BEFORE THE CALIFORNIA ENERGY COMMISSION

Docket 04-IEP-1E
Achieving the Preferred Loading Order White Paper

Docket 04-DIST-GEN-1
Order Instituting Investigation on Exploring Issues Associated with Implementation and Distribution Planning of Distributed Generation

In the Matter of:

2005 Integrated Energy Policy Report
CHP Workshop April 28, 2005

Comments of

WATSON COGENERATION COMPANY

Scott R. Hawley
Watson Cogeneration Company
28850 South Wilmington Avenue
Carson, California 90749-6203
Telephone: (310)816-8843
Email: hawlsr@bp.com

Proposal to Create a

Cogeneration Portfolio Standard

(CoPS)

With Targets

and

Establish Cogeneration as a Priority Resource

in the

Energy Action Plan Resource Loading Order

Comments of Watson Cogeneration Company

Watson Cogeneration Company (Watson) is pleased to present these written comments in strong support and advocacy of Combined Heat and Power facilities and adding Cogeneration as an explicit and integral part of California's Energy Action Plan Resource Loading Order. These comments provide further input to supplement the informative discussion from the April 28, 2005 CHP workshop in Sacramento.

Watson is a single 420 MW cogeneration facility located in Carson, CA within the SP-15 zone in the heart of the Los Angeles basin where power supplies are critically needed. The operation, which produces power and steam through four gas turbine generators and two steam turbine generators, is one of the largest cogeneration facilities in the western United States. Southern California Edison Company (Edison) purchases 340 MW of Watson's electric generating capacity under a 20-year qualifying facility (QF) contract that expires in 2008. The remainder of Watson's electrical capacity and the facility's steam output are sold to BP's Carson refinery. Watson is an important component of California's energy infrastructure producing enough power to supply over 400,000 homes and is literally the engine behind the production of 20% of California's in-state production of gasoline, 30% of the diesel, and a significant portion of the Jet Fuel that supplies LAX.

Watson recognizes the importance of cogeneration to the refinery's future operations and California's energy supply and has a keen interest in extending its QF contract. As such,

Watson began exploring terms with Edison for extending the QF contract as far back as March 2003 and has pursued discussions with Edison on numerous occasions over the past several years. In turn, Edison has proved unwilling to enter into these discussions and has not given any indication of when these discussions would take place. In fact, Watson met with Edison in October of 2003 and offered a written proposal to extend our existing contract and to consider adding additional MW to meet California's expanding energy needs. Edison failed to respond to or follow-up on that proposal and has steadfastly refused on multiple occasions since then to enter into negotiations until it receives clear regulatory direction from the CPUC. Failure to gain any progress in these discussions leaves Watson with the distinct conclusion that the electric production from this cogeneration facility is not considered an integral part of the IOU's forward looking resource plan for meeting Southern California's electricity needs.

Proposal

Cogeneration, a form of combined heat and power (CHP), is an energy efficient form of electric generation that reduces environmental impacts and the overall use of natural gas. Cogeneration contributes to "minimizing the energy sector's impact on climate change" as articulated in California's Energy Action Plan. Cogeneration is also an important component of California's existing energy infrastructure that improves the reliability and security of California's energy supply as well as the competitive position of California's industries.

The State Energy Action Plan should advocate the establishment of cogeneration as a priority resource in California on a par with renewables and distributed generation as the second element in the Energy Action Plan's "loading order." The CEC in this effort should encourage the CPUC to jointly adopt a Cogeneration Portfolio Standard that establishes a CHP target as a percent of total energy consumed in the state and integrate it along with the Renewables Portfolio Standard to ensure that Californians benefit from a cost-effective, reliable, and environmentally efficient power portfolio.

Introduction

In the aftermath of the 2000 - 2001 energy crisis, California's principal energy agencies adopted an Energy Action Plan to ensure that reliable and affordable electrical power and natural gas supplies continue to be available to residents of this state. Key elements of that plan seek to meet California's current and future energy needs through the creation of new policies that encourage the use and development of reliable power generation sources that are efficient and environmentally sound. Cogeneration is a proven technology that is reliable, cost-effective, energy efficient, environmentally sound, and is meeting a substantial portion of California's energy needs today.

