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December 1, 2006

Ms. Magalie R. Salas
Secretary
Federal Energy Regulatory Commission
888 First Street NE – Room 1A
Washington, DC 20246

Via E-Filing

RE: Klamath Hydroelectric Project (FERC Project No. 2082). Comments of California Energy Commission Staff on the Draft Environmental Impact Statement and Transmittal of the Report: Economic Modeling of Relicensing and Decommissioning Options for the Klamath Basin Hydroelectric Project

Dear Ms. Salas,

The California Energy Commission (Energy Commission) staff is pleased to provide comments on the Draft Environmental Impact Statement (DEIS) for the Klamath Hydroelectric Project (FERC Project No. 2082) owned by PacifiCorp. As part of our comments, Energy Commission staff also submits a report entitled: *Economic Modeling of Relicensing and Decommissioning Options for the Klamath Basin Hydroelectric Project*[1] into the National Environmental Policy Act (NEPA) record for the relicensing of the Klamath Hydro Project. This Energy Commission Consultant Report has been prepared jointly with the U.S. Department of Interior's Office of Policy Analysis (Interior). Dr. Richard McCann of M.Cubed is lead author of the report and developer of the Klamath Project Alternatives Analysis Model (KPAAM).

These comments supplement comments already filed by Energy Commission staff during the NEPA Scoping Phase (July 22, 2004) and on the applicant's Final License Application (April 26, 2004). The April 26, 2004 filing also included our 2003 staff report entitled: *Preliminary Assessment of Energy Issues Associated with the Klamath Hydroelectric Project.*[2]

California Energy Commission Authorities

The California Energy Commission is California's lead energy agency, and provides information, analysis and policy recommendations on energy issues to the Governor, Legislature, stakeholders and general public. The Energy Commission has exclusive

[1] *Economic Modeling of Relicensing and Decommissioning Options for the Klamath Basin Hydroelectric Project,* California Energy Commission Consultant Report, Publication No.700-2006-010, November 2006.

[2] *Preliminary Assessment of Energy Issues Associated with the Klamath Hydroelectric Project*, California Energy Commission Staff Report, Publication No. 700-03-007, May 2003.

jurisdiction to license all thermal electric generating facilities in California 50 megawatts (MW) and greater. Part of our agency's mandate under the Warren-Alquist Act is to ensure a reliable supply of electricity that is affordable and that minimizes harm to public health and safety, and the environment.[3]

In the Energy Commission's 2003 *Integrated Energy Policy Report* to the Governor – which is our primary statement on energy policy issues for the State of California – the Energy Commission found that:

> "Hydroelectricity has historically played an important role in meeting California's electricity needs. Its low production costs and unique ability to meet critical peak demand have long benefited the state's ratepayers. Some hydroelectric projects, unfortunately, have serious environmental consequences such as significant, ongoing impacts to many California rivers and streams, native salmon and trout populations, and the water quality needed to support sustainable riverine ecosystems. … Since the FERC licensed most of the state's hydroelectric facilities more than 30 years ago, these facilities were not subject to current environmental standards. By 2015, 44 FERC-licensed projects in California will seek renewals, affording the state the rare opportunity to address problems with existing fisheries and aquatic resources. In addition, decommissioning of high environmental impact hydroelectric facilities that supply little power is a possible method of restoring important aquatic habitat."[4]

Summary of Key Findings from the Energy Commission Consultant Report, *Economic Modeling of Relicensing and Decommissioning Options for the Klamath Basin Hydroelectric Project*

Staff from the California Energy Commission and U.S. Department of Interior Office of Policy Analysis collaborated with the energy economics consultant Dr. Richard McCann of M.Cubed to conduct a rigorous economic analysis of two relicensing and decommissioning options for the Klamath Hydro Project. Dr. McCann developed the Klamath Project Alternatives Analysis Model (KPAAM) in order to compare the net present value cost differences between the relicensing and decommissioning options over an assumed 30-year license period.

