 Base	Planned	750 MW in service Dec 2011; 750 MW in service June 2013. NPC ownership of 600 MW in each of the two units.

Table 1-13 lists existing fossil generation resources located within the Nevada Power system, but not owned by the utility. They primarily comprise of natural gas-fired facilities, many of which use new and highly efficient combined-cycle technology.

Table 1-13 This should be on next page
Nevada Power
Non-Utility Generator In-System Resources –Privately Owned

Plant Name	# of Units	Type	Summer Cap (MW)	Operating Status	Notes
Reliant Bighorn/ Clark	1	Gas Combined Cycle	552	In service	
Mirant Apex/ Clark	1	Gas Combined Cycle	470	In service	
LV Cogen II	1	Gas Combined Cycle	224	In service	Contract for 224 MW with NPC
Sun Peak/ Clark	1	Gas Combustion Turbine	222 Peaking	In service	Contract for 222 MW with NPC
Hoover/		Hydro	200	In service	Contract for 200 MW with NPC

Clark			Base		
QF/ Clark		Combustion Turbine and Combined Cycle	305	In service	Contract for 305 MW with NPC
El Dorado Energy/ Clark	1	Combined Cycle	492	In service	Darken bottom line of box

Resource Planning Strategy

Nevada Power has the task of planning how best to meet the resource needs of electricity customers in southern Nevada. These plans are thoroughly reviewed by many public and private stakeholders via regulatory proceedings before the Public Utilities Commission of Nevada (PUCN). The PUCN evaluates the utility's proposals and issues rulemakings regarding these energy resource plans for the state of Nevada.

A strategy is being pursued that provides a balance of generation supply and customer demand-side resources to best meet the state's growing energy needs and serve the public interest of Nevadans. These resources include fossil fuel generation, renewable energy generation, energy conservation and efficiency, demand-side management programs, and power purchases using intrastate and inter-state transmission assets.

Near-Term

The resources that Nevada Power owns, in conjunction with potential market purchases that may be available using the control area import capability and internal merchant generation, exceeds the capacity requirements by a safe margin in the near term. However as with Sierra Pacific, the potential for excess regional generation does not necessarily mean secured energy. Reserve margins in the southwest could become tight this summer if several unfavorable regional events occur. Resource challenges could periodically arise if regional energy supplies decline, for example as a result of a lower than expected hydro generation year in the Pacific Northwest and California; or customer demand is much greater than forecasted, for example, as during the unusually hot weather event that occurred in California during the summer of 2006. Such conditions could lead to calls for conservation or high spot market prices for energy. Therefore, it is important that Nevada Power's supply plan hedge against these possibilities through contracting forward for the power needed to meet the expected loads plus reserve requirements during the peak summer period.

The completion of the Centennial project, the construction of the solar projects currently under contract, and the completed construction of the Mirant, Silverhawk, Lenzie, Eldorado, Harry Allen, Las Vegas Cogen expansion and Reliant power plants should provide an adequate resource supply. However, for summer 2007, a portion of the Mirant facility and the entire output of the Bighorn and Eldorado generation facilities are not under contract to Nevada Power and these resources may not be available to meet 2007 load demands.

Resource adequacy will be further enhanced by conservation and demand-side management programs. The increased funding allocated by Nevada Power for DSM and conservation programs is an important step. As these programs take hold and as the State, Clark County and Henderson conservation efforts further expand, the growth rate in the amount of energy needed to fulfill increasing demand should moderate.

Long-Term

The forecast of continued high load growth on the Nevada Power system will require the future addition of resources to maintain resource adequacy and ensure system reliability. The planned addition of renewable resources and DSM programs are expected to provide a major contribution to future resource requirements but will not be adequate to meet all future resource requirements. The addition of 642 MW of natural gas-fired combustion turbines at the existing Clark station approved in the 2006 NPC Resource Plan, and a proposed 1,200 MW ownership share in the planned first phase of the 1,500 MW coal-fired Ely Energy Center will also provide additional capacity needed to maintain resource adequacy. Even with these resource additions and planned conservation measures additional resources are forecast to be required. The optimal resource mix to maintain required reserve margins will be evaluated in future Resource Plans.

Renewable Generation

Nevada Power procures and develops renewable generation jointly with its affiliate, Sierra Pacific Power Company. Please refer to the Renewable Generation section under the Sierra Pacific Power Company Electricity Assessment above for a description of the utilities' efforts to expand renewable energy use.

The status of Nevada Power's renewable energy and portfolio credit position reported in 2006 is shown in Table 1-14. In the short term, credit deficits in any year will be satisfied by purchases of portfolio energy credits (formerly renewable energy credits or RECs) from Sierra Pacific Power Company and other holders of surplus credits.

Table 1-14
Nevada
Renewable Energy Credit Position (2006)

(000 PCs)	2007	2008	2009	2010	2011	2012	2013	2014	2015
TOTAL RETAIL SALES (in 000 kWh)	20,771,904	21,556,300	22,445,868	23,175,337	23,699,583	24,381,997	24,982,180	25,567,587	26,071,436
RPS %	9%	9%	12%	12%	15%	15%	18%	18%	20%
Total PC Requirement	1,869,471	1,940,067	2,693,504	2,781,040	3,554,937	3,657,300	4,496,792	4,602,166	5,214,287
Non-Solar Requirement	1,775,998	1,843,064	2,558,829	2,641,988	3,377,191	3,474,435	4,271,953	4,372,057	4,953,573
Solar Requirement	93,474	97,003	134,675	139,052	177,747	182,865	224,840	230,108	260,714
DSM Allowance	467,368	485,017	673,376	695,260	888,734	914,325	1,124,198	1,150,541	1,303,572
COMPANY-OWNED									
Non-Solar	0	0	0	0	0	0	0	0	0
Solar	932	923	913	904	895	886	877	869	860
Subtotal	932	923	913	904	895	886	877	869	860
PRE-EXISTING CONTRACTS									
Non-Solar Total	0	0	0	0	0	0	0	0	0
Solar Total	0	0	0	0	0	0	0	0	0
Subtotal	0	0	0	0	0	0	0	0	0
NEW CONTRACTS									
Non-Solar									
ORNI 3	118,000	118,000	118,000	118,000	118,000	118,000	118,000	118,000	118,000
ORNI 9	112,600	112,600	112,600	112,600	112,600	112,600	112,600	112,600	112,600
Non-Solar Total	230,600	230,600	230,600	230,600	230,600	230,600	230,600	230,600	230,600
Solar									
PowerLight (RECs only)	3,395	3,395	3,395	3,395	3,395	3,395	3,395	3,395	3,395
Solargenix	92,591	111,109	111,109	111,109	111,109	111,109	111,109	111,109	111,109
Your Vitamins	715	715	715	715	715	715	715	715	715
Solar Total	96,701	115,219	115,219	115,219	115,219	115,219	115,219	115,219	115,219
Subtotal	327,301	345,819	345,819	345,819	345,819	345,819	345,819	345,819	345,819
NET METERED									
Non-Solar	3	3	3	3	3	3	3	3	3
Solar	10,132	13,986	17,648	21,125	20,070	19,065	18,112	17,207	16,347
Subtotol	10,135	13,989	17,651	21,128	20,073	19,068	18,115	17,210	16,350
NON-SOLAR SUMMARY									
Non-Solar PCs	230,603	230,603	230,603	230,603	230,603	230,603	230,603	230,603	230,603
DSM PCs	431,283	463,297	645,487	668,104	857,334	884,021	1,089,973	1,118,429	1,273,191
Purchase from Sierra	836,370	0	0	0	0	0	0	0	0
Total Non-Solar PCs	1,498,256	693,900	876,090	898,707	1,087,937	1,114,624	1,320,576	1,349,032	1,503,794
Non-Solar Requirement	1,775,998	1,843,064	2,558,829	2,641,988	3,377,191	3,474,435	4,271,953	4,372,057	4,953,573
Surplus / (Open Position)	(277,742)	(1,149,164)	(1,682,739)	(1,743,281)	(2,289,253)	(2,359,810)	(2,951,377)	(3,023,025)	(3,449,779)
SOLAR SUMMARY									
Carried Forward		14,291	47,416	46,521	44,717	3,154	0	0	0
Solar PCs	107,765	130,128	133,780	137,248	136,184	135,170	134,208	133,295	132,426
Total Solar PCs	107,765	130,128	133,780	137,248	136,184	135,170	134,208	133,295	132,426
Solar Requirement	93,474	97,003	134,675	139,052	177,747	182,865	224,840	230,108	260,714
Surplus / (Open Position)	14,291	33,125	(895)	(1,804)	(41,563)	(47,695)	(90,632)	(96,813)	(128,288)

Note: Retail Sales MWh from the Renewable Annual Report, Docket 06-04002, filed with the Public Utilities Commission of Nevada, 4/3/2006.

Energy Efficiency and Conservation Opportunities

Table 1-15 provides a list of the energy efficiency and conservation programs currently offered by Nevada Power. More information is available on the utility's web site at http://www.nevadapower.com.

