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**United States Department of the Interior**

**FISH AND WILDLIFE SERVICE**  
Sacramento Fish and Wildlife Office  
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In reply refer to:

Mr. Arthur Hagood, Vice President  
Synergics Energy Services  
191 Main Street  
Annapolis, Maryland 21401

Subject: U.S. Fish and Wildlife Service Comments on the Initial Information Package of the New License Application for the Kilarc-Cow Creek Hydroelectric Project, Federal Energy Regulatory Commission (FERC) Project No. 606, Shasta County, California

022

Dear Mr. Hagood:

The U.S. Fish and Wildlife Service (Service) received a copy of the Initial Information Package (IIP) filed by Synergics Energy Services (SES) on behalf of Cow Creek Hydro, LLC (Licensee) in July 2005. Representatives of the Service also attended the joint agency and public meetings hosted by SES in mid-September 2005. Based on the information provided in the IIP and at the recent meetings, we offer the following comments.

**Chronology**

As SES indicates in their notice of joint agency and public meetings, they intend to build upon the work performed by Pacific Gas and Electric Co. (PG&E) in the watershed over the past few years. As a result, the recent history of relicensing activities involving the Kilarc-Cow Project (Project) is integral to future consultation. Below is a summary of several relevant dates and actions over the last 4 years.

- In Spring 2002, PG&E initiated first stage consultation with the Service and other interested parties as part of a Traditional Licensing Process (TLP) for the Project.
- By Summer 2003, PG&E had prepared and implemented several study plans to gather information necessary to support an application for new license. However, several important study plans involving fundamental issues such as hydrology and aquatic habitat were not complete. The Service submitted a letter, dated January 30, 2003, outlining our concerns with the adequacy of certain proposed studies and recommending additional study plan revisions (see Attachment A).



Mr. Hagood

2

- In early 2004, there was a significant shift in the consultation process with PG&E initiating exploratory discussions on a potential decommissioning alternative for the Project.
- In December 2004, the California Energy Commission (CEC) filed a response letter to the California Department of Fish and Game (DFG) with FERC (see Attachment B) regarding the energy issues associated with the proposal to decommission the Project. The conclusion of the CEC found that it would be economically better to decommission the Project because: (1) the cost of relicensing may not be economically viable or recoverable given the small amount of generation available, and (2) the type of power produced by the Project was insignificant when compared to the energy market. This was because the Project, having no significant storage, could not provide the more valuable peaking-power. Finally, the CEC agreed with the State and Federal resource agencies in that the environmental benefits of decommissioning the Project far outweighed the need for the Project's power and would serve as a good environmental restoration project.
- In March 2005, PG&E, the Service, DFG, State Water Resources Control Board, National Marine Fisheries Service (NMFS), National Park Service, Trout Unlimited, and Friends of the River signed an agreement that stated PG&E would not seek a new license (See Attachment C). In the agreement, PG&E referred to their extensive analysis of the complex and competing resource issues associated with the Project. Based on this analysis, PG&E was committed to supporting decommissioning as a viable and cost effective alternative to relicensing the Project. An attachment to the agreement outlined a good faith effort by the signatories to scope out the issues and desired conditions that should be addressed in a future decommissioning plan for the Project. The Service reiterates our support of the agreement and PG&E's commitment to implement a responsible and reasonable decommissioning plan if approved by FERC.
- In April 2005, the FERC issued a notice soliciting applications for the Project.
- In June 2005, the Redding City Council elected not to file a notice of intent for the Project. The City of Redding decision was based on a staff report finding that adjustment of the instream flow requirements to levels commensurate with other recent FERC orders would significantly reduce the Project's power production. The anticipated power production of a newly licensed Project would be unable to cover the costs of upgrading, maintaining and operating the facilities, even in a high cost power market. The staff report concluded that initiating a relicensing process would be "the first step in a multi-year effort costing anywhere from several hundred thousand dollars to several million dollars without a guaranteed positive outcome at the end of the process." A copy of the City of Redding's Electrical Utility staff report is included as Attachment D.
- In June 2005, in contrast to the decisions made by PG&E and the City of Redding, SES gave notice of their intent to file an application within 18 months under the TLP.

