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December 21, 2004
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FEDERAL ENERGY
REGULATORY COMMISSION

Mr. Donald B. Koch
Northern California Regional Manager
California Department of Fish and Game
601 Locust Street
Redding, CA 96001

Re: California Department of Fish and Game Request to the California Energy Commission to Review the Energy Issues Associated with the Proposal to Decommission the Kilarc – Cow Creek Hydroelectric Project (FERC No. 606)

Dear Mr. Koch:

This letter responds to your September 9, 2004 request to the California Energy Commission (Energy Commission) to assess the energy issues associated with the Pacific Gas and Electric Company (PG&E) proposal to decommission the Kilarc – Cow Creek hydroelectric project in Shasta County. Per your request, we will also address some of the issues raised in the August 11, 2004 letter from Synergics Energy Services LLC to PG&E. Our Executive Director, Robert Therkelsen, has asked my office to prepare this response on behalf of Energy Commission staff.

Decommissioning Proposal

Based on the correspondence and communication with your staff, we understand that PG&E has initiated discussions with the Department of Fish and Game (Department) and other state and federal agencies involved with Federal Energy Regulatory Commission (FERC) hydro licensing to develop a proposal to decommission the Kilarc – Cow Creek hydro project. PG&E is proposing to abandon the license and decommission the project rather than relicense it when the current license expires in 2007. PG&E's letter of September 21, 2004 to Synergics confirms that PG&E has stopped all work on relicensing the facility.

We further understand that PG&E's decision is based on a variety of factors, including that: 1) the project is small at 4.6 MW; 2) endangered salmon and steelhead trout are present in the project area; and 3) the costs to meet current instream flow, water quality and fish passage measures as potentially required by FERC as a condition of relicense would render the project non-economic.

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Synergics, which owns the Olsen hydro project downstream of the PG&E project, believes the Kilarc – Cow Creek facilities should remain operational. Synergics may seek to intervene in order to ultimately purchase the project and the rights to continue operating it under FERC's jurisdiction.

Kilarc – Cow Creek Hydro Project

The Project totals 4.6 MW and is located in Shasta County on several upper branches of Cow Creek that are tributary to the Sacramento River. The Kilarc powerhouse on Old Cow Creek measures 3.2 MW nameplate capacity and was built in 1904. The Cow Creek powerhouse on South Cow Creek measures 1.4 MW nameplate capacity and was built in 1907. Both powerhouses operate in run-of-river mode, meaning that power is generated during periods of sufficiently high seasonal flow, typically in winter and spring periods. No storage reservoirs are associated with the project, so water cannot be stored for dispatch during summer peak demand months. However, a review of production data for the years 1991 to 1997 indicates that summer dependable capacity averages about 1.5 MW. Average annual electricity production for the combined project is 31.1 gigawatt-hours (GWh) or 31,100 megawatt-hours (MWh).¹

Salmonid Fishery Resources in Project Area

Fall run Chinook salmon and steelhead trout, both of which are federally listed species, occur throughout the Cow Creek watershed. The upper Sacramento River and its tributaries provide the largest remaining anadromous salmonid habitat areas in California. The Department is planning salmonid habitat restoration work throughout the Cow Creek watershed.² These salmonids occur above and below the Cow Creek powerhouse on the South Fork. The fish passage facilities at the South Creek diversion are old and only partially effective.

Salmonids are also found in Old Cow Creek; Chinook salmon in the lower stream reaches, and steelhead trout in the upper reaches closer to the Kilarc powerhouse. Steelhead trout have not been documented in the immediate vicinity of the Kilarc powerhouse, although it is suitable habitat. Staff from the Department and NOAA Fisheries believe that steelhead can pass the Whitmore Falls during high flow events and reach the habitat area above and below the Kilarc powerhouse. Representatives from Synergics believe it to be unlikely that steelhead can surmount the 10-foot high Whitmore Falls.³

Energy Commission Staff Assessments of Salmon Restoration Projects

Energy Commission staff has reviewed several hydropower projects in California where re-operation, or full or partial decommissioning has been proposed in

¹ Kilarc – Cow Creek Project, FERC No. 606, First Stage Consultation Package, Pacific Gas and Electric Company, June 2002.

² Personal Communication, Annie Manji, Staff Ecologist, Department of Fish and Game Region 1, September 28, 2004.

³ Personal Communication, Art Hagood, Synergics Energy Services LLC, September 29, 2004.