Table 1-15
Nevada Power
Energy Efficiency and Conservation Programs

Program	Description
Air Conditioning Load Management (ACLM)	This program reduces peak demand caused by air conditioning load by either cycling a participant's air conditioning system or by increasing the temperature by 1-4 degrees on a provided thermostat. The normal operation lasts three hours in the late afternoon or early evening.
Cool Controls Plus Project	This project assists small hotel and motel owners reduce energy consumption by installing thermostats with occupancy sensors in each room that adjusts the temperature when a room is vacant after a specified period of time to reduce heating or air conditioning energy usage. The project also provides upgrades to fluorescent lighting and LED (light emitting diode) exit signs.
ENERGY STAR Lighting and Appliances	This program provides upstream buy downs for the costs of compact fluorescent bulbs and direct cash incentives to customers purchasing energy-efficient qualified appliances.
ENERGY STAR Manufactured Homes	This program provides incentives to manufacturers, dealers and contractors for the installation of ENERGY STAR qualified manufactured homes. Step taken include building envelope measures, air distribution systems, air conditioners, and compact fluorescent lamps.
High Efficiency AC Rebate	This program provides rebates to home builders and homeowners for the installation or retrofit of high efficiency air conditioning equipment with a 14 SEER rating or higher, duct sealing, and quality installation assurance measure.
Low Income Weatherization for Single and Multi-Family Put on previous	This project provides home weatherization measures to low income customers with family incomes that are between 150% of the Federal Poverty level and 60% of the county median income. These "gap customers" are not eligible for other weatherization programs. The program also provides participants with basic energy conservation education.

page	
Market and Technology Trials	This program evaluates new or innovative energy-efficient technologies for potential energy conservation benefits. The target is to identify potential new projects to include in program offerings to customers as a part of the demand side management portfolio or for promotion through education programs.
Non-Profit Grants	This program assists non-profit organizations with energy efficient improvements in new and existing building projects. Grants are awarded based on the highest energy savings potential from the applications submitted.
Pool Pumps	This project provides incentives to residential customers who retrofit their pools with energy-efficient two-speed pool pumps.
Second Refrigerator Collection and Recycling	This program helps customers reduce their energy consumption by removing a second refrigerators or freezers from their residences. Each refrigerator or freezer is dismantled and all materials are either recycled or safely disposed of in an environmentally correct manner.
SureBet Commercial Incentives	The program facilitates the implementation of cost-effective and energy efficient lighting, HVAC, motors, refrigeration, and other energy efficiency measures for commercial, industrial and institutional facilities through a comprehensive incentive program (Prescriptive and Custom) and energy efficiency engineering services targeted at both customers and contractors.
SureBet New Construction	This program provides incentives and engineering design assistance for new buildings that are designed and constructed to achieve energy efficiencies at least 10% better than the efficiency required by code. LEED-based incentives are also available.
SureBet Schools	This project facilities energy efficiency and peak demand reduction in public schools by providing design assistance, technology assessments, case studies, and financial incentives for installed energy efficiency measures.should be on previous
Zero Energy Homes	This new pilot project is designed to support the introduction and promotion of zero and near-zero energy homes in the Las Vegas new home construction market. It is structured to expose the value of investing in energy efficiency and renewable energy to home buyers, home appraisers, real estate agents, and financial companies.
Energy	This program provides energy education and efficiency outreach to

Education	customers through: Home and Trade Shows – Energy experts are available for speaking engagements and public events to provide information to customers and assist customers with energy related questions. Residential and Commercial Builders Support – Energy experts are available through public events and workshop opportunities to educate train the builder community regarding energy conservation. Energy Star Homes are promoted. Facility Operator Certification for Utility Systems (FOCUS) – A collaborative effort of Nevada Power, Sierra Pacific Power, the Community College of So NV (CCSN) and the Management Assistance Partnership (MAP) of the University and Community College System of Nevada. This program trains building facility operators on how to incorporate energy conservation in daily operations and how to evaluate, develop, and see lot management energy conservation upgrade projects for their businesses. Darken bottom line.

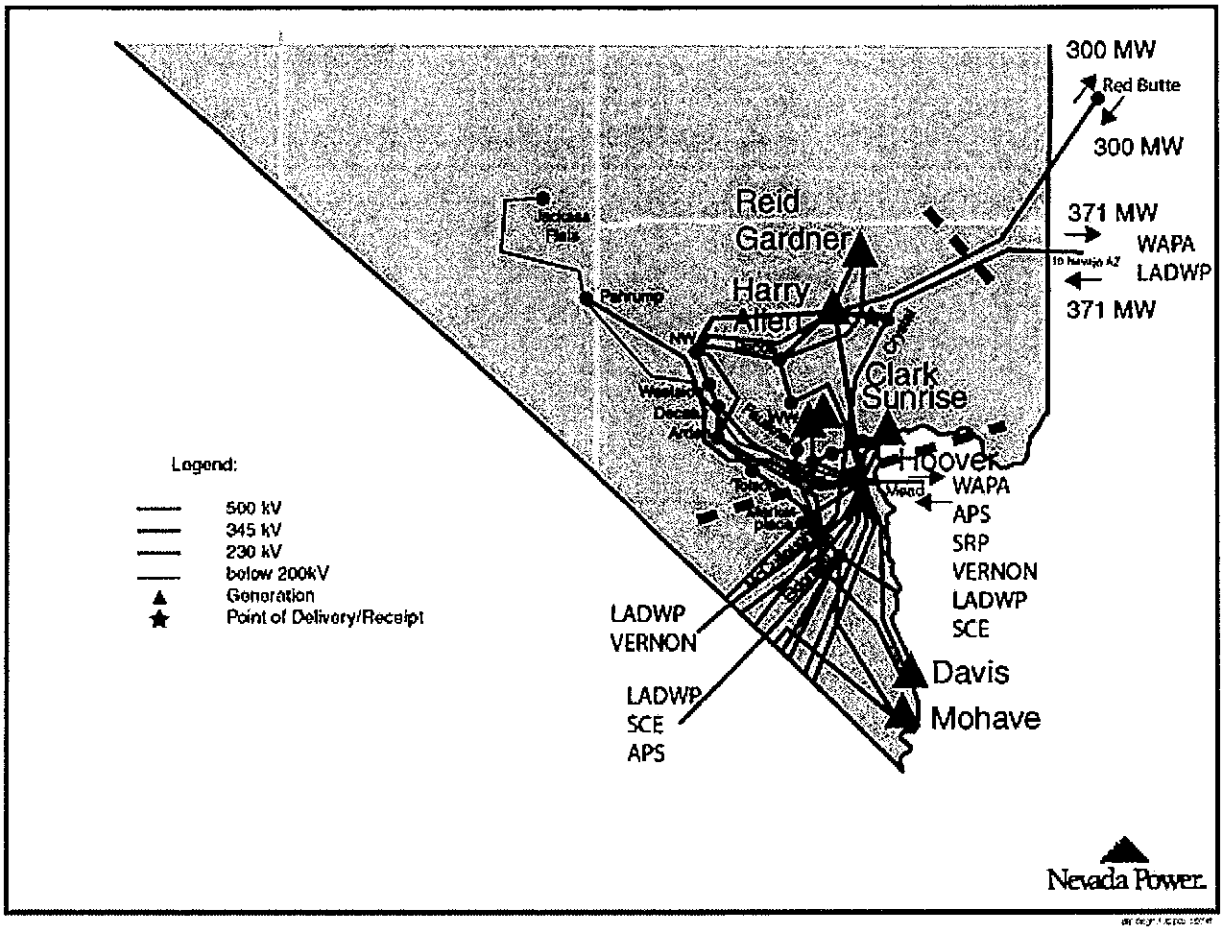
In completing an integrated resource plan, Nevada utilities are required to treat energy efficiency and energy conservation as if they were potential generation resources. This is a reasonable approach because it treats avoided consumption as if it had been actual consumption supplied by an internal generator. Also, there are generally two types of consumption to be avoided: energy consumption and peak capacity consumption. The two are broken out and treated differently because the costs associated with energy and capacity are different and they are billed differently to larger customers.

The Nevada Power system has a relatively low load factor, meaning that the difference between peak energy demand (peak capacity) and the average energy demand is fairly large. This is important because it follows that it will be relatively important to reduce the peak capacity. Accordingly, Nevada Power's energy efficiency and conservation programs are aimed at reducing energy consumption overall and especially during peak times.

Transmission System

The Nevada Power bulk transmission system is depicted in the map in Figure 1-3. The system primarily consists of 500 kV lines from Crystal to Harry Allen, Harry Allen to Northwest, and Harry Allen to Mead. Additionally, Nevada Power has a 345 kV line from Harry Allen to Red Butte and several 230 kV lines from Mead, McCullough and Crystal. Extensive 230 kV, 138 kV and 69 kV lines interconnect throughout the Las Vegas Valley for complete the system. Figure moved up to put on same page as map

Figure 1-3
Nevada Power
Transmission System



The Nevada Power transmission system also has three major inter-ties that connect it to neighboring utilities. These interconnections allow for transfer of energy among the west coast utilities. A description of each inter-tie is provided below:

NPC to the Eldorado Valley - The NPC to Eldorado Valley interconnection is composed of nine 230 kV lines and one 500 kV line extending from the Las Vegas Valley to the Mead, McCullough, and Eldorado Substations. These lines are capable of approximately 2,800 MW of import and 3,800 MW of export with the new Harry Allen – Mead 500kV line in service. This is Nevada Power's largest interconnection in terms of transmission capacity and is used to deliver off-system energy including its share of the Hoover Dam.

NPC to Navajo – McCullough (Crystal Tap) - The Crystal Tap allows for 950 MW of transfers from the Navajo 500 kV system into or out of the Nevada Power system. The Crystal Tap is composed of a pair of 500/230 kV step down transformers and a pair of 230 kV phase regulating transformers.

NPC to Utah - The Red Butte to Harry Allen line is a 345 kV line running from the Las Vegas Valley to PacifiCorp's southern Utah system. This line is rated for 300 MW of transfer in both directions.

Import Capability

The Nevada Power transmission system is capable of importing up to 3,988 MW as the total simultaneous limit of flow on the three inter-ties. As described above in the Transmission System section for Sierra Pacific Power Company, this limit is governed by the system ability to survive the loss of its single largest element; and the limit itself may also be less than 3,988 MW depending on generation dispatch patterns.

Export Capability

The Nevada Power system is currently capable of exporting approximately 3,800 MW. However this number is limited when generation resources are committed to serve control area load.

Recent and Planned Additions

Current and planned transmission resources in the Nevada Power system are expected to be adequate to reliably serve customers in southern Nevada. Nevada Power is continually in the process of upgrading its transmission facilities to serve the load growth in Las Vegas, North Las Vegas, Henderson, and other nearby communities.

One recent addition called the Centennial Project is a 500 kV system interconnected at Crystal, Mead, and Northwest Substations. It provides 3,000 MW of transmission service from Harry Allen / Crystal to the Eldorado and Las Vegas Valleys. The system was completed in March of 2007. The first phase, which provided 1,700 MW of transmission capacity, was completed in March of 2003.

Additionally, the Bighorn Project is a pair of 230 kV lines from Primm, Nevada to the Arden substation located in southwest Las Vegas. This project was constructed to interconnect the Reliant Bighorn 500 MW combined-cycle facility to the grid and deliver the generation output to the Mead 230 kV substation for sale into regional wholesale markets. This project was completed in 2002.

In planning for future system needs Nevada Power has also received approval for the East Valley Master Plan (EVAMP), Valley Area Routing and Siting (VARS) and West Henderson Master Plan. These are major bulk transmission expansions to meet load growth. Additionally, Nevada Power is installing 7 major bulk/network 230/138 kV transformers and 14 new transmission/distribution substations.

