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Sent via e-mail to: Keith.Miles@NETL.DOE.GOV

March 3, 2008

Mr. Keith Miles
U.S. Department of Energy
National Energy Technology Laboratory
626 Cochrans Mill Road
P.O. Box 10940
Pittsburgh, PA 15236-0940

SUBJECT: **COMMENTS ON REVISED FUTUREGEN**

Dear Mr. Miles:

Sierra Pacific Resources, the parent company of Nevada's two investor-owned utilities, Nevada Power Company and Sierra Pacific Power Company, appreciates the opportunity to submit a response to the Department of Energy's Request for Information (RFI) on DOE's proposed restructuring of the FutureGen program. Our response is attached.

We are proposing that FutureGen incorporate a technology demonstration at a new coal plant, our Ely Energy Center project, which is located approximately 250 miles north of Las Vegas. We believe our project is perfectly aligned with your objective of "more closely reflecting the immediate and future needs of the Nation." Additionally, the Ely project has some elements that could establish a model for future coal projects in the U.S. by not only providing for carbon capture, but also fostering and augmenting renewable energy and reducing emissions from the retirement of older power plants.

Why a CCS demonstration at the Ely Energy Center?

1. **Offers more than just a technology demonstration** – The Ely Energy Center is not just another coal plant project. It is a project that will enable our company to decommission three older coal-fueled units, thereby improving Nevada's environment. It will also open the pathway for 500 megawatts of transmission-locked renewable energy in eastern and northern Nevada; and it will improve electricity reliability by connecting (for the first time) northern Nevada with southern Nevada with a 250-mile transmission line.

2. **Favorable regulatory environment** – The Ely project will be built within the framework of a regulated utility, and it is strongly supported by the Public Utilities Commission of Nevada, which wants to see our companies diversify their fuel supply and is therefore prepared to see this project included in rate base. Thus, the project presents low economic risk and low regulatory risk. These considerations, which demonstrate the strength of the underlying power plant project, should also help to ensure that the project will meet DOE's proposed timeline for demonstrating carbon capture and storage ("CCS").

3. **Favorable community environment** – Unlike so many other coal-fired generating projects nationwide, the Ely project enjoys strong local community support. All of the local city councils, the county commission, the Ely-Shoshone Indian Tribe and hundreds of businesses and citizens in the community have expressed their support for the project in writing. This strong community support that Ely enjoys greatly reduces the project risk, at a time when dozens of coal-fired power plants around the country are being canceled in part because of vigorous community opposition. DOE cannot achieve its program objectives of demonstrating CCS if the underlying power plant fails.

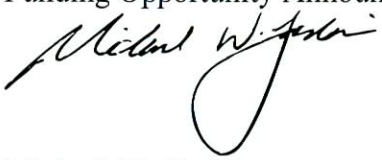
4. **Dramatic need** – Nevada is the fastest growing state in the nation, and our customers are heavily dependent on natural gas. Almost 75% of our power relies on natural gas generation. Thus, the Ely project is vitally needed for fuel diversity, which serves to further strengthen the case for the underlying project. At the same time, the participation of Ely in DOE's CCS demonstration can underscore the broader value CCS can provide in avoiding the risk of over-reliance on natural gas for power generation.

5. **Technology and geographic diversification** – The Request for Information (RFI) indicates that the restructured FutureGen is focused primarily on IGCC and on the four finalist sites in Texas and Illinois for the prior FutureGen program. While DOE may wish to emphasize IGCC technology, it would seem highly desirable to include in this multiple-award program at least one Ultra-Supercritical Pulverized Coal (USCPC) plant, which is the chosen technology for the first phase of Ely, and to provide for some geographic diversity. This will increase the value of the FutureGen program by allowing DOE to demonstrate the viability of CCS in the West using the nation's most abundant coal type--sub-bituminous. It can also greatly accelerate the development of a carbon capture technology that can be retrofitted to the predominant coal-fired technology in use throughout the United States and the world. Demonstrating CCS solely with IGCC would, by contrast, ensure that the program only has value for new coal plants, since its pre-combustion carbon capture technology be retrofitted to existing plants.

6. **Forward-planning Environmental Impact Statement** – Because the planning for Ely is well-advanced, we have the environmental impact analysis underway. Because of we have agreed with our regulators that the second phase of the Ely project will use IGCC and CCS technologies, the ongoing Environmental Impact Statement encompasses sufficient land to accommodate an unencumbered demonstration of CCS with today's commercially proven USCPC technology. We have also begun the geologic analysis to support CCS for Ely.