The Relicensing Condition uses over 160 mitigation measures for instream flow changes, full volitional fish passage past Iron Gate, Copco I and II, and JC Boyle, and water quality measures. The measures were compiled primarily from PacifiCorp's proposal from its Final License Application, and the preliminary mandatory conditions

[3] California Public Resources Code (PRC) Sections 25216.5(d) and 25309.3(c).

[4] *2003 Integrated Energy Policy Report*, California Energy Commission, Docket No. 02-IEP-1, Publication No. 100-03-019, December 2003.

filed by federal agencies under sections 4(e) and 18 of the Federal Power Act. Proxies were used for the water quality measures.

Following are the key findings for the Relicensed Condition:

- Klamath Project generation would be reduced 23 percent to an average annual level of 562,790 MWh.

- The net present value of capital, operations and maintenance costs over a 30-year period in 2005 dollars would range from $230 to $470 million, with a midline estimate of $360.

- Assuming current production costs of $19 per MWh, the mitigation measures would add from $30 to $61 per MWh, with a midline estimate of $47 per MWh. Total production costs for a relicensed Klamath facility would range from $49 to $80 per MWh, with a midline estimate of $66 per MWh.

For the Decommissioning Condition, the Report assumes removal of Boyle, Copco I and II and Iron Gate between 2013 and 2015. The California Coastal Conservancy's recent estimate of $89.6 million is used. The remaining book value of $38.5 million is added.

- Total net present value decommissioning costs range from $77 to $110 million in 2005 dollars, with a midline estimate of $94 million.

Replacement power costs for a 30-year period from 2008 to 2038 are calculated from six publicly available wholesale price forecasts and discounted to constant 2005 dollars. Forecasts are used from PacifiCorp's Avoided Cost filing at the Oregon Public Utilities Commission, the California Public Utilities Commission Market Price Referent, Northwest Power Planning Council's 5th Power Plan, an Oregon Department of Energy proposal for a biomass power plant and demand side management strategy, and two forecasts prepared by Department of Interior economists.

- On a levelized basis for the 30-year period, per MWh replacement costs range from $35.59 per MWh to $79.73 per MWh.

- On a total 30-year basis, net present value replacement power costs range from $74 to $167 million.

Decommissioning and replacement power costs are added across low, midline and high ranges and across the six replacement power cost estimates.

- Total decommissioning and replacement power costs over a 30-year period range from $152 to $277 million. The midline estimate ranges from $168 to $260 million, depending on the replacement power cost estimate that is used.

- Using PacifiCorp's replacement power cost estimate and the midline decommissioning estimate, total Decommissioned Condition costs would be $259 million.

Total net present value costs for the Relicensed and Decommissioned Conditions are compared.

- Decommissioning ranges from $14 million more than relicensing, to $285 less than relicensing.

- For 16 of 18 values, it is less costly to decommission than to relicense.

- Using PacifiCorp's estimate for replacement power, and the midline case, decommissioning would be $101 million less than relicensing.

Energy Commission staff comments on the DEIS are provided in the attachment. In addition to the Consultant Report, several documents cited as references in our comments and the Consultant Report are also attached.

Thank you for the opportunity to provide comments on the DEIS for the Klamath Hydroelectric Project. Please contact Terrence O'Brien, Deputy Director, Energy Facilities Siting Division, at 916-654-3933, or by email at tobrien@energy.state.ca.us, if you have any questions or require further information.