Cogeneration is a highly-efficient process that provides both electricity and useful thermal energy for the California economy and energy market. Due to the efficient use of fuel in the combined production of heat and power, cogeneration offers energy savings and substantially offsets air emissions, compared with separate production of equal amounts of heat and power. Since the early 1980s, the promotion of cogeneration has been an integral part of California's strategy for the efficient use of energy, and has been closely coordinated with state policies to encourage the increased use of renewable power. California has led the nation and the world in adopting policies that have encouraged the development of renewable resources such as geothermal, wind, and solar, as well as alternative technologies such as cogeneration. As a direct result of these prior policies, cogeneration now supplies about 12 percent of the total demand for electricity on the system of the California Independent System Operator, approximately 6,100 megawatts. Today, however, the continued development of cogeneration is not an explicit goal in the Energy Action Plan. Watson is concerned that this omission neglects what can be an efficient tool to generate energy savings and to pursue targets for reductions in emissions.

Objective – A Stable Framework for Cogeneration

The Commission's objective in this element of the Integrated Energy Policy Report ("IEPR") should be to create a framework that supports the continued functioning of existing cogeneration facilities and facilitates the installation of new cogeneration plants where a useful heat demand currently exists or is foreseen.

Despite the promising potential of cogeneration, there has been no significant increase in the share of cogeneration in the California resource mix in recent years. In fact, cogeneration capacity has declined by over 400 megawatts since the energy crisis in 2000 - 2001. California must recommit to its strategy to promote cogeneration and to dismantle barriers to its continued existence and development.

Last year the California Energy Commission unanimously approved the final 2003 IEPR and strongly endorsed cogeneration:

> *Distributed generation, including cogeneration, has tremendous potential to help meet California's growing energy needs as an additional generation source. Its use offers potential benefits that extend to customers, utilities and the [electricity] system as a whole and can be used strategically to meet the policy objectives of the Renewable Portfolio Standard and the reduction of greenhouse gasses.*

The CEC and CPUC should establish a stable framework that clearly identifies a cogeneration strategy as part of state energy policy. This framework should preserve cogeneration's historical place on a par with renewable resources in the resource loading order, maintain existing cogeneration facilities through an equitable extension of existing power purchase contracts, and promote investments to increase the share of electricity

production from cogeneration in total California electricity production by 25% by the year 2010.

A Cogeneration Portfolio Standard (CoPS) should be created to serve as a vehicle to preserve existing projects and to promote new highly-efficient cogeneration installations in the California energy market. A key element of CoPS should be providing regulatory certainty and financial support for cogeneration projects, through CPUC orders that require the utilities to offer cogeneration projects long-term QF contracts at reasonable "avoided cost" prices, as required by Congressional mandate under the Public Utility Regulatory Policies Act ("PURPA").

The Cogeneration Portfolio Standard would also serve as a means to create the necessary framework to ensure that efficient cogeneration, alongside other environmentally friendly supply options, constitutes a key element when decisions on investments in new production capacity are made. Establishment of a CoPS should be integrated into an expanded Renewables Portfolio Standard to create a supportive framework that ensures cogeneration can continue to contribute to the diversified and energy efficient supply systems in California.

The CEC along with the CPUC can play an important role in facilitating and ensuring that the state's objectives on cogeneration are met. The aim is to promote cogeneration wherever an economically justified potential is identified in order to save energy and reduce emissions impacts on California's environment.

Reasons for Supporting Cogeneration

The following reasons justify state policies that support and encourage California's cogeneration infrastructure:

1. High efficiency means less fuel consumption. Reduced natural gas use lowers the demand for this important fuel; which translates into increased supplies of (and lower prices for) natural gas across the entire market.