The proposed EN-ti transmission project (2011) that would interconnect northern and southern Nevada, could also improve reliability in Nevada. The Robinson Summit to Crystal Substation transmission line that is being considered as a north-south interconnection could potentially provide southern Nevada with access to excess energy supplies that may exist in the regional northwest power pool during the summer. In addition, interstate transmission projects that are currently being studied may address bottlenecks outside of the Nevada Power system and increase reliability.

Other Electric Service Providers

Nevada's rural areas and small cities are served by three types of electric service providers: rural electric cooperatives, municipal utilities and general improvement districts. Rural electric cooperatives are chartered under federal laws associated with the Rural Utility Service, the successor agency to the more widely know Rural Electrification Administration. Municipalities and improvement districts are chartered under state law, NRS 710, Utilities Owned by Local Governments, and NRS 318, General Improvement Districts, respectively. All of these providers are self-regulated and either owned by their members/customers or are accountable to them at the ballot box.

Rural Electric Cooperatives

Harney Electric

Headquartered in Burns, OR, Harney serves customers in north-central Nevada. Its highest peak load was 57 MW and it supplies approximately 183,000 MWh annually.

Mount Wheeler Power

Headquartered in Ely NV, Mount Wheeler serves 6,657 northeastern Nevada customers in Elko, White Pine, Eureka, and Nye Counties, as well as three Utah counties. Its highest peak load was 34 MW and it supplies approximately 188,000 MWh annually.

Penoyer Valley Electric Cooperative

Headquartered in Rachel, NV, Penoyer Valley serves customers in southeastern Nevada. Its highest peak load was less than 1 MW and it supplies approximately 1,000 MWh annually.

Plumas-Sierra Rural Electric Cooperative

Headquartered in Portola CA, Plumas-Sierra serves customers in California and Washoe County, Nevada. Its highest peak load was 25 MW and it supplies approximately 147,000 MWh annually.

Raft River Rural Electric Cooperative

Headquartered in Portland, OR, Raft River serves customers in Idaho, Utah and extreme northeastern Nevada. Its highest peak load was 75 MW and it supplies approximately 278,000 MWh annually.

Surprise Valley Electricmove to next page

Headquartered in Alturas CA, Surprise Valley serves customers in California and northwestern Nevada. Its highest peak load was 33 MW and it supplies approximately 122,000 MWh annually.

Valley Electric Association, Inc.

Headquartered in Pahrump, NV, Valley Electric serves 15,495 customers in southern Nevada, west of Las Vegas, in Nye, Esmeralda, Clark and Mineral Counties. Its highest peak load was 89 MW and it supplies more than 402,000 MWh annually.

Wells Rural Electric

Headquartered in Well, NV, Wells Rural Electric serves 5,529 customers in northeastern Nevada, in Elko County. Its highest peak load was 89 MW and it supplies more than 643,000 MWh annually.

Municipal Utilities

Boulder City

Boulder City Utilities serves the citizens of Boulder City, southern Clark County. Its highest peak load was 51 MW and it supplies more than 163,000 MWh annually.

Caliente

Caliente Utilities serves the citizens of Caliente, south-central Lincoln County. Its highest peak load was 3 MW and it supplies slightly less than 10,000 MWh annually.

Fallon

Fallon Utilities serves the citizens of Fallon in western Churchill County. Its highest peak load was 15 MW and it supplies slightly more than 65,000 MWh annually.

Pioche

Pioche Utilities serves the citizens of Pioche in east-central Lincoln County. Its highest peak load was 2 MW and it supplies approximately 7,500 MWh annually.

General Improvement Districts

Alamo Power District # 3

Headquartered in Alamo, NV, Alamo Power District # 3 serves customers in Lincoln County. Its highest peak load was 3 MW and it supplies approximately 11,000 MWh annually.

Lincoln County Power District # 1

Headquartered in Caselton, NV, Lincoln County Power District # 1 serves 824 customers in Lincoln County. Its highest peak load was 16 MW and it supplies more than 72,000 MWh annually.

Overton Power District # 5

Headquartered in Mesquite, NV, Overton Power District # 5 serves 9,343 customers in eastern Clark County. Its highest peak load was 74 MW and it supplies more than 366,000 MWh annually.

Wholesale Electric Service Providers

Colorado River Commission (CRC)

The Colorado River Commission is a Nevada state agency. It is registered with FERC as a scheduling coordinator and is responsible for accepting and distributing power from Hoover Dam, as well as providing power for the Southern Nevada Water Authority and its associated water utilities, Nevada Power Company and a specific list of industrial customers located near Hoover Dam.

Proposed Electric Generation

Table 1-16 lists the generation facilities currently in the permitting process, or under construction throughout the state. The table has been provided by the Public Utilities Commission of Nevada. A description of some of the larger projects follows the table.

Table 1-16
State of Nevada
Proposed Electric Generation

Name	MW	Location	Permits	Target Online Date
Ely Wind Generation Facility	50 Wind	Ruth White Pine County 5 miles east of Ely	Ongoing	2007
Tracy Combined Cycle GT	514 Combined Cycle	Tracy Power Plant Should be above Storey County 13 miles east of Reno	Under Construction	JUNE 2008
Nevada Solar One	50 64 Solar	El Dorado Valley Clark County 20 miles southeast of Las Vegas	Under Construction	EARLY 2007
Falkner 1	25 Geothermal	Blue Mountain Humboldt County 20 miles west of	Ongoing	DECEMBER 2009

		Winnemucca		
Granite Fox Power Project	1450 Coal	Gerlach Washoe County 100 miles north of Reno	Delayed	
Galena 3	20 Geothermal	Steamboat KGRA Washoe County 9 miles south of Reno	Under Construction	EARLY 2008
Salt Wells Geothermal Project	17 Geothermal	Salt Wells Churchill County 10 miles east of Fallon	Ongoing	AUGUST 2008
White Pine Project	1600 Coal	White Pine County	Ongoing	EXPECTED 2010
Ely Energy Project	1500 + 1000 Coal	White Pine County	Ongoing	750 MW - 2011 750 MW - 2013
TS Power Plant	206 Coal	Eureka County	Under Construction	MAY 2008
Toquop Energy Project	750 Coal	Lincoln County	Ongoing	2010
Carson Lake - Fallon Naval Air Station	30 Geothermal	Churchill County	TBD	MID 2008 – PHASE 1
No. Nevada Corrections Center	1 Biomass	Carson City	Under Construction	EARLY 2007

Buffalo Valley	31.5 Geothermal	Lander County	TBD	MID 2008
Stillwater	33.5 Geothermal	Churchill County	Ongoing	AUGUST 2008
Hot Sulphur Springs The s is bold	25 Geothermal	Elko County	Ongoing	2008
Carson Lake	24 Geothermal	Churchill County	Ongoing	DECEMBER 2009
Vulcan Power Fish Creek	30 Geothermal Move up	Esmeralda County	Ongoing	TBA

White Pine Energy Station

In 2004, White Pine Energy Associates, LLC (WPEA), a member of the LS Power Group (www.lspower.com), announced plans for a 1,600 MW coal-fired plant 30 miles north of Ely in White Pine County (the White Pine Energy Station or WPES). The WPES is proposed to be located on federal lands managed by the BLM and will interconnect with Sierra Pacific Power's 345kV Falcon-Gonder line and the proposed 500 kV transmission line commonly known as the Southwest Intertie Project (SWIP). The WPEA will lease permitted water rights held by White Pine County and has stated the WPES will utilize a hybrid cooling system that will use up to 5,000 acre-ft/yr of water which is approximately 80% less than a conventional cooled plant. WPEA has aided the City of Ely efforts in acquiring the Nevada Northern Railway and continues to aid Ely in efforts to rehabilitate the railroad for delivery of coal to the WPES.

The WPES is in the advanced stage of permitting as (i) NDEP has issued a draft air permit for the facility (ii) water rights are permitted, (iii) the BLM is expected to release the Draft Environmental Impact Statement for public comment and review in Spring 2007, and (iv) a UEPA application is pending at the Nevada Public Utilities Commission.

WPEA has stated that subject to timely receipt of permits and approvals it expects to begin construction on the WPES in early 2008 with commercial operations beginning in 2012.

SWIP Transmission Line

In 2005, the LS Power Group, an independent power company (www.lspower.com), announced plans to complete the Southwest Intertie Project (SWIP), a 500-mile 500 kV north-south AC transmission line which will interconnect the transmission systems of Idaho Power Company (IPC), Sierra Pacific Power Company (SPPC), and Nevada Power Company (NPC). The SWIP was conceived more than 20 years ago and a right-of-way was granted to IPC by the U.S. Bureau of Land Management in 1994. LS Power's affiliate, Great Basin Transmission, is completing the development and engineering of the project. The southern half of the SWIP connecting SPPC and NPC is slated to start construction as early as 2008, while the northern half connecting the Nevada systems to IPC could begin construction as early as 2009. The SWIP serves as the anchor for a BLM designated utility corridor and a number of transmission projects proposed for the eastern side of the state. It is designed to provide system stability and seasonal flexibility for delivering base load and renewable resources where needed most.

Wind Generation Projects

LS Power has partnered with Nevada Wind, LLC to develop a number of wind energy generation projects in western and eastern Nevada. Currently the developers are planning a 50 MW wind generation project in Washoe County with an online date as early as 2008. In addition, at least 250 MW of planned wind capacity is being developed in eastern Nevada along the SWIP corridor.

Toquop Energy Project

Size: One 750 MW pulverized coal burning unit.

Technology: Very efficient, super-critical boilers.

Environmental Control Equipment: Low NOx burners, selective catalytic reduction, low sulfur coal, wet fluegas desulfurization, a wet stack to control acid gas emission (including sulfuric acid mist) activated carbon and hydrated quicklime injection to be installed before the fabric filter baghouse (if needed for additional reductions) fabric filter to control particulate emissions, and high efficiency combustion.

Fuel: Low sulfur, sub-bituminous coal from Wyoming.

Water: Water from deep underground wells, not surface water.

Rail: 31 mile coal rail spur from the Union Pacific Line.