Mr. Hagood

3

### **Service Goals**

In an August 18, 2005, letter, SES requested that agencies discuss resource goals and issues. Given our work of the last year and half with PG&E and other interested parties, our preference is implementation of the decommissioning alternative described in the 2005 Agreement. Our goals for the decommissioning alternative are included in the attachment to the agreement. Therefore, we refer SES to these documents and emphasize our expectation that the agreement and attachment constitute the benchmark for any future licensee that decides to abandon the Project. Considering the economic decisions of both PG&E and the City of Redding, the Service considers it very possible that any new licensee would eventually determine that the Project is not economically viable. At such time, we would request the FERC order the new licensee to implement a surrender license which meets the desired conditions identified by the agreement signatories in early 2005.

If SES chooses to pursue the relicensing process, the Service will participate so as to ensure the protection, mitigation, and enhancement of fish and wildlife resources including Special Status species, associated with the Project.

Pursuant to the requirements of the Federal Endangered Species Act (ESA), the Service and NMFS are responsible for reviewing a proposed project within its jurisdiction and must determine whether any listed endangered or threatened species may be present in the project area and determine whether the proposed project will have a potentially significant impact on such species. Spring-run Chinook salmon have been documented in the Project area and are listed as threatened under both the State and Federal Endangered Species Acts.

As part of its responsibilities under the Fish and Wildlife Coordination Act and the ESA, the Service participated in the development of four planning documents: the Upper Sacramento River Fisheries and Riparian Habitat Management Plan (1989), the Central Valley Salmon and Steelhead Restoration and Enhancement Plan (1990), the Restoring Central Valley Streams: A Plan for Action (1993) and the Steelhead Restoration and Management Plan for California (1996). In an October 5, 1998, letter, the FERC accepted these four documents as comprehensive plans for the Sacramento River system downstream of Shasta Dam under section 10(a)(2)(A) of the Federal Power Act. The project footprint includes land and water resources which are part of the Service's comprehensive effort to maintain and restore anadromous fish populations in California's Central Valley. In addition to the State and Federal threatened spring-run Chinook Salmon, Central Valley fall-run Chinook Salmon, a State species of special concern and Federal candidate species, and steelhead trout, a species listed as threatened under the Federal ESA (16 U.S. Code Section 1530 et seq.) have been documented in the Project area. As a result, the most recent update to the comprehensive plans, the 2001 Restoration Plan for the Service's Anadromous Fish Restoration Program includes the Project area within the watersheds targeted for high priority restoration actions.

The Project's FERC boundary includes two major branches of Cow Creek with about 4 miles of stream bypassed in both Old and South Cow Creeks. The portion of South Cow Creek within the Project boundary is managed for anadromous and resident fish including fall-run and spring-run

Mr. Hagood

4

Chinook salmon, steelhead, and rainbow trout. Whitmore Falls is located about 7 miles downstream of the Project on Old Cow Creek and had been considered as a partial barrier to fish passage. The Service has mandatory authority to prescribe fish passage prescriptions for the Project under the FPA. Based on the Service's assessment of Whitmore Falls and our consultation with other resource agencies, Whitmore Falls is not an absolute barrier to anadromous fish. Contrary to the characterization on page 36 of the IIP, Service fishery biologists and fish passage specialists consider Whitmore Falls passable for steelhead trout under both normal and wet water year flow conditions. The current extent of anadromy in Old Cow Creek is unknown at this time. Until such time that appropriate data indicate otherwise, the Service will take the conservative approach of managing the portion of Old Cow Creek within the Project boundary for both anadromous and resident fish including steelhead and rainbow trout. Further, given the apparent lack of absolute physical barriers between known steelhead habitat in Old Cow Creek and the Project, regardless of fish survey results, the Service intends to view the area as restorable steelhead habitat for the foreseeable future.

The Service also provided the original licensee, PG&E, with comments on the only public Study Report released so far, "The Habitat Assessment for the California Red-legged Frog (CRLF)," in a letter dated June 10, 2004 (see Attachment E). The Service's main point in that comment letter was that future (new) licensees, such as SES/Cow Hydro LLC, would have to complete the CRLF assessments and surveys that were designed in the original Study Plans. PG&E had only assessed 11 of 55 total sites and the Service would require that the remaining 44 sites be evaluated per the Service's 1997 Guidance on site assessment and field surveys for the CRLF.