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order to facilitate restoration of salmonid habitats. These are the Battle Creek Restoration Project, Trinity River Division Mainstem Fishery Restoration Project for the Central Valley Project, and relicensing of the Klamath River Hydroelectric Project. In each case, stakeholders have raised concerns about the effect of hydropower energy production losses. The projects are summarized in the following table.

Summary of Energy Commission Staff Assessments for Three Salmonid Restoration Projects Involving Hydropower

Project	Nameplate Capacity	Energy Production	Energy Losses / yr		Expected Benefits
			MW	GWh	
Battle Creek	36.3	245	7.2	93.8	42 miles of cold-water habitat for Chinook and steelhead
Trinity River Division of CVP	497	NA	7	287	Restore Trinity River flows to 48% of historic average, benefiting Chinook, coho and steelhead
Klamath	163	656	163	656	300 additional miles of mainstem and tributary habitat for Chinook
Totals			172.2	1037	
Total California Hydro Capacity & Generation	14,116	37,345*			
% of State Totals			1.2%	2.7%	

* Fifteen year annual average based on data from 1983 to 2001. Source: Appendix D of 2003 Environmental Performance Report.

In reviewing these cases, Energy Commission staff has used a variety of criteria related to state and regional level electric resource adequacy and reliability, potential effects on utility customers, and availability and cost of replacement power. Staff also uses information from the *2001 and 2003 Environmental Performance Reports of California's Electrical Generation System* to compare impacts from hydropower with those of other generation resources. Staff recognizes that salmonid habitat is a vital resource for California's imperiled salmon and steelhead trout fisheries, and that restoration of such habitats is an important environmental policy objective for the state.

In each of these cases, Energy Commission staff has found that the loss of hydroelectricity would not have a significant effect on electric resource adequacy at the state and regional level.⁴ In the simplest terms, it is an issue of scale: the hydropower production losses are extremely small in the context of the electricity resources available to California utilities within and from outside the state.

⁴ For the Energy Commission Staff's review of Klamath energy issues, staff emphasized that the assessment was preliminary, and that further study was recommended, especially to assess the potential for any energy effects at the local level.

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The Energy Commission has raised concerns about potential near-term peaking capacity shortages in California, especially in Southern California.⁵ However, for the three decommissioning and re-operations proposals reviewed by Energy Commission staff, the long planning horizons for decommissioning means that the energy production reductions would occur after anticipated new electricity generation resources are brought on-line in response to near-term supply needs. Electricity supplies are expected to stabilize in 2010.

California's power generation system is large and extremely diverse. In-state and dedicated out-of-state capacity measures about 60,000 MW, and electricity use averages about 270,000 gigawatt-hours (GWh) per year.⁶ On average, 20 percent of California's electricity is imported. California's generation system is flexible because it must accommodate wide fluctuations in seasonal and daily energy demand. Energy demand peaks during summer weekday afternoons, and hydropower is one of the key energy resources called upon to meet that peak demand. Wide variation in hydropower production, caused by the annual variance in snow and rainfall, is one of the variables the generation system must accommodate. When hydropower production is lower due to dry water years, replacement electricity is provided primarily by in-state natural gas-fired power plants and from increased electricity imports.

The diversity, flexibility and increasing size of California's electricity supply system enable it to readily accommodate the relatively minor electricity production losses associated with the Battle Creek, Trinity River and Klamath projects.

Energy Commission Staff's View on Loss of the Kilarc – Cow Creek Hydropower

At 4.6 MW nameplate capacity, 1.5 MW dependable capacity and 31.1 GWh of production, Kilarc – Cow Creek is the smallest hydropower project reviewed to date by Energy Commission staff. In addition to its small size and energy production levels, the project is run-of-river, meaning that its energy potential above 1.5 MW cannot be stored or counted upon for use during peak summer demand periods. Therefore, its energy resource values are low. Loss of the project's power would have limited effect on electricity resource adequacy.

The Department of Fish and Game and other state and federal resource and water quality agencies view PG&E's decommissioning proposal as an important restoration opportunity for salmonid habitat in the Cow Creek watershed and northern Sacramento River valley. Energy Commission staff concur with this assessment.

⁵ Committee Final Report, 2004 Update to the Integrated Energy Policy Report, California Energy Commission, October 2004, Report No. 100-04-006CTF.

⁶ 2003 Integrated Energy Policy Report, Electricity and Natural Gas Assessment Report, California Energy Commission, October 2003, Report No. 100-03-014F.