Project Status:

- Permitting is in an advanced phase, will all key permits expected by December 2007
- Draft EIS expected to be issued in April 2007
- Final Record of Decision expected in September 2007
- Air Permit Filed in February 2007
- Air Permit Expected in November 2007
- Construction to begin in 1st quarter 2008

Regional Considerations

Regional Transmission Projects

Several regional transmission projects are underway that involve routes through Nevada. Those projects include the: Frontier Transmission Project supported by the Governors of Nevada, Utah, Wyoming and California; NorthernLights Inland Project developed by TransCanada and supported by the Governors of Montana, Idaho and Nevada; Eastern Nevada transmission Intertie supported by Nevada Power Company and Sierra Pacific Power company; Great Basin Transmission proposed by LS Power; TransWest Express Project proposed by Arizona Public Service and the Pacific Northwest/Canada to Northern California Project proposed by Pacific Gas and Electric. Sierra Pacific and Nevada Power are reviewing the results of these studies as they are produced to determine the impacts to customers.

Regional Reserve Margins

The Western Electricity Coordinating Council (WECC) approved a resource adequacy forecast in 2006, called the WECC 2006 Power Supply Assessment (WECC PSA). The demand forecasts and supply resources included in the analysis are based upon data through December 31, 2005. The WECC modeling effort uses data for all of the western interconnection that includes all of the far western, southwestern and intermountain states.

A primary purpose of the WECC PSA is to study the resource reserve margins on a Council-wide basis, identifying any sub-regions within WECC that have the potential for electricity supply shortages based on reported demand and generation while considering transmission constraints between the defined sub-regions. The WECC breaks the western states into 6 sub-regions along with further subdivision into a total of 26 zones. The strength of the WECC's Supply Adequacy Model ("SAM") is that it provides a summary of projected loads and resources for the entire western interconnection using the most recent data available. While SAM does consider transfer capabilities between zones, the model is not designed to perform more sophisticated transmission analysis with respect to the sub-regions. Therefore, while the model is useful for gaining a general understanding of Nevada's regional resource adequacy outlook, it cannot be relied upon as the final answer. A collection of efforts including modeling by Sierra Pacific and Nevada Power, supply plans filed by the utilities with the PUCN, and the critique of these models and supply plans in proceedings before the PUCN, must also be relied upon for a more comprehensive understanding of Nevada's resource adequacy.

The WECC modeled seven scenarios that covered summer and winter peak periods, as well as varying forecast assumptions with respect to high load conditions, planning reserve requirements, and the expected amount of new generation that becomes operational through the forecast period ending in 2015.

Under all scenarios, the Desert Southwest sub-region (which includes Nevada Power's service territory) and the Northwest sub-region (which includes Sierra Pacific Power's service territory) demonstrated adequate supplies for the near-term forecast year of 2007. The Desert Southwest sub-region showed the potential for slight generation deficits beginning in 2008 in two of the four summer scenarios,

followed by the other two summer scenarios showing deficits beginning in 2009. In the Northwest, energy supplies were forecasted to be adequate through at least 2010. A full copy of the WECC 2006 Power Supply Assessment is available at the following web-link:

http://www.wecc.biz/modules.php?op=modload&name=Downloads&file=index&req=viewsdownload&sid=56

Regional Organizations

NSOE and the PUCN, along with colleagues from the Consumer Advocate's office and the electric utilities, are called upon to engage their counterparts in other western states on electricity and natural gas issues. Much of the interaction among the states is directly in response to a greater willingness of the Western Governors Association to assert the interests of the western states in response to federal intentions to compromise those interests by proposing to exercise greater direct authority in western markets. In responding to the governors' directions, a fairly large number of organizations have emerged to perform analyses, communicate with Congressional Delegations, and basically formulate a cogent position for the western states. These organizations are identified in the following paragraphs.

Western Governors Association (WGA)

The WGA is a forum established by the governors to explore and act jointly on issues of mutual interest or concern. Recent WGA activities include environmental issues (for example, joint action on the status of listing the sage grouse as an endangered species) and several energy issues. Energy issues are generally addressed by the WGA directly or through the Western Interstate Energy Board. The WGA has chosen to deal with the Clean and Diversified Energy resolution directly (this is the resolution that calls for the building of 30,000 MW of "clean and diversified energy" and the 20 percent improvement of energy efficiency by 2020).

Western Interstate Energy Board (WIEB)

The WIEB is a non-profit organization established to implement some of the energy initiatives of the WGA. Issues that fall within the purview of WIEB include activities related to (1) the Western Interstate Nuclear Compact, (2) the WGA protocol on transmission siting in the west, (3) a series of activities related to operational transmission issues and regional transmission organizations, and (4) actions taken to unify resource adequacy assessments, a role that has been delegated to CREPC.

Committee on Regional Energy Policy Coordination (CREPC)

CREPC functions in concert with WIEB and is active in carrying out several WGA initiatives. These include a very substantial effort to determine electric resource adequacy for the west. In connection with its work on electric adequacy, it soon became apparent that in order to determine electric resource adequacy, it was necessary to determine natural gas resource adequacy. These parallel efforts are underway with considerable assistance and participation by the California Energy Commission.

Western Interconnection Regional Advisory Body (WIRAB)

WIRAB was created by Western Governors under Section 215 of the Federal Power Act. The WIRAB is to advise WECC, the ERO and FERC on whether proposed reliability standards and the governance and budgets of the ERO and WECC are in the public interest. FERC may request that WIRAB provide advice on other topics.

Western Electricity Coordinating Council (WECC)

The WECC is an association with membership representing the entire spectrum of organizations with an interest in western interconnection reliability. It is the largest most diverse of the eight North American Electric Reliability Corporation (NERC) regional reliability councils. Until recently, the WECC's essential function was to establish and enforce voluntary reliability standards. However, compliance with reliability standards will become mandatory in accordance with the Energy Policy and of 2005 and the Federal Energy Regulatory Commission has certified NERC as the Electric Reliability Organization. Therefore, WECC's role will transform into a monitor and enforcer of mandatory reliability standards through statutory authority delegated by NERC.

Chapter 3 Natural Gas Assessment

Natural gas is moved from production areas in central-southwestern states, Rocky Mountain states and western Canada, via interstate pipelines to three types of customers: "sales" customers (residential, commercial and sometimes industrial), "transportation" customers (generally commercial and industrial customers), and "power generation" customers. Sales customers receive gas from a Local Distribution Company (LDC) and typically pay a bundled price for the gas service they use. Transportation customers buy their gas commodity and gas transportatian separately. They are usually large customers who may take gas from the LDC or directly from on interstate or intrastate transmission pipeline. Electric utilities and merchant pawer plants are the only major power generation customers, although some combined heat and power (CHP) installations ar self-generating customers also need to take gas at the higher pressures needed for electric generation.

Natural Gas Fundamentals

Natural gas was known as the "perfect fuel" some 25 years ago because it was reasonably available and transportable, and it was virtually non-polluting in the eyes of 1980 regulators and consumers. It was so perfect, in fact, that it was assumed to be in short supply and considered too valuable to be used to generate electricity. It was used as a heating fuel and as a feedstock in industrial processes. In such a world, the principal short-term variable was the weather; so, if suppliers could simply have enough storage to get through two or three weeks of unseasonably cold weather, natural gas prices would remain reasonably stable. As things turned out, this was generally the case. There were a few spikes, but after the mid-1980s natural gas prices typically hovered around $2.00 per mmBTU (million BTUs) and the spikes that did occur were relatively small and short-lived; that is, until about 1999 to 2000. During the 1990s abundant gas supplies and environmental benefits had all but removed the tacit proscription on natural gas powered electric generating stations. The concept of savings derived from electric deregulation also had become very popular in the middle of the previous decade.

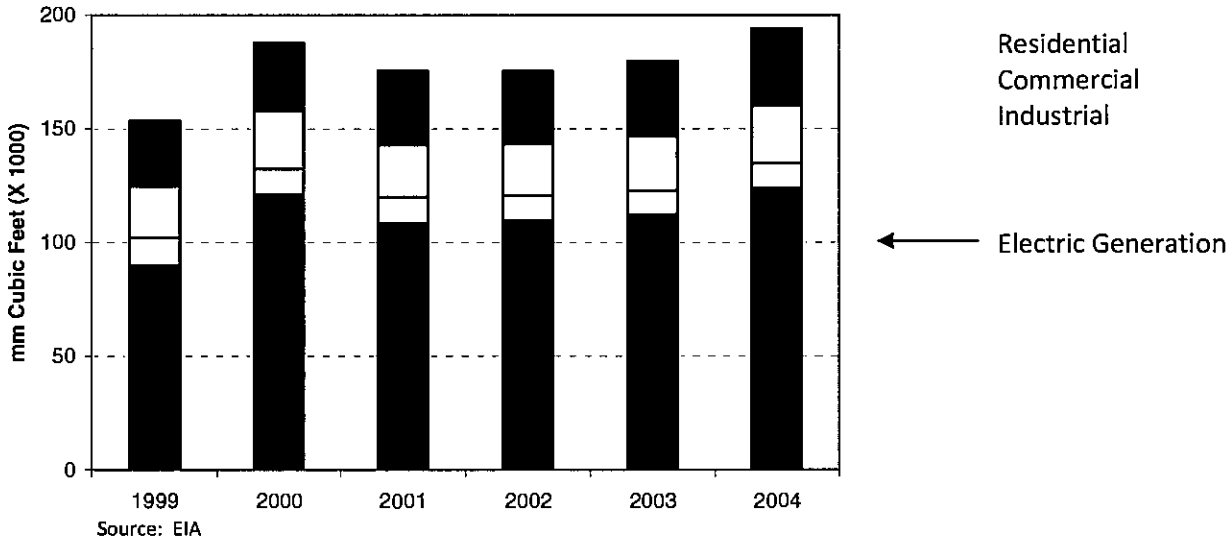
Electric deregulation brought significant uncertainty to the relatively stable natural gas markets. It did this in two ways. First, the potential for substantial profits in electric markets caused a building boom in natural gas powered generators – the least expensive and fastest way to acquire electric capacity. In order to finance such plants, builders needed to assure investors that they had sufficient quantities of natural gas to power the plants being built. To do this, builders needed options on natural gas supply availability as well as delivery pipeline operating flexibility to match the operating cycles of their new plants. . Second, natural gas electric power plants are relatively expensive to operate but easy to startup and shutdown. As a result, natural gas plants are often "on the margin"; that is, they are the plants that have the least predictable operating cycle. Therefore, the amount of fuel – natural gas – they need to operate is the most uncertain, which again introduces uncertainty and an opportunity for arbitrage.