### **Specific Resource Issues and Recommended Studies**

The August 18, 2005, SES letter requested that agencies identify any additional studies or information considered necessary to support an application for the Project. SES also requested explanations for why additional studies are "more appropriate than the studies already agreed upon during PG&E's relicensing process." This statement fails to acknowledge several studies that PG&E and the agencies did not reach agreement on; namely the stream flow monitoring study, the aquatic habitat study and the instream flow study. Again we refer to the Service's January 30, 2003, letter to Ms. Angela Risdon, who was at that time PG&E's Kilarc-Cow Relicensing Project Manager.

The Service also notes that the IIP is a summary prepared by SES of information compiled by PG&E, much of which is not available for our review. As such, the IIP is not a stand alone document. We understand that SES is still in the process of obtaining data from PG&E and completing studies. This will undoubtedly create some discontinuity and delay in sharing information. However, in several instances the IIP presents data that is limited in scope and/or not tied to Project operations. Based on the IIP, it is not clear to us to what extent SES intends to develop and disseminate additional data. There are also conclusions within the IIP that erroneously suggest a comprehensive set of data has been submitted and analyzed. In an effort to facilitate development of a more complete Second Stage Consultation document, the Service will highlight several significant areas that require additional information.

Mr. Hagood

5

The Existing Water Use Section (section 4.2.2) provides a brief narrative including a few summary statistics (e.g. monthly average maximums and average minimums), and refers to Figure 4.2-3 as depicting the 20 and 80 percentiles (page 20). However, we cannot find Figure 4.2-3 in the IIP, and the few isolated quantities do not provide a meaningful basis for interpretation. Similarly, the Existing Water Quality Section (Section 4.2.3) references a table of multiple parameters (page 23), but this table is not within the IIP. The Temperature Section on page 24 presents over a dozen water temperature values in a narrative format from locations throughout the watershed without a table/graph to facilitate interpretation. As best we can determine, the narrative does not provide insight into the relationship of water temperature to Project operations (e.g. flow). These data gaps involve important "existing" water quality conditions. The conclusion on page 25: "the relatively short diversions are not believed to have negative impacts on water quality in the Project Area" is not supported by information within the IIP and appears to be conjecture. The IIP should highlight the areas lacking documentation, propose methods to collect information and refrain from making unsupported statements about Project impacts.

The first paragraph of the Fish Abundance and Distribution in the Project Area Section (Section 4.4.2.1) states, in part; "there are many passage barriers in the Cow Creek drainage caused by falls or steep streambed conditions which limit the extent of anadromous fish" (page 35). However, there is no accompanying description of the location or dimensions of these barriers and steep conditions. We anticipate that SES's #10 proposed study, Passage Barrier Survey will provide the data necessary to put this statement into context and allow assessment of Project impacts. Until the relevant information is collected and presented, a statement that barriers exist within the watershed is too vague to be helpful in identifying Project impacts or designing appropriate mitigation measures. We would add that the statement "fish distribution and abundance are also affected by the low summer flow and high water temperatures typical of the Cow Creek drainage" (page 35) is most applicable to elevations below 1,000 feet. As the Project Area occurs from 820 to 3,940 feet, the Service considers the majority of the aquatic habitat within the Project to be suitable for trout and salmon unless SES provides additional site specific information to the contrary.

The fish resources section provides some estimates of fish densities in Old Cow Creek downstream of the bypass reach, but does not include information on the fish resources within the bypass reach. Beyond fish density, the Service recommends length frequency and condition factor be examined in both flow and bypassed reaches to quantify impacts on fish resources.

Determining appropriate instream flows will be an important element of future consultation with the resource agencies. In the Project Impacts Section, the IIP notes past studies in the watershed such as the "Waters Method" in South Cow from 1978 and an "instream flow assessment" from a portion of Old Cow upstream of the Project 1985. Actual methods are not presented, nor any results such as Weighted Useable Area curves, just broad statements such as the general frequency of spill events under current operations. Identification of the impacts of the Project on the aquatic resources of both Old Cow and South Cow Creeks will require a rigorous analysis of the relationship of flow to habitat. The analysis should be based on site specific field data obtained at flows representative of the unimpaired hydrograph. The Service's minimum

Mr. Hagood

6

requirements of an acceptable instream flow study for this Project are outlined in the additional study portion of this letter.