7. **FutureGen demonstration could be supported by renewable energy** – This project is actively working to integrate a solar thermal system into various points within the plant's steam cycle. This same renewable energy component could be made available to enhance DOE's demonstration project and make this project even more environmentally friendly and offset the energy penalty that typically accompanies CCS.

Thank you for your attention to our RFI response. I'm confident our project has much to offer the Department of Energy and our nation's energy future. We are anxious to respond to DOE's Funding Opportunity Announcement.



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Sierra Pacific Resources, Inc.
Nevada Power Company
Sierra Pacific Power Company

Sierra Pacific Resources

Comments in Response to
DOE's Request for Information on Plan to Restructure FutureGen

Sierra Pacific Resources, parent company of Nevada Power Company and Sierra Pacific Power Company, submits the following comments in response to DOE's invitation for expressions of interest and comments on its proposed restructuring of the FutureGen program (the "RFI"). Sierra Pacific has a strong interest in participating in FutureGen and is well advanced in its planning for the Ely Energy Center, an ultra-supercritical coal-fired power plant that we believe could offer some unique benefits to the reconfigured FutureGen program. Our comments are divided into two parts: Part I provides the project information that DOE specifically requests in the RFI. Part II comments on the issues raised in the RFI, including most particularly the question whether the revised FutureGen program should allow for advanced coal technology systems other than IGCC at locations other than the finalist sites for the prior FutureGen program.

Part I. Ely Energy Center – Project Description

Point of Contact:

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Location of Project:

East/Central Nevada
White Pine County, Nevada
Approximately 20 miles north of Ely, Nevada (250 miles north of Las Vegas)

Narrative Description of Project:

The Ely Energy Center is a 2500-megawatt coal-fueled power plant that will be built in two phases. The first phase (1500 MW), which itself will be constructed in two 750 MW phases, is being developed as an Ultra-Supercritical Pulverized Coal (USCPC) project. The second phase is intended to utilize the Integrated Gasification Combined Cycle (IGCC) technology with Carbon Capture and Storage (CCS) once that technology has been demonstrated at elevation and with sub-bituminous coal. The facility is designed to be the cleanest coal plant in the West in terms of its emissions control technology. Additionally, it is being designed to consume half the normal requirement of water by utilizing a hybrid cooling technology. The facility will operate at extremely high efficiencies, allowing the Companies to retire 300 megawatts of 50-year-old coal facilities at the Reid Gardner Generating Station.

The project is being developed by Sierra Pacific Resources, which is headquartered in Nevada and is an investor-owned corporation with operating subsidiaries engaged in the utility business. The company's stock is traded on the New York Stock Exchange under the ticker symbol SRP. The company's chief operating subsidiaries are Nevada Power Company and Sierra Pacific Power Company, which together serve more than one million customers. The operate as regulated utilities under the jurisdiction of the Public Utilities Commission of Nevada.

The Ely Energy Center has been in the development stage since 2006 and is awaiting a final air permit by the Nevada Division of Environmental Protection and an Environmental Impact Statement (EIS) from the U.S. Department of Interior's Bureau of Land Management.

The project development has been approved by the Public Utilities Commission of Nevada, and it has received support in writing from the White Pine County Commission, the Ely City Council, the McGill Town Council, and the majority of local businesses, taxing authorities, the local news media and community members. Among the reasons for this project's widespread support is that it will enable Nevada Power to decommission three older coal-fueled units in Nevada, improve the state's system reliability by directly connecting the northern Nevada grid with the Southern grid for the first time, open the pathway for transmission-locked renewable energy, and help Nevada be more energy independent and improve its energy diversity by relying less on natural gas.

The company has extensive experience with pulverized coal plants at its Reid Gardner Generating Station and its North Valmy Generating Station. It also has experience with IGCC technology, as it helped pioneer that technology at its Piñon Pine Power Project near Reno, Nevada.

Project Timetable:

The Ely Energy Center has completed key regulatory, community support, water resources and other milestones. Construction is scheduled to begin in 2010 or 2011, depending on completion of the EIS process and issuance of a record of decision. Under conservative planning assumptions, Ely is scheduled to commence commercial operations in 2015, DOE's target date for CCS projects.

Requested DOE Contribution to CCS:

Sierra Pacific does not yet have an estimate of the cost of CCS for Ely, and thus cannot specify a requested DOE contribution at this time. The company has begun detailed analysis of the geologic formations in Nevada that could best support CCS in a saline aquifer as called for in the RFI (as well as the other CCS options for Ely, such as enhanced oil recovery). Thus, it will be able to provide cost estimates for CCS and to identify a requested DOE contribution in response to the Funding Opportunity Announcement (FOA) that DOE expects to issue in the next several months.