Today, the natural gas companies in Nevada, Southwest Gas Corporation (Southwest) and Sierra Pacific Power Company (Sierra, once known as WestPac), have adequate supplies of natural gas. Reno and much of the I-80 corridor in the north and Clark County in the south have sufficient access to natural gas commodity, as well as capacity for some additional growth in demand. Generally, those areas that are un-served with natural gas, such as Mesquite and Pahrump, would benefit substantially if it could be

made available to them. Other areas, such as Elko, see future economic development tied to increased access to natural gas.

Since the 1990's through 2006, Nevada natural gas utilities were not required to file Gas Resource Plans; however, they annually file Gas Supply reports. These documents provide both an historical look at purchases in the previous regulatory year and a forecast for the coming year and beyond. Figure 2-1 shows natural gas consumption during the past six years for both of Southwest's systems and for Sierra. Importantly, nearly all of the variability occurs in natural gas used for electric generation.

Figure 2-1
Total Natural Gas Consumption for Nevada
Natural Gas Demand History res comml & indust. Should be colored or arrows pointing



For example, comparing 1999 to 2003, 88 percent of the increase in gas consumption came from electric power plants. It is also significant that the amount used for electricity generation is not necessarily predictable. Note, for example, that during the year 2000 – the year of the western energy crisis – more natural gas was used than any previous or subsequent year, with the possible exception of 2004. Since that time significant gas fired generating plants have been built in the southern part of the State. As an example in 2006, Nevada Power completed the 1,102 MW Chuck Lenzie Combined Cycle Generating Station, acquired a 75% ownership in the Silverhawk Generating Station, and installed a new 72 MW combustion turbine at its Harry Allen Site, essentially doubling the Company's generating capacity, which has also added to the natural gas fuel supply requirements.

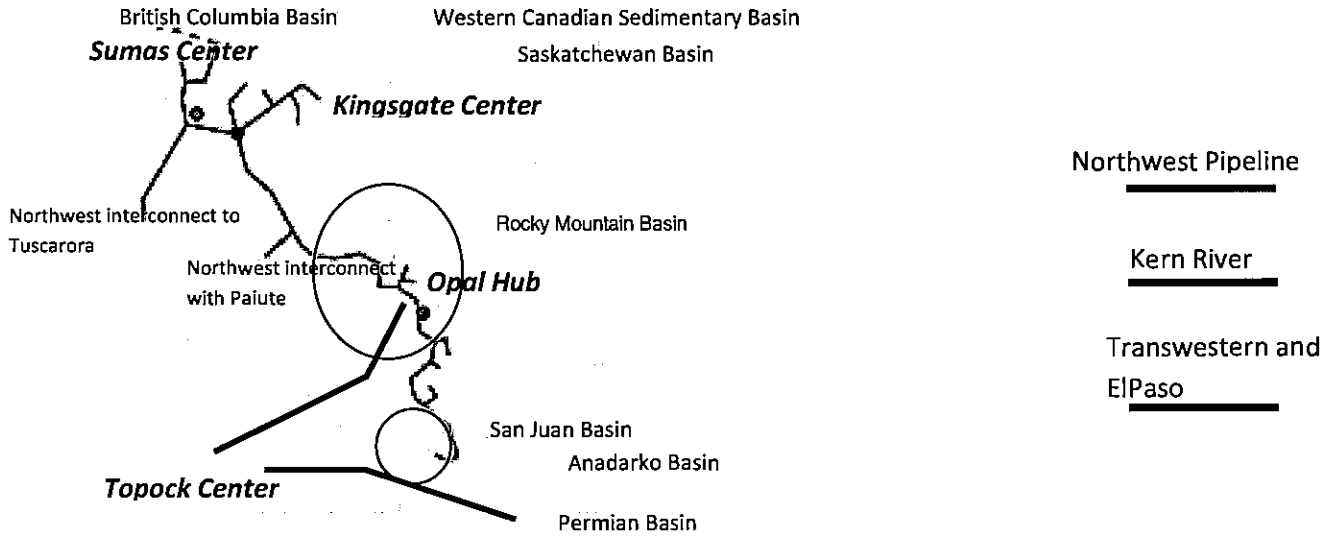
An LDC, as well as owners of gas fired generating facilities, typically purchases gas on one month or multiple month contracts. These contracts specify a daily volume of gas, but may have certain options available to the purchaser or the supplier. Gas may also be purchased such that a minimum and maximum take is specified, so-called "swing contracts." This allows large gas buyers some flexibility when the weather or other conditions cause the forecast to be off for the day. Gas may also be purchased on the spot market for a day or for multiple days. Large gas buyers have purchasing strategies that ensure a base amount of gas is purchased to cover loads that are constant and swing contracts to cover normal variations in weather driven gas demand. They also use the spot market to

buy or sell commodity on days when it is economically advantageous to do so. Unlike electricity, natural gas deliveries can be somewhat flexible, and may be slowed down by "packing" transmission and distribution pipes, or speeded up by drawing down pressure in pipelines, which is also referred to as "drafting" the pipe. This "packing and drafting" of pipelines occurs daily and is offered by the pipeline operators as a "park and lend" gas commodity service. The amount of gas scheduled or requested for delivery on a pipeline is called a "nomination, while the amount of gas supply that is confirmed for delivery to a delivery point is called a "confirmation."

The purchase and delivery of natural gas involves arrangement for both the commodity, natural gas in a specific number of million BTUs (mmBTU), dekatherms (ten therms), or million standard cubic feet (mmscf) over a given time period; and the transportation of that gas from the point of purchase generally to the utility's "city gate." The city gate is the point where an LDC's system connects to an interstate or intrastate pipeline. Also, the three units of gas volume (and therefore, energy) measurement are very close to the same quantity of gas and are sometimes used interchangeably.

Southwest's and Sierra's supply for northern Nevada typically come from four basins: the Rocky Mountain, British Columbia, Western Canadian Sedimentary, and Saskatchewan Basins. These basins and their nominal basin delivery points; Opal, Sumas, and Kingsgate (Alberta and Saskatchewan), respectively are shown in Figure 2-2. Southwest's supplies for southern Nevada typically come from the Wyoming Thrust Belt and Green River (Rocky Mountain), San Juan, Anadarko, and Permian Basins. In general the production of natural gas from Rocky Mountain basin is increasing significantly. Gas production in the Canadian provinces is holding steady due to the large number of wells being drilled to offset well production decline rates. Production from the basins located primarily in New Mexico, Oklahoma, and Texas is declining, as it has been for several decades.

Figure 2-2 To next page
Interstate Pipeline and Basin Supplies to Paiute Pipeline



Southwest Gas Corporation

Southwest serves both the northern and southern parts of Nevada and, similar to the physical situation with electricity, the two systems are not interconnected within the state. In the northern Nevada service territory, Southwest serves the following counties: Carson City, Churchill, Douglas, Elko, Eureka, Humboldt, Lander, Lyon, Nye, Pershing, Storey and Washoe. In the southern part of the state, Southwest serves Clark County.

Natural Gas Supply and Transmission

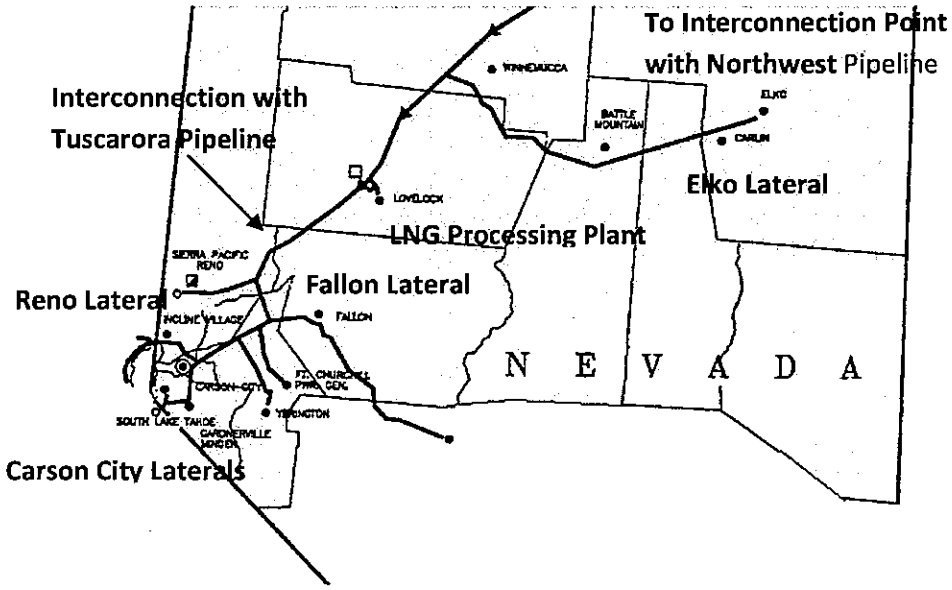
Southwest's northern Nevada service territory receives natural gas by way of the Northwest and Tuscarora interstate pipelines that draw gas from the four basins noted above, as well as the San Juan basin. Northwest delivers that gas to the Idaho-Nevada border where the Southwest owned Paiute Pipeline receives the gas and delivers it to northern Nevada customers through pipelines and "laterals." Figure 3-3 shows the five major laterals that deliver natural gas to Elko, Reno, Carson City (2), and Fallon as well as a number of other communities along the various routes. Strategically located compressor stations along each major pipeline establish the flow of gas in these pipelines. A portion of the natural gas being transported provides fuel for the engines that supply power to these compressors.

Paiute and Tuscarora are physically interconnected, near Wadsworth, Nevada in Washoe County. This interconnection allows Southwest and Sierra operational flexibility in times of unusual demand, supply interruptions, or pipeline transport unavailability. It also allows Sierra and Southwest to avoid, at least in part, the use of LNG processing facilities near Lovelock during mild weather or during routine operations. The LNG plant is designed to provide peaking service during times of extremely cold weather.