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Energy Commission Staff's Views on Synergics' August 11, 2004 Letter
 Synergics Energy Services Company LLC owns and operates the 4.4 MW Olsen Hydroelectric Project (FERC 8361) on Old Cow Creek about one mile below the Kilarc powerhouse on Old Cow Creek. It is our understanding that Synergics seeks to purchase the Kilarc – Cow Creek hydro project, should it be made available by PG&E. The Synergics letter raised numerous concerns about energy supplies and electricity resource adequacy issues in California. Energy Commission staff offer the following perspectives on these issues.

- **High Demands for Electricity:** As indicated in the Synergics letter, California recorded numerous peak demand days during the summer of 2004. According to the California Independent System Operator (CAISO), peak load records were set on five successive days during two separate heat waves in July and August. The record peak of 44,872 MW for the CAISO control area occurred on August 11. While that peak demand was 5.2 percent greater than in 2003, total demand in August 2004 was only 1.7 percent higher than in August 2003.⁷

Peak demand occurs from 50 to 100 hours per year. While dispatchable hydropower plays a critical role in meeting summer peak demands, small run-of-river hydro projects such as Kilarc – Cow Creek cannot be called upon to increase production to help meet such peak demands.

- **Supply Demand Balances and System Reliability:** The Energy Commission's recent *2004 Update to the Integrated Energy Policy Report* (2004 Energy Report) states that California could be at risk of reserve margins falling below 7 percent between 2005 and 2008 if several trends continue: increasing demand, retirement of aging power plants, and transmission congestion. The risk is highest for Southern California, due to increasing population and load growth.

Notwithstanding the importance of all generating facilities in helping to meet California's electricity demand, including facilities like Kilarc – Cow Creek, it is important to recognize the need to examine the contribution of a facility's generating capacity within the broader context of balancing its benefits with its environmental impacts. In the view of Energy Commission staff, the predominant issue of concern for system and regional reliability is a shortage of capacity at peak demand, not a general shortage of baseload capacity or general electricity production, such as produced by small run-of-river hydroelectric projects. Dispatchability of generation resources is also a critical feature in evaluating contributions to meeting peak demand periods.

⁷ California Independent System Operator *Market Analysis Report for July and August 2004*.

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- **Hydropower Environmental Comparisons with Other Resources:**
One perceived benefit of hydropower is that it does not generate air pollutant emissions. This does not mean that hydropower is without environmental impacts. As stated in the *2003 Environmental Performance Report*, hydropower in California contributes to significant, ongoing environmental impacts to rivers and streams.⁸ While air pollutant emissions from thermal generation are an issue of concern, their relative contribution to degraded air quality in key airsheds is small. For example, in the South Coast Air Quality Management District, NO_x emissions from the power generation sector comprised just two percent of total NO_x emissions in 2002.⁹

The Synergics letter states that “Removing existing hydropower capacity from service will ... increase the reliance on thermal, almost exclusively gas-fired, resources. From an environmental perspective the increased building of thermal units and reactivation of retired thermal units will increase overall air pollution, air emissions and greenhouse gases leading to global warming and climate change.”

In the view of Energy Commission staff, decommissioning small energy facilities like Kilarc – Cow Creek would create no measurable difference in air emissions in California, but can significantly contribute to increases in wild salmonid habitats. The claims in the Synergics letter about increases in air pollution and climate change gases from the loss of small increments of hydropower are exaggerated and unsubstantiated.

Improvements in California's air quality are based on a robust regulatory strategy. New power plants are required to offset potential increases in the emissions of critical air pollutants, and existing power plants are required to install air pollutant reduction equipment based on best available retrofit control standards. Total emissions and the average emission rates (e.g., lbs/MWh) of air pollutants from California's generation sector have steadily decreased while energy capacity and energy production have increased. The shift of capacity and energy production from the decommissioning of Kilarc - Cow Creek hydro project would be spread incrementally across new and existing power plants in California and western North America. Any incremental increase in air emissions at an existing fuel-fired unit would only be from historical levels and not beyond permitted emissions levels.

⁸ California Hydropower System: Energy and Environment, Appendix D to the 2003 Environmental Performance Report, California Energy Commission staff report No. 100-03-018, October 2003.

⁹ 2003 Environmental Performance Report, Figure 3-1, California Energy Commission Staff Report No. 100-03-010, August 2003.