The Project Impacts on Stream Temperature Section echoes the IIP's Existing Conditions presentation. Limited data from isolated times and places is summarized without graphs, tables or clear correlation with Project operations. The IIP notes that water temperature data collected during "lower flow releases" in the South Cow reach are "too high to provide suitable rearing habitat for steelhead or resident trout" (page 47). Such statements require much greater detail and context to enable the Service to assist in developing appropriate mitigation measures.

The Project Impacts on Passage/Entrainment Section references an evaluation from 1984 that showed that the South Cow facilities provided adequate passage and protection for anadromous fish. Actual methods and data from the study performed over 20 years ago are not provided in support of this statement. Similar to the field of instream flow assessment, salmonid fishway criteria have changed dramatically in the past two decades and this issue should be revisited using modern technologies.

Beyond the PG&E studies referenced in the IIP, the Service recommends that SES conduct additional field work and analyses in the areas of 1) hydrology and aquatic habitat, 2) water quality and 3) fish passage. In the following paragraphs we provide the relevant authority and rationale for these recommendations. We also describe appropriate methodologies for addressing each resource area.

#### Hydrology – Aquatic Habitat

The bypassed reaches of the Project are not currently gauged. Existing flow data is limited to the amount which is diverted and the amount required to be bypassed. In the case of the Old Cow (or Kilarc) diversion, the main canal can handle up to 52 cubic feet per second (cfs). Over the past 20 years, the canal diverted an average of 32 cfs from Old Cow Creek as measured downstream of the current required bypass release of 2 cfs. The amount released back to the creek is less than 6 percent of the average amount diverted for power production. In the case of the South Cow Creek Diversion, the main canal can handle 50 cfs and over the past 20 years, diverted an average of 32 cfs, again measured downstream of the bypass release. The bypass requirement on South Cow Creek, through the fish ladder, varies from 2 to 4 cfs (depending on water year type) or from 6 to 11 percent of the average amount diverted for power production.

The scientific rationale for the current bypass requirements is not provided in the IIP. Given our current understanding of the ecological processes tied to hydrology, the Service cannot concur that flows of 2 to 4 cfs are protective of fish and wildlife resources. Flows influence a wide range of fish habitat conditions including thermal refugia in critically hot months, the availability of edge habitat for newly emerged fry, and the timing of spawning activities. Hydrology also influences the composition of riparian vegetation and streambed substrate. The Service believes that given the magnitude of the Project's diversions, such bypass flows have had and will continue to have significant impacts on the fish and wildlife aquatic resources of Old and South Cow Creeks. The Service requests that SES establish the relationship between Project operations

Mr. Hagood

7

that influence stream hydrology and downstream aquatic and riparian habitat conditions (e.g., water quality, fish distribution and abundance, fluvial geomorphology, and vegetation distribution and abundance) utilizing current ecological principles and theory. An understanding of the relationships between flow and the natural resources will be an essential component of any new license application, which must include a bypass flow regime adequate to protect, maintain, and enhance the aquatic and riparian resources of Old and South Cow creeks.

The first step in determining an adequate bypass flow regime is synthesizing an unimpaired hydrograph to provide the ecological foundation for management decisions. The Service supports implementing a flow regime with seasonal variations patterned after the unimpaired hydrograph to help restore normative habitat conditions in a regulated system (see Stanford, et al., 1996). Determining the unimpaired hydrograph is a challenging task on this system, given the lack of gauges in bypassed channels and the added complexity of an adjudicated system. Actual flow measurements should be taken. Such field data will be essential to calibrate estimates of flow from existing records. Year-round flow measurements are particularly relevant in the bypassed reaches since, from a hydrologic perspective, these are both the most heavily impacted portions of the Project and currently the least quantified.