Technological, Financial or Legal Issues or Barriers:

Sierra Pacific does not believe that Ely presents any unique technological, financial or legal issues. USCPC technology commercially proven, and the Company, as noted above, the company has extensive experience operating pulverized coal plants. The carbon capture aspect of the project is, of course, the known challenge, but there has been substantial research and

development of carbon capture as applied to pulverized coal technology, and the technology risk associated with carbon capture and storage is at the heart of FutureGen. The distinct programmatic advantage Ely offers DOE is that applying CCS to a USCPC plant offers the greatest promise for accelerating the development of a retrofit technology for CCS that can be applied to the predominant coal burning power plant technology in use in the United States and the world. For decades to come, pulverized coal technology will dominate power generation. Expanding the scope of FutureGen to allow proof of CCS on this technology can greatly increase the benefit of this demonstration program.

Ely presents no unusual financial or regulatory barriers, but rather offers distinct advantages that reduce its risk profile. It is a facility that will be in a regulated rate base, and the Public Utilities Commission of Nevada has already approved development costs for Ely. It will be subject to normal regulatory oversight during the various project stages. The Nevada Department of Environmental Protection, the relevant air permitting authority, is presently considering Sierra Pacific's air permit application, but it has publicly stated that it believes the plant's emissions profile is probably the best in the Nation.

Other Project Benefits:

The Ely project offers two important additional benefits. First, it will be accompanied by the addition of transmission capability that will also enable up to 500 MW of renewable energy that currently has no transmission pathway to be delivered to customers in southern and northern Nevada. Second, in addition to hosting the CCS demonstration, the Companies have actively studied the integration of a solar thermal system into various points within the USCPC plant steam cycle. In such an arrangement, a solar thermal energy system would convert water to millions of Btu's of hot water and/or steam, and inject it at one or more points within the plant's cycle, reducing the amount of energy required to be generated from the burning of coal. Studies are currently underway to refine the amount of solar thermal energy that could be generated and how it could best be integrated into the boilers. This aspect of the project, for which the companies would not be seeking DOE funding, could greatly offset the energy penalty typically thought to accompany carbon capture in USCPC plants. The Companies would be pleased to explore incorporating this novel use of renewable energy into the project, and we are prepared to submit a formal proposal to do so as part of our application responding to the FOA.

Part II. Comments on DOE's Revised Approach to FutureGen

Sierra Pacific Resources applauds DOE's attempts to move forward and demonstrate the ability to capture and store carbon from coal-based power plants. We are strongly interested in participating with the Department and, if the terms of the FOA permit, Sierra Pacific will respond to the Department's FOA for a facility to demonstrate CCS at its proposed Ely Energy Center. The plant would provide a working demonstration of CCS facilities on ultra-supercritical boilers fueled with Powder River Basin coal. We are pleased to offer the following comments on the RFI, comments focused on a request that DOE expand its focus in the FOA to allow multiple coal-fired technologies from throughout the country, and most particularly in the West, where there is a great need to establish the viability of CCS.

Technology Choice:

DOE proposes to limit FutureGen CCS projects to power plants based on IGCC technology. Sierra Pacific respectfully suggests that this multi-award program should make room for one or more non-IGCC technologies. As noted above, pulverized coal (PC) technology is the predominant coal burning technology in use today. Demonstrating CCS on a PC technology will provide the maximum programmatic benefit in that it will greatly accelerate the availability of CCS to the plants that are already in operation and likely to continue to operate for decades to come. Given the pace of development of PC plants that is ongoing around the world today, this is a highly significant benefit.

Moreover, as emphasized in MIT's recently published study "The Future of Coal," it is unwise to let a single technology be the focus of our carbon capture and sequestration research efforts at this early stage:

> It is premature to select one coal conversion technology as the preferred route for cost-effective electricity generation combined with CCS. With present technologies and higher quality coals, the cost of electricity generated with CCS is cheaper for IGCC than for air or oxygen driven SCPC. For sub-bituminous coals and lignite, the cost difference is significantly less and could even be reversed by future technical advances. Since commercialization of clean coal technology requires advances in R&D as well as technology demonstration, other conversion/combustion technologies should not be ruled out today and deserve R&D support at the process development unit (PDU) scale. *(MIT Study on The Future of Coal, p.98)*

Although some have suggested that IGCC offers the easiest implementation of CCS for a grass-roots or "greenfield" plant, there are other technologies that should be included in the program to ensure that the viability of CCS is demonstrated with a range of fuels. Today, for example, there is no demonstrated commercial experience with IGCC using sub-bituminous Powder River Basin (PRB) coal, even though it is one of the nation's most widely used sources of energy, and, because of its low sulfur content, of significant benefit in the control of emissions of SO2/SO3. Restricting the FOA to IGCC units only would significantly diminish the likelihood of any demonstration of CCS projects using PRB coal.