Southwest's southern Nevada service territory receives natural gas by way of four interstate pipelines, including the Kern River (actually, two roughly side-by-side pipelines, except in the Las Vegas Valley, one added in 2003), El Paso and Transwestern pipelines. The combined Kern River Pipeline passes through Las Vegas, where it interconnects with the Southwest system. They then move on into California and merge with the Mojave Pipeline to form the Kern-Mojave Pipeline, which serves southern California customers. The El Paso and Transwestern pipelines both pass south of Las Vegas, but provide natural gas to the Las Vegas area with laterals owned by Southwest. Both of these pipelines terminate at the Topock Compressor Station in Topock, Arizona from which natural gas is delivered into California. For the most part, these pipelines draw from the Permian, Anadarko and San Juan basins, while the Kern River pipelines draw primarily from the Rocky Mountain basin. This provides some degree of fuel diversity for the Las Vegas area and likely contributes to a relatively small basis differential (the difference in commodity price between the two basins).

Move up

Figure 2-3
Southwest Gas
Paiute Laterals



Special System Constraints

During the last biennium, the two most important constraints in the Southwest system were addressed. New Kern River capacity to the valley has provided the physical ability needed to keep up with customer demands, largely residential, in Southwest's LDC in southern Nevada, and also meet the demands for industrial growth and the new natural gas electric generating stations in the south. The other constraint faced by Southwest in the north was the inability to substantially increase supplies down the Paiute Pipeline without very significant investments on both Paiute and Northwest pipeline facilities. The interconnection with the Tuscarora Pipeline provides an additional source of supply.

Southwest has no other significant physical barriers to meeting demands in northern or southern Nevada. Like many gas companies, however, it has continued to experience declining average gas usage by customers. This is positive in that it indicates greater efficiency, but it also has ratemaking consequences that Southwest believes are harmful to its shareholders.

Planned Additions and Retirements

There are no major additions to or retirements from the Southwest systems in northern or southern Nevada over the next three years.

Sierra Pacific LDC

Sierra is the LDC in the Reno area, as well as nearby portions of Washoe and Storey County.

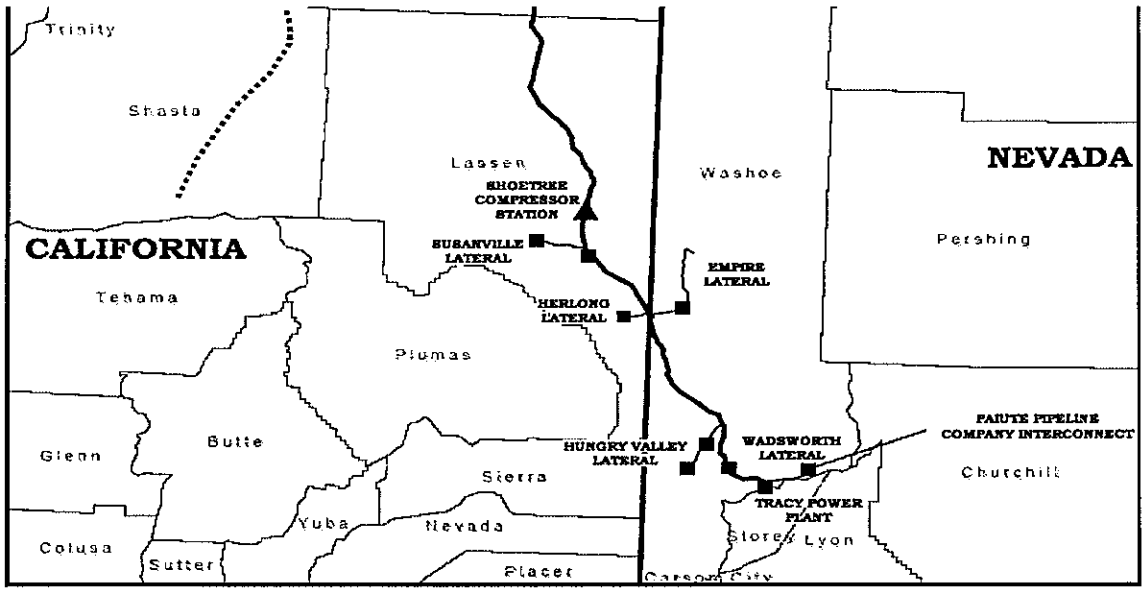
Natural Gas Supply and Transmission

Sierra's supplies typically come from five basins: the Rocky Mountain, San Juan Basin, British Columbia, Western Canadian Sedimentary, and Saskatchewan Basins. These basins and their nominal basin delivery points; Opal, Sumas, and Kingsgate (Alberta and Saskatchewan), respectively; are shown in Figure 2-2, above. In general the production of natural gas from Rocky Mountain basin is increasing significantly. Supply from the other basins is considered to be holding steady or slightly declining.

Sierra receives natural gas by way of the Northwest Gas Pipeline, an interstate pipeline that draws gas from three of the four basins noted above. Northwest delivers that gas to Idaho-Nevada border where the Paiute Pipeline receives the gas and delivers it to northern Nevada customers through a mainline and several laterals. The Western Canadian Gas supplies can flow to Sierra through several paths; however, but since Tuscarora was built they have generally flowed south through Washington and Oregon and to the California-Oregon border where the gas supplies flow into Tuscarora for delivery to the Reno-Sparks area. Figure 2-4 shows the three laterals that deliver natural gas to Empire, Hungry Valley and Wadsworth. Mainline gas goes to Reno and the Tracy Power Plant. Strategically located compressor stations along the Tuscarora pipeline establish the flow of gas in the pipeline. A portion of the gas being transported provides fuel supply to the engines providing power to these compressors.

Move up

Figure 2-4
Sierra Pacific LDC
Tuscarora Laterals



Paiute and Tuscarora are physically interconnected, near Wadsworth, Nevada in Washoe County. This interconnection coupled with the accompanying capacity expansion of the Tuscarora Pipeline, allows both Southwest and Sierra operational flexibility in times of unusual demand or supply interruptions.

Special System Constraints

With the completion of the interconnection with Paiute last year and the low variability in gas demand, compared with Southwest's southern territory, the Sierra system is adequate to meet customer demands for the next several years. Sierra has made operating adjustments, including the use of storage, swing contracts and the LNG processing facility that will allow it to respond to changes in customer demands, according to normal and reasonably expected conditions.

Planned Additions and Retirements

There are no major additions to or retirements from the Sierra Pacific LDC system over the next three years.

Natural Gas Adequacy

Natural Gas Prices

The concept of "adequacy" necessarily includes both the idea of availability of supply and the idea of price. It is not adequate, for example, to have all the natural gas you can possibly use if it will cost $10.00 per dekatherm, or if the price is so highly variable that a customer has no way of predicting what the gas will cost. High and/or uncertain costs are major concerns for customers. Importantly, it is just as difficult for businesses because price volatility often discourages businesses from making investments that could provide more jobs, greater economic vitality and a more diverse base for Nevada's state and local governments.

Moreover, a critical strategic element of the Governor's Comprehensive Energy Plan is to ensure that energy is available to Nevadans at reasonable and *affordable* prices. And, as with electricity and petroleum products, the alternatives for putting downward pressure on prices are (1) increase the supply, (2) decrease the demand, or (3) impose a regulatory structure that results in decreasing prices.

Before going through these alternatives, it is important to ask whether the existing supply-price condition results in natural gas "adequacy." This begins by asking whether North American exploration and development companies are finding new supplies of natural gas. The basic answer to this first question is, "yes" – exploration companies continue to drill wells. It is encouraging that new supplies are being located and developed, but it is somewhat discouraging that the new sources are at best only able to offset the decline in existing natural gas fields – at least in North America. This means that indigenous supplies of natural gas are generally unable to keep up with demand increases.

Does that mean that natural gas prices will go up? The answer to this question also is, "yes," and indeed, the average price has gone up by more than 50% in the last two years. Importantly, while volatility remains a problem, it is the average price increase that will be a heavy burden for Nevada consumers. There are several reasons for the price increase; certainly the expectation that North American supplies will be unable to keep up with demand increases is a factor. It is also true that there is a link, economists call it a "cross-elasticity," between crude oil prices and natural gas prices – higher crude oil prices tend to increase the price of natural gas, a partial substitute fuel and feedstock – and that too has had an effect on natural gas prices. Finally, the dramatic increase in demand by natural gas fired electric generation has affected prices.

Will natural gas prices continue to escalate in the coming years? The answer to this question is, "probably not," at least not when compared to inflation. There will, of course, be peaks and valleys, but a steady increase in price is unlikely for two reasons. First, as natural gas prices rise, customers will simply use less. Residential customers will pay more attention to insulation and appliance efficiencies when they buy a new house, will be more willing to invest in appliance upgrades or heating system repairs in their existing homes, or simply turn their thermostats down. Business customers will seek more efficient use of natural gas, and when they see that prices are likely to remain at current levels for some number of years, they will make business decisions about new investments that will improve their overall profitability.

Second, the upper limit to natural gas price increases is practically set by the cost of imported liquefied natural gas (LNG). This, of course, assumes that it will be possible to establish ports that can off-load a sufficient number of LNG tankers to have an effect on domestic prices. There will be substantial controversy on this subject, not only in Nevada, because some – those persuaded by safety or environmental issues – will argue that we can accomplish the same end by simply reducing demand for natural gas. Others – those persuaded by the link between low-cost energy and business vitality (and jobs) – will argue that LNG ports are a necessary risk if we are to maintain...well, adequacy.

In any case it is also important to point out that a growing reliance on imported LNG is similar in some respects to a growing reliance on imported crude oil. Both trends violate the President's call for decreased reliance on imported fuels; both trends result in Nevadans sending more money out of state (and country); and both trends result in a greater need to become involved in efforts to protect our supply of foreign fuels.

Returning to the original question, "Can we increase the supply of natural gas?" The basic answer is probably, "no." Nevada has no known reserves of natural gas and has no ports that could be used to import LNG. Any action we would take to increase supplies would need to be related to the actions of other western states, or of the federal government. We simply have no direct control over the supply of natural gas.

"Can we then force a reduction in the demand for natural gas?" The answer is probably unimportant because to accomplish this, it would be necessary for the state to either increase the cost of gas artificially, for example with an energy tax, or to impose a system of intrusive rules that would cause Nevadans to use less natural gas than they otherwise would. Neither of these options is under consideration by the Governor or being studied by NSOE.

Besides, the most effective mechanism to reduce demand for natural gas is an increase in the price and that has already been taken care of. Without this increase in price, many consumers have been quite willing to buy new homes that are energy inefficient, or to allow energy wasting behaviors to continue. It is possible that with the increase, consumers will act differently and that demand will come down. It will be important over the next biennium to measure how consumers respond to the price increases.