Specifically, the Service recommends installation of a U.S. Geological Survey gauge in the bypassed reach of South Cow Creek as soon as feasible. It is our understanding that the gradient and sediment load of Old Cow Creek preclude installation of a permanent gauge in that reach. The Service would also accept weekly use of hand held flow meters for as much of the 2005-06 water year as can be monitored without exposing field staff to hazardous conditions. Flow should also be measured at stations that bracket all significant diversions (such as the two project canals) and inputs (such as North Canyon and Mill creeks and powerhouse discharges). Beyond the two locations proposed in PG&E's May 2003 Study Plan document (the Kilarc powerhouse on Old Cow Creek and upstream of the diversion dam on South Cow Creek), we recommend that flow monitoring stations also be placed upstream of the Kilarc Diversion Dam (but downstream of the confluence with North Canyon Creek on Old Cow Creek) and downstream of Mill Creek (but upstream of the confluence with Hooten Gulch in South Cow Creek). Information from these added stations will facilitate extrapolation from the synthesized hydrology as well as providing a means of verifying estimated flows.

Once created, the unimpaired hydrograph will provide a basis for determining the impacts of the Project on the hydrology of Old and South Cow creeks as well as informing additional studies such as instream flow, aquatic habitat, and water quality. To facilitate the first objective of understanding hydrologic Project impacts, the basic Project hydrology should be presented as the daily average flow (both unimpaired and actual) and segregated into the three standard water year classifications of wet, normal, and dry. Water years should be classified with an unimpaired flow of 125 percent or greater equaling a "wet" year; an unimpaired flow greater than 75 percent and less than 125 percent equaling a "normal" year; and an unimpaired flow of 75 percent or less equaling a "dry" year. To help understand the Project's effects on the magnitude, duration, and timing of flow, the Service recommends utilization of the "Indicators of Hydrologic Alterations" (IHA) method developed by Brian Richter of The Nature Conservancy. The IHA program should be run using the synthesized unimpaired and actual hydrology.

Mr. Hagood

8

The synthesized unimpaired hydrograph should provide the range of flows to be addressed in the proposed "Physical Habitat Simulation" (PHABSIM) of the instream flow study. The Service recommends that the PHABSIM study include collection of at least two sets of velocity data. While a middle calibration flow may be used to reliably predict habitat available at lower flows, we question the reliability of using such flow data to extrapolate habitat estimates upwards.

The transect selection protocol for the instream flow study is not provided in the IIP but it should be representative of the variability both between and within different mesohabitat types (e.g., run, riffle, pool) to be statistically valid. This will require habitat mapping of the Project Area. The most useful habitat information would be acquired during moderate unimpaired flows. Based on the preliminary flow estimates provided at the back of PG&E's May 2003 document, the average unimpaired low flow during the past 50 years in September and October ranged between 25 and 35 cubic feet per second (cfs) in Old Cow Creek and between 55 and 65 cfs in South Cow Creek. Under current operations, the base flows in the bypass reaches are between 2 and 4 cfs. While flows of less than 5 cfs facilitate stream access and observation of substrate, we do not expect mapping conducted under such extreme flow conditions to provide representative habitat types. The Service recommends that aquatic habitat mapping be performed at flows of at least 30 cfs in the Old Cow bypass reach and at least 50 cfs in the South Cow Creek bypass reach (i.e., at the lower end of the unimpaired hydrograph) in order to capture a more representative assessment of habitat type distribution. Any data gaps resulting from constraints created by moderate flows, such as impaired water clarity or researcher safety issues, could later be addressed with a supplemental mapping effort at the base flow.

The instream flow study should model available habitat for the two resident trout species and "anadromous salmonids" on both Old Cow and South Cow Creek. As presented previously, until appropriate fish sampling data reasonably establish the absence of steelhead in the Project area, the Service considers Old Cow Creek to be potential steelhead habitat. Given their special status (i.e., federally threatened), Central Valley steelhead trout habitat requirements will be an important factor in future flow management decisions not only in the currently occupied Project habitat (i.e., South Cow Creek) but also in the potential/restorable Project habitat (i.e., Old Cow Creek). Therefore, the Service reiterates our recommendation for modeling weighted usable area for anadromous salmonids in all portions of the Project, not just South Cow Creek.

### Water Quality

Based on the information provided in the IIP, weekly water temperature maximums within the Project boundaries on Old Cow Creek can exceed 20° Celsius (C), the limit of acceptable temperatures for rainbow trout and well above the preferred range for steelhead (Bjornn, T.C., and Reiser, D.W., 1991, and Raleigh, R.F., et al., 1984). Water temperatures in South Cow Creek are even more compromised with average summer water temperatures exceeding the acceptable range for trout and maximums exceeding the lethal threshold for steelhead (24°C). Given the range of temperatures documented in both drainages over the past several years, determination of Project impacts on summertime water temperature will be essential.