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As stated earlier, state policy to meet increasing electricity demands emphasizes energy efficiency, demand side management and development of renewable resources. Should these measures not be sufficient to meet increasing demands, it is most likely that the incremental unit used to replace the lost capacity and energy will be a modern natural gas-fired power plant, which means that global climate change gas emissions will be minimized. Most new power plants are more efficient than the system average, and natural gas-fired power plants emit about 55 to 72 percent of the carbon dioxide per unit of energy input compared to coal or oil-fired power plants, respectively, further ameliorating the potential increases of global climate change gases.

- **FERC's 2001 Order to Increase Hydropower Production by Relaxing Environmental Standards:** The Synergics letter refers to the 2001 FERC Order EL-01-4700 as an example of federal policy guidance to increase hydropower electricity production. State of California agencies worked with FERC and hydropower producers in 2001 to review opportunities to increase hydropower production by temporarily relaxing environmental standards. FERC's theory was that hydropower production could be increased to help alleviate electricity shortages during the California power crisis.

Although California state agencies disagreed with the premise of the FERC order,¹⁰ six proposals were reviewed that would have increased California hydropower production by about 550 MWh per day, and 38 GWh total for the 2001 water year. As shown in the table in Appendix A, daily California demand in summer 2001 was about 700,000 MWh (700 GWh). The increase in electricity production would have constituted about eight hundredths of one percent (0.08 percent), a non-significant and non-measurable change. Ultimately, the Department of Fish and Game recommended approval of two projects under the FERC order, resulting in a daily energy production increase of 90 MWh per day.

In conclusion, we recognize the importance of even small facilities such as the Kilarc – Cow Creek hydroelectric project, with its 1.5 MW of summer dependable capacity, in helping to meet California's electricity demand. We note, however, that the project contributes no peaking power capacity during the high demand periods in summer and that PG&E believes it is economically infeasible to re-license the facilities given the modifications needed to eliminate their significant environmental impacts. While the powerhouses provided important contributions to electricity supplies when built nearly 100 years ago, as did many other hydropower projects of the era, in the current era, the environmental benefits of removing this small facility outweigh its electricity generation benefits.

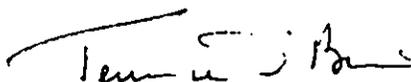
¹⁰ California Resources Agency's Motion To Intervene and Comments on the Federal Energy Regulatory Commission's March 14, 2001 Order Removing Obstacles to Increased Electric Generation and Natural Gas Supply in the Western United States, March 19, 2001.

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We hope this letter responds to the issues raised in your letter of September 9. Staff at the Energy Commission are pleased to share our expertise on electricity issues, and to provide support to staff from the Department of Fish and Game.

If we can provide further assistance, please contact me directly, or contact Jim McKinney of my staff at 916-654-3999, or by e-mail at jmckinne@energy.state.ca.us.

Sincerely

A handwritten signature in black ink, appearing to read "Terrence O'Brien". The signature is written in a cursive style with a long horizontal stroke at the beginning.

TERRENCE O'BRIEN, Deputy Director,
Systems Assessment and Facilities Siting

CC: Distribution List

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APPENDIX A

FERC ORDER EL 01-4700

SUMMARY OF PROPOSED PROJECT MODIFICATIONS EVALUATED BY CALIFORNIA RESOURCE AND WATER QUALITY AGENCIES IN SUMMER 2001

OWNER	FERC NO.	RIVER	PROPOSED POWER INCREASE		INSTREAM FLOW CHANGES		RESULT
			DAILY (MWh)	TOTAL (GWh)	DECREASE (cfs)	% OF MIF	
PG&E	2106	McCloud	97	22.4	30	19%	Deny
PG&E	96	San Joaquin	80	3.7	NA	NA	Approve
PG&E	2105	NF Feather	80	4	80	43%	In Review
Tri-Dam	2975	Stanislaus	283	7.7	60	55%	Deny
Hydropower	6896	Butte Creek	NA	NA	22	53%	Deny
Malacha Hydro	8296	Pit	10.6	0.95	25	50%	Approve
Total - Proposed			550.6	38.7			
Total - Approved			90.6	4.6			

¹ Minimum Instream Flow

CONTRIBUTION OF PROPOSED POWER FROM FERC HYDRO ORDER (550.6 MWh/day) AS % OF CALIFORNIA AVERAGE DAILY DEMAND 1999-2000

MONTH	MWh	% OF DEMAND
June	679,085	0.081
July	700,069	0.078
August	721,990	0.076
September	678,836	0.081
October	635,364	0.086
November	612,671	0.089
December	624,120	0.088

Source: Independent System Operator (ISO) for ISO control area, 1999 and 2000 hourly data

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