2. Cogeneration produces lower emissions of CO2 and other criteria pollutants, and thus contributes to policies supporting sustainable development, notably in relation to the need for increased use of clean energy and measures to reduce energy demand. In the context of climate change, California has a clear interest in putting forward concrete proposals aimed at reducing the emission of greenhouse gases. A Cogeneration Portfolio Standard is therefore one of the necessary elements in a package of measures needed to meet further commitments to reduce impacts on the environment.

3. Distributed cogeneration plants reduce losses on the electrical grid because these installations usually are located at or near electric load centers. They also enhance physical security and reliability, because they do not depend on long-distance

transmission on the high-voltage grid. Local production of electricity may also enhance security of electricity supply, since it ensures that electricity is produced in many different regions of California where it is needed. These regions become more self sufficient in power supply and less vulnerable to power failures and/or acts of terrorism that now are part of the US landscape since the events of 9/11. In addition, most large industries with a steam demand are very sensitive to power failures for their industrial production. Electricity produced from on-site distributed cogeneration increases security of electricity supply to the host site and provides protection from utility service outages.

4. Cogeneration increases competition among electricity producers, because the technology allows new actors to enter the market for electricity generation. Cogeneration also competes with the utilities to serve on-site loads, and thus helps to discipline utility cost structure and rates.

5. The development of cogeneration projects provides the opportunity to create new enterprises, joint ventures and other collaborations among stakeholders in the energy industry with those businesses and industries that have a need for steam, thus being a force for efficiency and innovation.

6. Cogeneration allows important California industries to reduce their cost of energy, improving their competitiveness in global markets. This is particularly important given the extremely high cost of electricity in the state.

Barriers to Progress in Development of Cogeneration

The lack of progress in promoting new cogeneration, to a large extent, results from the existence of a number of barriers which hampers the development of cogeneration.

Barriers to decentralized cogeneration include regulatory uncertainty on future avoided cost prices, lack of a true capacity market, inability to renew or extend existing contracts with the IOU's, low prices for excess electricity sold to CAISO or in the small wholesale market, high grid connection costs charged to the cogeneration developer, high costs for use of standby power, and lack of recognition of the benefits to the network of distributed generation. Efficient gas-fired cogeneration technologies use fossil fuels even more efficiently than new combined-cycle power plants and provide greater societal benefits.

Furthermore, the California utilities' procurement processes do not consider the broader societal benefits of cogeneration, and make no effort to accommodate resources with the unique operating characteristics of cogeneration plants. Cogeneration links together the production of heat and electricity; as a result, it is important to ensure that the produced electricity and heat meet real demands. The electricity can be transmitted into a market place and sold where it is needed. The heat, however, cannot easily be transported or stored, and therefore the cogeneration process must be based in the time and place of a real need for heat by a thermal host. The real need for useful heat is the cornerstone of

efficient cogeneration. If the produced heat is not meeting a real demand the advantages of cogeneration disappear. Thus, the operating hours of a cogeneration facility are linked to the real use of heat in the associated industrial process. As a result, a cogeneration plant's electrical output is fundamentally not dispatchable. The utilities' recent procurement solicitations have been heavily weighted toward buying fully dispatchable resources, with little effort to accommodate the operating constraints of cogeneration resources. In fact, cogeneration projects can provide the same firm, on-peak power as dispatchable resources, and the economic impacts of off-peak production can be resolved through time-of-use pricing. In fact, Watson's current QF contract is constructed in just this manner.

Altogether, the current market conditions have contributed to a situation where the long-term viability of many existing cogeneration plants is threatened, and where incentives to upgrade existing capacity or to invest in new capacity are significantly reduced.

Environmental Benefits

It must be stressed that there are important differences between cogeneration and renewable energy. Cogeneration is not a source of energy; it is a highly efficient process that transforms energy from one source, usually fossil fuel, into electricity and heat.

A fully-opened market needs an internalization of external costs to ensure a true level playing field for cogeneration. According to, for example the ExternE study ("ExternE - Externalities of Energy", EC, DG Research, Brussels, 1999.), Combined Heat and Power provides with the same fuel at least two times less socio-environmental damages compared with conventional electricity production. As long as external costs are not fully integrated into energy prices, the California Energy Action Plan should promote a Cogeneration Portfolio Standard integrated into the Renewables Portfolio Standard to rectify this imbalance.