Mr. Hagood

9

To implement a water temperature monitoring program, the Service recommends temperature recorders be spaced at least every mile along the bypass reaches to provide an estimated rate of change in temperature per mile as well as absolute values. To be able to isolate Project impacts, it will be necessary to monitor water temperatures immediately above Project diversions as well as below the mixing zones created by Project discharges.

Once SES establishes the existing rate of change in water temperature and isolates the impacts of the various diversions and tributaries, we recommend combining the data with the hydraulic information to be collected to allow modeling of the daily water temperature minima, maxima, and means under a range of flows. The range of flows modeled should include, at a minimum, both those provided under current operations as well as those that would exist without the Project in order to be able to quantify Project impacts on water temperature.

### Fish Passage

The Service has mandatory authority to prescribe fish passage prescriptions for the Project under the FPA. Whitmore Falls is a natural partial fish passage barrier located approximately 7 miles downstream of the Project on Old Cow Creek. Contrary to the characterization on page 36 of the IIP, Service fishery biologists and fish passage specialists consider Whitmore Falls passable for steelhead trout under both normal and wet water year flow conditions. The current extent of anadromy in Old Cow Creek is unknown at this time. Until such time that appropriate data indicate otherwise, the Service will take the conservative approach of managing the portion of Old Cow Creek within the Project boundary for both anadromous and resident fish including steelhead and rainbow trout. Further, given the apparent lack of absolute physical barriers between known steelhead habitat in Old Cow Creek and the Project, regardless of fish survey results, the Service intends to view the area as restorable steelhead habitat for the foreseeable future.

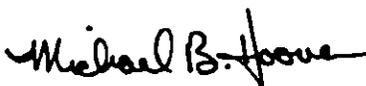
As mentioned previously, PG&E's Passage Barrier Study should provide an inventory and catalog of potential fish passage barriers within the bypass reaches to compliment the general aquatic habitat study. However, the geographic scope of the proposed study is too narrow. This Project provides fish passage facilities at only one of the five diversions, namely the South Cow Creek diversion. The other four diversions represent potentially significant barriers and need to be evaluated for purposes of designing appropriate mitigation measures. The effectiveness of the South Cow ladder installed in 1984 has not been reevaluated since the initial study. The current effectiveness of the passage facilities at the South Cow Creek diversion should be assessed for both anadromous and resident species under a range of flows, including when the diversion is just beginning to spill as well as during the summertime when elevated water temperatures may combine with low flow to impede passage.

Mr. Hagood

10

The Service appreciates the opportunity to comment on the studies necessary for relicensing of the Kilarc-Cow Creek Hydroelectric Project. If you have any questions regarding the above comments and recommendations, please contact William E. Foster at the above address or telephone (916) 414-6528.

Sincerely,

  
David L. Harlow  
Acting Field Supervisor

**Attachments**

cc:

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Mr. Hagood

11

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Mr. Hagood

12

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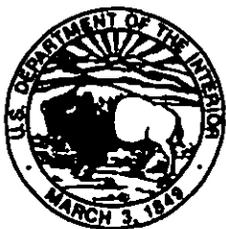
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### References

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## **ATTACHMENT A**

**U.S. Fish and Wildlife Service. January 30, 2005.  
Comment Letter on First Stage Consultation Package  
Kilarc-Cow Hydroelectric Project, FERC Project No. 606**



## United States Department of the Interior

FISH AND WILDLIFE SERVICE  
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January 30, 2003

Angela Risdon  
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Dear Ms. Risdon:

Subject: Kilarc-Cow Hydroelectric Project, FERC No. 606, Shasta County,  
California - Comments on the First Stage Consultation Package

This responds to the Pacific Gas and Electric Company's (PG&E) June 24, 2002, letter to the U.S. Fish and Wildlife Service (Service) which transmitted the First Stage Consultation Package (FSCP) in preparation for filing an application for new license for the Kilarc-Cow Hydroelectric Project (Project). Comments were due back to PG&E (Applicant) on or before October 7, 2002. For various reasons, PG&E extended the comment period until November 6, 2002. The Energy Planning and Instream Flow Branch of the Sacramento Fish and Wildlife Office has recently undergone several staff changes and no comments were sent in response to the FSCP by the November 6, 2002 deadline. The Service realizes that the deadline for submitting comments has passed; however, PG&E has agreed to accept Service comments submitted after the extended deadline. We appreciate this opportunity to comment on the FSCP.