Sincerely,

B.B. BLEVINS
Executive Director

CC: Mr. Michael Chrisman
Secretary, California Resources Agency

Mr. Ryan Broddrick
Executive Director, California Department of Fish and Game

Mr. Tom Howard
Acting Executive Director, California State Water Resources Control Board

Mr. Michael Grainey
Director, Oregon Department of Energy

Mr. Cory Scott
Klamath Relicensing Project Manager, PacifiCorp

Attachments

List of Attachments

- Energy Commission Staff Technical Comments on the FERC DEIS for the Klamath Hydro Project

- California Energy Commission Consultant Report*: Economic Modeling of Relicensing and Decommissioning Options for the Klamath Basin Hydroelectric Project,* CEC Publication No. 700-2006-010, November 2006

- Opening Brief of PacifiCorp in its General Rate Case Proceeding U-901-E before the California Public Utilities Commission, Application 05-11-022, August 28, 2006

- PacifiCorp Update to the 2004 Integrated Resource Plan

- PacifiCorp 2006 Integrated Resource Plan, Capacity Expansion Model Results

ENERGY COMMISSION STAFF TECHNICAL COMMENTS ON THE KLAMATH HYDRO PROJECT DRAFT ENVIRONMENTAL IMPACT STATEMENT

Contribution of the Klamath Hydroelectric Project to Meeting PacifiCorp's Customer Load

The 169 MW nameplate capacity Klamath Project is often portrayed as a peaking hydropower facility, but it is increasingly evident that project operations are highly constrained and that it operates more as a run-of-river facility. Inflows from the Bureau of Reclamation's Irrigation Project are managed for irrigation and environmental purposes, and two Biological Opinions set flow schedules to protect populations of federally protected salmon and other fish species.

The Northwest Power Planning and Conservation Council rates the Klamath Project as having 92 MW of firm winter capacity,[5] while the DEIS sets dependable capacity at 42.7 MW. The project accounts for two percent of PacifiCorp's native generating capacity, and accounted for one percent of total electricity sales in 2004.

In a recent PacifiCorp filing to the California Public Utilities Commission in the utility's general rate case, PacifiCorp describes the project's operational constraints, and how it is dispatched relative to other resources owned by the company:

> "Limitations on PacifiCorp's operational flexibility have become increasingly severe in recent years. For example, current USBR Water Management Policy and Biological Opinion elevation targets for Upper Klamath Lake require a rapid refill of Upper Klamath Lake. … This rapid refill policy eliminates much of PacifiCorp's operating discretion, diminishing the ability to store and release water in Upper Klamath Lake for the benefit of hydro generation."[6]

The filing states further that Klamath Project electricity is primarily used as a low cost resource that is dispatched as available so that generation from higher cost resources can be reduced. Accordingly, its production is valued at lower levels than firm capacity from other sources.

As summarized from the Energy Commission staff's *2003 Preliminary Assessment*, "loss of some or all of [Klamath project] energy would not significantly affect PacifiCorp's ability to provide electricity to its 1.6 million customers" and "would not have a demonstrably significant effect on resource adequacy."

Exhibit H in PacifiCorp's Final License Application to FERC states that the utility would be able to continue serving local customers if project generation were to cease; "local

[5] As listed in "Res 121504 HYLoss.xls" at www.nwcouncil.org

[6] *Opening Brief of PacifiCorp in its General Rate Case Proceeding U-901-E before the California Public Utilities Commission*, Application 05-11-022, August 28, 2006 at p. 31.

transmission improvements totaling $5.6 million could allow replacement power to be brought in from the grid."[7]

PacifiCorp's energy resource planners are developing resource portfolio scenarios to replace the capacity and energy from the Klamath Hydroelectric Project. In a recent update to the Preferred Portfolio in its *2006 Integrated Resource Plan,* "Replace Klamath hydro units with alternative resources" is listed as Scenario Number 16 in its "Capacity Expansion Module Results." [8]

In PacifiCorp's 2006 update to its 2004 IRP, it describes plans to expand its generating capacity by 2,113 MW by 2014 in order to meet load growth. [9] The new capacity would include 1,636 MW of thermal resources (coal and natural gas), 300 MW of renewables (primarily wind) and 177 MW of demand side management. An additional 300 MW of capacity would become available via a transmission line upgrade, making a total of 2,413 MW in new resources available to meet load growth.[10]

Developmental Analysis – Section 4.0

Sections 4.1 to 4.6 summarize a series of cost-benefit calculations for various relicensing and decommissioning alternatives identified by FERC staff. Two of these alternatives are somewhat similar to the scenarios analyzed in the Energy Commission Consultant Report.