There is a relevant footnote to this section. Interestingly, Nevada's two LDCs take very different views about natural gas purchasing practices. Southwest Gas points out that buying gas at the market price, whatever that might be, assures customers of the least gas cost. Further, attempts to "beat the market" price are inherently risky, where the chances of losing are just as great as the chances of winning. The consequence of this approach is gas costs that tend to be more volatile for the utility and its customers. In response to these concerns, Southwest's practices call for the purchase of about half of its expected gas requirement at a fixed price; this has the effect of smoothing market volatility and reducing customer exposure to short-term dramatic market price movements.

In the past, Sierra Pacific has taken the view that providing more certainty about the cost of gas has value to customers and the utility. Therefore, it purchases call options and other financial hedging tools to be able to cap and somewhat set the price of gas supplies. The physical gas supplies are then

procured at the current market conditions. Both approaches have been found to be just and reasonable by the Public Utilities Commission of Nevada.

Energy Efficiency/Conservation Opportunities

Opportunities for energy efficiency and energy conservation with natural gas generally come in three areas. One of the most interesting technically is the recovery of the potential energy of high pressure gas through a pressure letdown system. The stored energy in high pressure gas is often wasted by throttling or bleeding pressure down to the lower operating pressure most home and small commercial systems use. Several manufacturers now offer letdown turbines that capture this energy as electrical energy.

Another highly effective conservation measure comes from simply upgrading home heating systems. In the northern part of the state, two of the most effective actions that can be taken are to replace a home furnace with a new 90 percent efficient (or better) unit and to have heating ducts sealed to prevent warm air from spilling into areas that do not need the heat. Insulation, helpful in hot and cold climates and automatic thermostats are also effective in reducing the amount of natural gas expended for home heating.

Finally, larger commercial customers who need both heat and electricity in the right proportions can use combined heat and power (CHP), or what was once called "cogeneration." When the timing, the heat and the electrical demand are aligned, even small CHP units can rival the thermal efficiency of some large utility turbine-generators because most of the energy in steam power plants is rejected – thrown away – when the steam is condensed. CHP units use that heat for process or space heating and save both energy and water.

Propane, Fuel Oil and Other Heating Fuels

Nevadans use a number of different fuels for home heating. Natural gas and electricity are by far the most widely used, but other common alternative fuels include propane, wood in various forms (chips, pellets, logs) and distillates, such as kerosene. When these fuels are purchased, rather than harvested, they are usually bought and sold in unregulated markets. Of the alternative fuels, only propane is, in some instances, regulated by the Public Utilities Commission of Nevada.

It is hard to know the extent to which these alternative fuels affect Nevadans. In most cases they are used because the expense of obtaining natural gas or electricity is very high – a common occurrence in rural locations.

Regional Considerations

Nevada is fully engaged in cooperative discussions with other western states on issues related to natural gas. For the most part these discussions concentrate on the adequacy of natural gas supplies for electricity generation. The Nevada participants are from NSOE, the Public Utilities Commission of Nevada and the utilities. Natural gas used by local distribution company service providers – Southwest and Sierra in Nevada – has been the subject of successful state regulation for many years and is, therefore, not a significant part of these discussions.

The issue of adequacy of natural gas is closely related to the issue of electricity adequacy because natural gas is a significant fuel used in the generation of electricity. If natural gas supplies were

inadequate for essential electricity generation, then the consequences would be felt well beyond any one state's borders; hence, the need for a regional approach.

Regional Organizations

NSOE and the Public Utilities Commission of Nevada, along with colleagues from the Consumer Advocate's office and the natural gas utilities are called upon to engage their counterparts in other western states on electricity and natural gas issues. Much of the interaction among the states is directly in response to a greater willingness of the Western Governors Association to assert the interests of the western states in response to federal intentions to compromise those interests by proposing to exercise greater direct authority in western markets. In responding to the governors' directions, a fairly large number of organizations have emerged to perform analyses, communicate with Congressional Delegations, and basically formulate a cogent position for the western states. These organizations are identified in the following paragraphs.

Western Governors Association (WGA)

The WGA is a forum established by the governors to explore and act jointly on issues of mutual interest or concern. Recent WGA activities include environmental issues (for example, joint action on the status of listing the sage grouse as an endangered species) and several energy issues. Energy issues are generally addressed by the WGA directly or through the Western Interstate Energy Board. The WGA has chosen to deal with the Clean and Diversified Energy resolution directly (this is the resolution that calls for the building of 30,000 MW of "clean and diversified energy" and the 20 percent improvement of energy efficiency by 2020). In particular, it is not clear whether natural gas is part of the 20 percent improvement in energy efficiency, or whether it will apply only to electric utilities.

Western Interstate Energy Board (WIEB)

The WIEB is a non-profit organization established to implement some of the energy initiatives of the WGA. Issues that fall within the purview of WIEB include activities related to (1) the Western Interstate Nuclear Compact, (2) the WGA protocol on electric transmission siting in the west, and (3) a series of activities related to operational electric transmission issues and regional transmission organizations. WIEB is also responsible for conducting the analysis in response to the WGA's request for a determination of electricity (and therefore natural gas) adequacy by June of 2006.

Discovery Efforts

There are no known discovery efforts ongoing in Nevada; however, the level of prices and the apparent establishment of an unusually high average price of natural gas have spurred investment in new and existing resource development all around the world. Alaskan and Canadian developers are expanding and it appears likely that there will be a new pipeline from Alaska to the lower 48 states, perhaps shortly after the beginning of the next decade. Moreover, the high prices also provide the incentive to develop offshore fields even in areas where drilling and development have not, heretofore, been contemplated.

Elevated price levels are also spurring an expansion of LNG markets. Sustained prices above four dollars per mmBTU are likely high enough that foreign gas resources can be exploited, compression facilities built, port facilities built in North America, LNG tankers built and used for transportation, legal issues confronted, and reasonable profits earned. Current natural gas prices are in the five to seven dollar per mmBTU range.

Chapter 3 Transportation Fuels Assessment

Transportation fuels – gasoline, diesel, jet fuel and a group of versatile fuels called "distillates" – have been effectively deregulated for many years. This means that states and the federal government do not try – are not permitted to – (1) limit profits to a fixed percentage of company investments or sales, (2) require production of specific amounts of fuels at the refinery, (3) require distribution and storage of fuels at locations that seem appropriate to government regulators, or (4) demand access to a company's books and records without due cause. Consequently, the United States relies on market forces to allocate transportation fuels and provide incentives for new facilities.

The NSOE monitors the supply and demand for transportation fuels to determine that they are reasonably balanced and sustainable, but has no ability to require actions that might be viewed as helpful. NSOE also actively engages refiners and distributors in voluntary actions that improve coordination and the flow of information, of course, without violating anti-trust laws. Finally, NSOE maintains effective communications with the owner of the three petroleum pipelines, Kinder-Morgan that deliver refined products to our major population centers. This is because many of the supply interruptions that have occurred are as a result of pipeline problems.

It is clear that a long-term adequacy challenge exists in the supply of transportation fuels. Just as with natural gas, this challenge can be addressed by increasing supply or by decreasing demand – there are no regulatory solutions under existing laws. Unlike the situation with natural gas, Nevada has no ability to directly affect the supply of transportation fuels except in very limited circumstances, and the Governor does not intend to artificially reduce demand, nor is NSOE studying such options. This assures that gasoline and other transportation products will be allocated by price.

Present System Description

Nevada's transportation fuel distribution system consists of the pipelines that move fuel from the refineries and the regional and local storage facilities to the bulk storage tank farms and retail outlets in Nevada.

For northern Nevada, products are supplied by a Kinder-Morgan pipeline that extends from Concord, Calif., through Sacramento, Calif., into the tank farm in Sparks, Nev. It then continues to the Naval Air Station (NAS) in Fallon, Nev. Figure 3-1 is a map of the northern system.

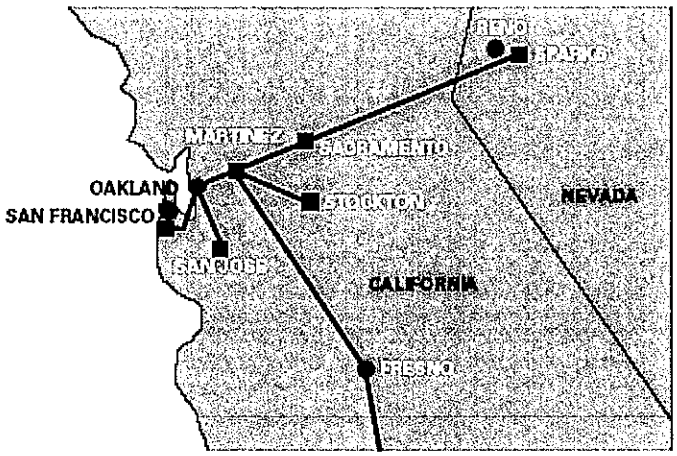
For southern Nevada, products are supplied by two Kinder-Morgan pipelines that extend collinearly from Colton, Calif., into the North Las Vegas tank farm and McCarran International Airport. Nellis Air Force Base is also served by this system. Figure 3-2 is a map of the southern system.

Both systems can deliver gasoline, diesel fuel, military and commercial jet fuels to the areas to meet consumer demand under normal conditions. In the north, the system has the capacity to meet the area needs without modification. In the south, the delivery system is reaching the maximum capacity and modifications are proposed to meet the immediate needs of the area, but as described in the California report, this area is in critical need of alternative means of meeting southern Nevada needs in the future.

Since the northern Nevada system is sufficient for the near future, this discussion will concentrate on southern Nevada. Should identify the report ie. CEC

Changes made or suggested for southern Nevada should apply to the north when that system nears maximum capacity. Kinder-Morgan owns and maintains storage facilities at both ends of the pipeline (California and Nevada). Figure 3-3 shows the storage capacity in Sparks and in North Las Vegas. While Kinder-Morgan owns the pipeline and some storage facilities, it typically does not own any of the products it carries and stores. Product is owned by distributors, who may hold and sell the product themselves, or may store and deliver product to retail chains or independent gasoline stations.

Figure 3-1
Kinder-Morgan, Inc.
Concord to Reno Pipeline System



The map does not show exact locations or terminal names, but it correctly represents the general pipeline structure in Northern California and Nevada.