A CoP Standard should take into account all of the societal benefits of the cogeneration producer. These benefits should include avoiding the extra costs that would result from otherwise higher prices and societal costs compared to the separate production of heat and electricity. At the present market conditions, the CPUC should consider modifying avoided cost pricing compensation and adjusting it to rectify the above mentioned imbalance which neglects the higher costs that would result if heat and electricity are separately produced.

The actions of both the CEC and CPUC should ensure the development of a set of common principles for the promotion and retention of cogeneration resources. Such principles can also ensure that financial support for cogeneration is prioritized in such a way that QF and utility procurement contracts are allocated to efficient cogeneration production.

It is in California's interest to work towards the creation of a level playing field within its energy markets. Establishing an objective, non-discriminatory and transparent framework for cogeneration producers in relation to system and societal issues is an important question. Creation of a level playing field is also relevant from a competition point of view as it contributes to ensuring a greater number of market players in the California energy market.

From a security of energy supply perspective, California also has an interest in promoting cogeneration as an element in its overall strategy to reduce energy demand. Promotion of cogeneration using indigenous energy sources such as biomass, waste, waste gas, and geothermal energy is particularly important in this context.

Creating a Cogeneration Portfolio Standard

Policy makers have long recognized that cogeneration can meet power demands in addition to the steam needs of industry while burning 35% to 40% less fossil fuel, thus significantly reducing emissions of greenhouse gases that contribute to global warming.

A Cogeneration Portfolio Standard (CoPS) must be established by joint action of the CEC and CPUC, with targets set to ensure that efficient cogeneration is promoted as an integral part of the "loading order."

To determine the energy savings from cogeneration, it is necessary to develop additional criteria. To define high-efficiency cogeneration the fuel used to produce a given amount of heat and power by cogeneration must be quantified and compared with the fuel that would have been necessary to produce the same amount of heat and power via separate generation. This implies that for the comparison assumptions must be made as to what kind of separate production cogeneration displaces making it necessary to provide a common methodology for calculating the energy and emissions savings from cogeneration.

The benefits of cogeneration can be expressed in terms of energy savings and emissions savings. In most cases, a cogeneration installation that provides energy savings will also offer emissions savings. However, the choice of fuel for cogeneration will have an impact on the amount of emissions savings. The concept of cogeneration is basically about saving energy by using the fuel input in a highly efficient manner to generate both electricity and heat. For the purpose of this CoPS, energy savings and emissions savings taken together should be considered as suitable indicators to express the benefits of cogeneration. The CoPS focus on the energy efficiency characteristics of cogeneration allows it to remain fuel neutral thus allowing for a diversified mix of fuels in the cogeneration sector. Under the proposed reporting requirements the CEC would also make an assessment of the corresponding avoided environmental benefits, including the CO2 emission savings.

Highly efficient cogeneration plants using fossil fuels produce at least 5-10% less CO2, and in many cases as much as 35% to 40% less CO2, than in the situation of separate production, while electricity from renewables produce almost no CO2. It is therefore obvious that the 'CO2 reduction value' of 1 kWh of cogenerated electricity may be smaller than the 'CO2 reduction value' of 1 kWh of renewable electricity, but it is equally obvious that it does provide a similar benefit to society when compared to separate production of electricity and thermal output from conventional thermal resources. This societal benefit from cogeneration therefore should be provided with a "green" tag similar to, but separate from renewables to identify the benefits of cogeneration for marketers and resellers of electricity to the consumer. In this manner, it also allows a mechanism for the CoPS to be integrated into the Renewables Portfolio Standard and together increase the targets for market penetration of desirable electric resources. Given the fact that cogeneration is a form of DG and can be located widely across the utility systems, it can also serve as a valuable asset in terms of future CO2 sequestration opportunities.