In focusing its attention on IGCC, DOE appears to be betting that IGCC-CCS is the most cost-effective approach to achieving DOE's stated goals. However, as EPRI has explained, from a cost standpoint, IGCC offers no clear and consistent cost advantage:

> Some studies show an advantage for IGCC with CCS with bituminous coal. With lignite coal SCPC with CCS is generally preferred. With sub-bituminous coals, SCPC with CCS and IGCC with CCS appear to show similar costs. *(Testimony of Bryan Hannegan, Vice President-Environment, Electric Power Research Institute, before the Science, Technology and Innovation Subcommittee of the Committee on Commerce, Science, and Transportation, November 7, 2007.)*

Thus, DOE should take care in this important program to avoid the proverbial "eggs in one basket" approach. There are several coal-based technologies in addition to IGCC that provide

opportunities for the integration and testing of CCS. These include super-critical pulverized coal (SCPC), ultra supercritical pulverized coal (USCPC), and oxy-fueled coal plants. Each has its unique attributes and potential advantages for CCS, and they should all be eligible for consideration in the restructured FutureGen program to ensure that a full range of alternative technologies is available to the nation with CCS.

Emissions Targets:

The emissions targets DOE identifies in the RFI as its objectives for participating projects essentially reinforce the preference for IGCC technology since they are emissions standards that only IGCC can meet. Sierra Pacific's USCPC Ely project comes very close to meeting those standards. It is designed to achieve the following emissions levels:

97% sulfur removal
.06 lb./million Btu NOx emissions
99% removal of particulate matter
>90% mercury removal

Very small deviations of this type from DOE's identified emissions objectives should not preclude a project's participation in FutureGen.

Geographic Diversity:

DOE encourages potential program applicants to focus their proposed demonstration facilities at the four original FutureGen sites:

> The Department recognizes the tremendous effort expended by the four sites – two in Illinois and two in Texas – evaluated in the Department's Environmental Impact Statement (EIS).... The site announced by the FutureGen Industrial Alliance in December 2007, Mattoon, IL, as well as the other three sites evaluated in the EIS may be eligible to host a commercial-scale IGCC plant with CCS technology. DOE encourages applicants to include these four sites in their consideration for this restructured FutureGen approach since the site analysis and characterization data at those four sites may be applicable to future environmental analyses under this restructured approach. *(RFI at 5.)*

This would effectively limit the demonstration value of the program to two geographic areas, Texas and Illinois, and would thus preclude the program from demonstrating CCS is a variety of geographic locations and environments. Although Sierra Pacific recognizes that significant environmental effort was expended in the Department's FutureGen EIS, other sites may offer substantial other benefits and may even have similar environmental analysis underway in connection with plans for a coal plant using a non-IGCC technology, as is the case with the Ely project. Such projects at alternative locations should not be barred from even competing to participate in the restructured FutureGen program.

It is noteworthy that the West is home to many of the fastest growing states and populations, and is thus likely to face the fastest growing demand for electricity. FutureGen's benefit will be greatly increased if it provides demonstrations in areas like the West that are going to require significant new generation capacity. Moreover, broadening the geographic horizon of the program will enhance the demonstration value of the program by allowing it to test CCS with a

wider range of coal types. Indeed, IGCC coal plants, using bituminous coal (the predominant coal in the eastern U.S.) and operated at or near sea level, have already been built and are being operated in the eastern U.S., in Florida and Indiana. However, CCS has not been demonstrated with sub-bituminous coal, such as Powder River Basin coal, the coal most abundant in the West.

Finally, broadening the geographic horizon of the program will offer the opportunity to demonstrate CCS at higher elevations, provided the IGCC-only focus is also lifted. As DOE is well aware, IGCC plants face a decline in output of at higher elevations because of the much lower air density and decreased gas turbine output. If the FOA limits its demonstration of carbon capture to Texas and Illinois IGCC units as the only potential hosts for the research, it will in effect limit the benefit of the demonstration to the eastern United States. There would seem to be no legitimate programmatic justification for such a narrowly focused program, when the need for CCS exists throughout the country.