When the Kinder-Morgan pipelines are not able to supply products or when supplemental supplies are needed, it is possible to carry fuels into the Reno and Las Vegas markets using trucks and rail cars. Transporting products in this way is only a stopgap measure. It is very difficult to deliver enough fuel in this manner for the following reasons:

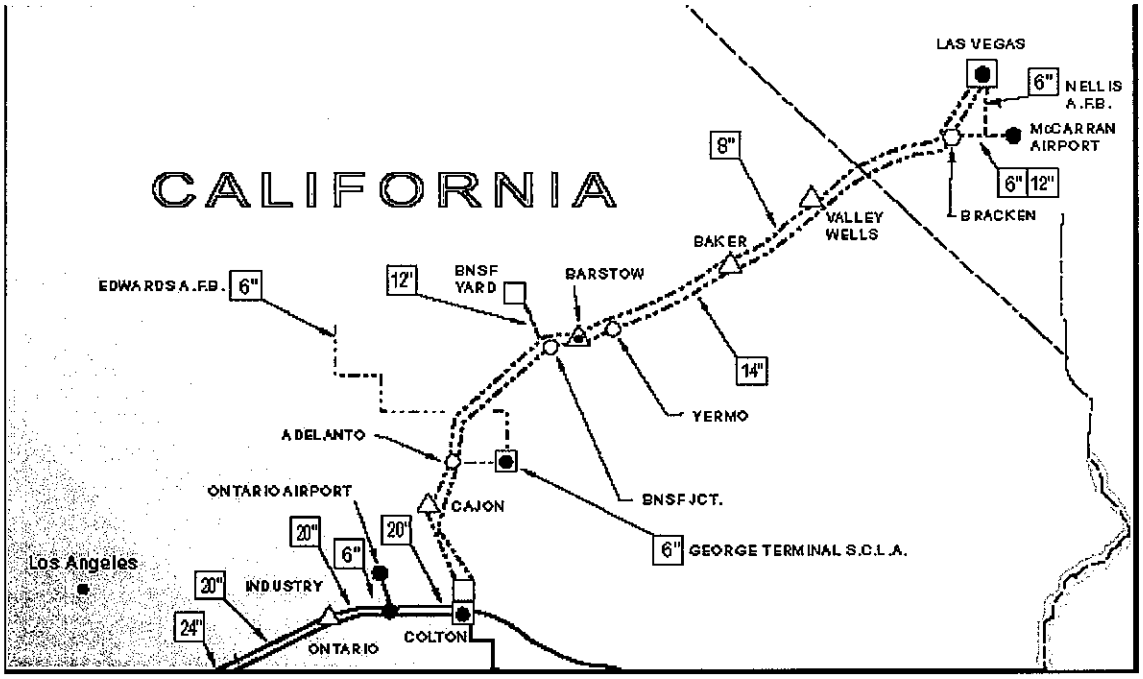
- There are not enough trucks that can be committed to this purpose for long periods of time,
- The number of available drivers is limited,
- Rail cars are not easily obtained and converted to this purpose in the short run, and
- Railroads are already unable to fulfill some of their customer demand with existing engines and crews

To the extent that these problems are overcome, two new challenges emerge:

- Gasolines require different formulas in California, Las Vegas and Phoenix and are not interchangeable, and

- Truck drivers are limited in the number of consecutive hours they may drive

Figure 3-2
Kinder-Morgan, Inc.
Colton to Las Vegas Pipeline System



It is possible for the State Implementation Plan administrator to request "enforcement discretion" from the US Environmental Protection Agency to allow the use of non-conforming gasolines under very unusual circumstances. Such authority, when granted, is limited in duration. Enforcement discretion has been requested in Nevada during a small number of events.

It is also possible to request a waiver of driver time limits from the US Motor Carrier Safety Administration in the US Department of Transportation. Doing so requires a declaration of emergency and presents a safety issue – driver fatigue – that is not easy to quantify. Nevada has not requested this type of waiver in the past.

Move up. Can we correct some of the stuff that goes beyond margins?

Figure 3-3
Kinder-Morgan, Inc.
Tank Storage & Delivery Capacity at Sparks and Las Vegas

Sparks Services

Pipeline: Concord, CA (10") to Rocklin, CA (Sacramento)
Rocklin CA (8") to Sparks, NV (45,200 barrels/day)(bbl/d)
Sparks, NV (6") to NAS Fallon, NV (10,000 bbl/d)

Storage: 19 Tanks holding 360,300 barrels owned by K-M
1 tank with 9,050 barrels of ethanol owned by K-M
2 tanks leased to BP/Arco, with 45,100 barrels
6 tanks leased to Nella Oil with 120,700 barrels
1 tank of ethanol with 3,806 barrels
4 tanks with 52,000 barrels (Shore terminal)
4 tanks with 46,134 barrels (Reno-Tahoe International Airport)

Facilities: 3 Truck Racks
Mix-grade Blending & Splash Blending (Ethanol)
Additive Injection Systems, including Red Dye

Fuel types shipped:
Premium & Regular Clear, EPA Diesel, Diesel #1,
Commercial Aircraft fuel (Jet A), and Military Aircraft fuel (JP-8)

Cycle: Diesel – 3 days, military when required cuts into diesel cycle for 14 hours.
Gasoline – 4 days
Jet A – 10 hours

Expansion Plans: none

Las Vegas Services

Pipeline: Colton, CA (14") to Las Vegas, NV - 113,200 bbl/d
Colton, CA (8") to Las Vegas/McCarran Airport - 30,000 bbl/d
Las Vegas to Nellis AFB - 33,600 bbl/d (military fuel only)

Storage: 30 tanks with 803,700 barrels of fuel storage
5 tanks with 42,700 barrels of storage (ethanol)
3 tanks with 84,800 barrels of storage (Rebel)
9 tanks with 288,000 barrels of Jet A (McCarran)

Facilities: 3 Truck Racks
Automated Truck Rack
Tank Car & Truck Loading/Unloading
Laboratory Testing
Vapor Recovery & Incineration

Mix-grade Blending & Splash Blending (Ethanol)
Additive Injection Systems
Fuel types: 14 inch line: CBG premium & regular, Clear premium & regular, Clear Diesel, Jet A and JP-8. During the summer, the CBG and Clear gasoline storage is combined.
8 inch line: used only for Jet-A.
Cycle: The 7 ½ day cycle in the south is similar to that in the north.
Expansion Plans: Increase capacity of 14" pipeline to 126,000 bbl/d by the end of 2007. Add two tanks with a capacity of 152,000 barrels capacity (gasoline & diesel) by 2-28-07.

About 10 percent of the volume of storage tanks is generally not available for distribution. This is the product located in the bottom (also referred to as "the heels") of the tank that usually contains a higher concentration of impurities. The appropriate SIP administrator has the authority to allow release of gasoline in the heels of tanks for distribution. This option requires a demonstration of need and has been exercised in Nevada.

Operation of the distribution market is functionally quite simple, but market economics can be complex. The reason is that storing product – maintaining inventory – costs money. The actual fee for storage, like the actual fee for transporting fuels, is relatively small per gallon of product delivered to a retail customer. What can become expensive is related more to the value of the product in the tank. In periods of rising retail prices, product in storage appreciates in value, but when prices are falling, the value of a distributor's inventory decreases. This means that successful distributors must be able to predict general price swings and take advantage of them to the extent possible. If prices are expected to fall, for example, a distributor might want to keep a small inventory. But this, too, represents some level of risk. A refinery or pipeline problem could quickly lead to fuel outages if, for example, only two days of inventory are maintained.

The distribution market, like other petroleum markets, is not regulated economically. This means that decisions about how much inventory to maintain are wholly within the discretion of the distributor and his retailers. Clearly, if the goal is to avoid fuel outages, large inventories are desirable. But there is no way for the state to require distributors to maintain a given quantity of fuel on hand. Who would take the price risk and pay for the lost value of inventory, if prices declined?

How much inventory is available when a problem occurs is an all-too-frequent question. Some low-cost retail competitors may choose to hold small inventories as a way to give them a cost advantage over major company retail outlets. It seems simple enough to allow them to take the supply risk, but it is also important to recognize that when gas stations start placing signs on their pumps that they are out of gas, a different market mentality ensues. People begin to "top-off" their gas tanks and the demand for gasoline far exceeds normal draw down rates. This occurred in Phoenix in 2003. The consequence is a general supply crisis – panic-buying

leads to excessive demand and outages at nearly all gasoline stations. What is not widely understood is that the largest amount of gasoline (and to a lesser extent, diesel) storage capacity in Nevada is in the tanks of automobiles. If customers top-off their tanks, there is not enough supply to keep up with demand in normal times, let alone during a pipeline shutdown.

It should be noted that jet fuel markets operate a little differently. Because airlines and airports work together to ensure adequate supplies of jet fuel, most airports, including McCarran and Reno-Tahoe, have more storage as a fraction of their daily draw down than gasoline markets do. It is not uncommon for airports to maintain an inventory of a week or more at normal usage rates. Airlines also have the ability to truck in product and to change their fuel loading practices to minimize the loading of fuel at an airport where supplies have been curtailed.

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There are retail markets for gasoline and diesel, but the jet fuel market operates, for the most part, as a wholesale market except for the relatively small amount dispensed to general aviation customers. The inputs and outputs of these markets are the same as in the distribution market – refined products. The retail gasoline and diesel markets take product from distributors and sell it to customers in gasoline stations. These are perhaps the most competitive of all the petroleum markets.

Retailers typically have a great deal of discretion in their pricing policies and often combine gasoline and diesel products with convenience stores. Prices are known to change rapidly and to vary quite significantly among the various brands of gasoline sold in Nevada. Price differentials at competing stations within two or three blocks of each other are often as large as five, or even ten, cents per gallon.

Retailers also have a large amount of storage in their tanks. This storage is typically not tracked, but it can provide as much as an extra day or two of capacity under normal usage conditions.

The economics of retail gasoline stations are again deceptively complex. Individual retailers, for example, may choose to keep their prices high – even in the face of a competitor reducing his prices – if their inventories are running low and it is some time before trucks will provide a new delivery of product. Running a retail gasoline station is quite an entrepreneurial task.

It is important to note that the practice of artificially raising the price of gasoline using taxes is not widely used in the US or Nevada. This is, however, normal practice in many other countries in Europe and Asia. Nevada does have a high gasoline tax, but it is due to geography – big state, long roads, and few people – rather than to energy policy. Taxes do account for about 20 percent of the price of gasoline at the pump.