Comment on Appropriate Baseline and Project Alternatives

FERC staff assumes in its analysis that the baseline for comparison between alternatives is the current conditions, or No Action alternative. In the Energy Commission Consultant Report, it is assumed that current operations cannot continue because they do not meet legal standards. The appropriate baseline for making economic comparisons among future conditions is the relicensed project with the mitigation measures required by the agencies and FERC. Project alternatives that can also meet the legal requirements for protecting Klamath Basin resources should be compared to this baseline. In the Energy Commission Consultant Report, decommissioning of the four main power dams is analyzed as a project alternative. It is not clear on what basis FERC staff determined that decommissioning Iron Gate and Copco I is a feasible NEPA alternative, while decommissioning all four main power

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[7] "If generation were to cease at the Klamath Project, PacifiCorp would still be able to service its local customers. Non-Project substations would remain available to supply power throughout the Project area.

The local transmission system has been designed to service customers using power from the Project. If the Project ceased operations or if operations were drastically altered, transmission improvement projects would be needed to provide reliable load service to Klamath basin customers. Such projects are forecasted as follows: (1) Install two additional capacitors in the Project area; (2) Install a transformer at Copco, and (3) Complete reconductoring of two 230-kilovolt (kV) lines. The estimated conceptual-level cost to complete these projects is about $5,600,000."

(PacifiCorp. *Final License Application,* Exhibit H, Page 2-7, February 2004.)

[8] PacifiCorp, 2006 Update to Integrated Resource Plan, August 2006 Summary of Capacity Expansion Model Results.

[9] PacifiCorp, *2004 Integrated Resource Plan Update*, p. 34.

[10] *Ibid.*

dams is not fully analyzed in the DEIS. The Energy Commission Consultant Report documents that decommissioning all four power dams is a feasible and less costly alternative that relicensing for most of the assumptions used in the study.

Comment on Economic Effects of the Relicensing Conditions on the Klamath Hydro Project

The FERC Staff Alternative with Mandatory Conditions would reduce generation to 497,931 MWh and would raise production costs to $99.24 per MWh. Using the FERC staff assumption of $41 per MWh as the value of the power, total net revenue on a per MWh basis would be negative $59.70.

The Energy Commission Consultant Report finds that the Relicensed Condition would reduce generation to 562,790 MWh with a production cost of $66 per MWh over an assumed 30-year license period. Total net present value relicensing mitigation costs could range from $230 to $470 million, with a midline estimate of $360 million. Compared to the simple levelized cost figure of $66.10 per MWh that PacifiCorp cited as the cost of avoided power in its 2005 Avoided Cost Filing to the Oregon Public Utilities Commission, production costs for a relicensed Klamath facility may be about equal to avoided resource costs. The total relicensing production costs calculated in the Energy Commission Consultant Report range from $49 per MWh to $80 per MWh.

As explained in Chapter 3 and Appendix B of the Energy Commission Consultant Report, a total of about 160 mitigation measures were selected on a conservative basis from the measures proposed by PacifiCorp in its Final License Application and the preliminary mandatory conditions filed by federal agencies on March 27, 2006 under section 4(e) and 18 of the Federal Power Act. Proxies are used for the Clean Water Act measures, which have not yet been determined.

It is not clear from the DEIS which mitigation measures were included in FERC's calculations, however, the general trend is similar for both studies: relicensing the Klamath Hydro Project with the preliminary agency mandatory conditions would substantially increase production costs and raise them equivalent to or higher than avoided resource costs. The range of final production costs from $49 to $80 per MWh identified in the Energy Commission Consultant Report are comparable to firm contract prices for natural gas-fired resources and wind resources. In other words, PacifiCorp ratepayers would be able to benefit economically from procuring firm resources from other sources rather paying to relicense the Klamath Project.