Setting a CoPS Target

California should once again focus on stimulating effective promotional policies for cogeneration. Setting targets helps to quantify and subsequently monitor what California wishes to achieve in the field of cogeneration and ensures that it will be included in the utilities' resource procurement plans. This framework should preserve cogeneration's historical place on a par with renewable resources in the resource loading order, maintain existing cogeneration facilities through an equitable extension of existing power purchase contracts, and increase the share of electricity production from cogeneration in total California electricity production by 25% by the year 2010.

Monitoring and Assessment

The Energy Action Plan's Cogeneration Portfolio Standard should require that the CEC identify and monitor the existing efficient cogeneration in California and regularly carry out a well-documented analysis of the current and future potential for cogeneration. The CoPS should set a criteria and elements that must be covered in the analysis including a requirement to consider the fuels used for cogeneration and an obligation to examine aspects relating to cogeneration technologies including efficiency, environmental savings, cost effectiveness, and the ability to meet target timeframes.

To allow monitoring and assessment of progress at regular intervals and ensure that targets are met, reliable cogeneration statistics are necessary. Therefore the CoPS should also require an obligation for the CEC to submit cogeneration statistics on an annual basis to the CPUC. The CEC also should analyze continued barriers to cogeneration and report

regularly on progress towards realizing potentials and on measures taken to promote cogeneration.

The analysis should consider:

1. The type of fuels used for cogeneration, including specific considerations on the potential for increasing the use of renewable energy sources in California's heat markets via cogeneration.
2. The type of separate production of heat and electricity for which high-efficiency cogeneration is likely to substitute.
3. A review of the potential for upgrading existing capacity and construction of new capacity.
4. The analysis should include appropriate mechanisms to assess the cost effectiveness - in terms of primary energy savings - of maintaining and increasing the share of cogeneration in the energy mix. The analysis of cost effectiveness should all also take into account in the context of climate change commitments such as those sought in the Kyoto Protocol to the United Nations Framework Convention on Climate Change.

Conclusions and Summary

State policy has long supported the development of cogeneration projects in California. California should sustain past policies and develop new policies that will promote the retention and development of and reliance upon industrial cogeneration.

Today, gas-fired cogeneration projects that are Qualifying Facilities under PURPA provide about 12% of the capacity on the ISO grid, and, in terms of energy, serve about 17% of the IOU's loads. Beginning this year, the number of QF cogenerators under contract to the IOUs will begin to drop sharply, as their original contracts expire. Due solely to the loss of QFs (both gas-fired and renewable), the IOU's committed resources will drop by roughly 3% per year from 2005 to 2012. Even if the state fully realizes its goals for renewable generation of a 1% increase in market share per year, the IOUs will not be able to make up the deficit from resulting contract expirations, unless cogeneration QFs can equitably extend their existing contracts. State regulatory policy must focus on providing long-term contract extensions for existing cogeneration QFs, with reasonable capacity payments and avoided cost pricing, to ensure that the benefits of existing cogeneration resources are not lost.

In order to ensure that California will always benefit from a cost-effective, reliable, and environmentally efficient power portfolio, **(1) a Cogeneration Portfolio Standard with targets that preserve and expand the use of cogeneration should be established. (2) The Cogeneration Portfolio Standard and its targets should be integrated into the Renewables Portfolio Standard to allow for greater penetration of desirable energy resources in California. (3) The State Energy Action Plan should also be updated to re-establish**

cogeneration as a priority resource on a par with renewables and distributed generation as the second element in the Action Plan's "loading order".

These actions will help preserve and secure this important segment of existing state infrastructure, reduce environmental impacts and overall use of natural gas, maintain resource diversity in our electrical system, encourage further investment, and meet the obligations by the state to facilities with Qualifying Facility status.

Watson Cogeneration Company appreciates the opportunity to provide the Commission with these comments.

Respectfully,

Scott R. Hawley
Watson Cogeneration Company
28850 South Wilmington Avenue
Carson, California 90749-6203
Telephone: (310)816-8843
Email: hawlsr@bp.com