### Introductory Comments on the 1<sup>st</sup> Stage Consultation Process

The Kilarc-Cow Project is a multi-dam hydroelectric project encompassing the Old Cow Creek and South Cow Creek Watersheds, including Mill Creek and North and South Canyon Creeks. There is existing data from previously completed studies, as well as new concepts about the management of river systems, that support the development of additional studies to describe and evaluate resources within the project affected area.

The purpose of these comments is to define data needs and study requirements so that sufficient information is provided in the Final Application for new License (FAL) to foster the development of Service recommendations that will adequately protect, mitigate, and enhance fish and wildlife populations and overall ecosystem health. Specifically, the Service desires to: (1)

Ms. Risdon

2

provide better technical information for sound resource decisions, (2) reduce time necessary for settling disputes, (3) more effectively address stakeholder needs, and (4) provide greater stakeholder satisfaction.

The Service has not been able to fully participate in collaborative meetings; however, we wish to emphasize that the collaborative process is valuable in that it helps us identify topics of resource concern, evaluate the usefulness of previous studies and existing data, and develop effective final study recommendations.

### General Comments

The FSCP provides a good overview of project facilities and operations, the surrounding area affected by the project, and the fish and wildlife resources that occur within the project area. While most of our major areas of concern are addressed in the document, we note that study design deficiencies, as studies are described in the study plan, may result in inadequate studies and inconclusive study results. Ultimately, the data provided from the studies must be sufficient to satisfy the Service's needs to make determinations about the protection of general fish and wildlife resources, federally listed threatened and endangered species, species of concern, and the Commission's evidentiary record to support its licensing determination.

The Service's participation in licensing this project is aimed at representing our: 1) procedural interests to ensure applicant and agency compliance with the Fish and Wildlife Coordination Act, Endangered Species Act (ESA), Federal Power Act, National Environmental Policy Act and other Service legal mandates and authorities, and 2) our substantive mission-related interests; for example, conservation of fish and wildlife populations and their habitat, restoration of ecosystem functions, structure and composition, and fulfilling trust responsibilities for anadromous fish, migratory waterfowl, wetlands, riparian habitat, and threatened and endangered species.

We plan to use an ecosystem approach for evaluating the effects of licensing this hydroelectric project. Our goal is to protect, maintain and, if necessary, restore the stream reaches within the Project affected area to a self-sustaining fully functional ecosystem with structure that supports all life stages of naturally occurring species, recognizing that all physical, chemical and biological components are interrelated. We will examine the impacts of ongoing project operations and maintenance, and evaluate potential mitigation and enhancement measures.

The area surrounding and within the project boundaries is comprised of a variety of fish and wildlife, their habitats, recreational areas, project features and cultural resources. To facilitate understanding and to address a relatively complex variety of data needs, we divide the ecosystem into compartments, also known as metrics, and examine measurable compartmental indicators. General compartments can include but are not limited to: Project operation, water quality, geomorphology, sediment transport and deposition, historic unimpaired and existing hydrology, riparian condition, wildlife, fisheries and aquatic health, and total habitat area.

Ms. Risdon

3

### Specific Comments

**Proposed Studies and Methodologies:** The following comments are in regard to the study plans listed in the FSCP. The Service understands that all studies, as proposed, are to be completed in 2003.

#### *Hydrology. Section 6.1.1*

The Service's objective for the hydrologic attribute is to develop an instream flow regime that is patterned after the unimpaired hydrograph with similar patterns of flow magnitude, duration, frequency, timing and rates of change. By improving components of the hydrograph currently impaired by the Projects, we believe the essential ecosystem attributes of the watershed can be conserved, enhanced, and restored. Therefore, the Service requires "impaired" and "unimpaired" hydrologic information to assess the effects of Project developments and operations on the hydrology in riverine bypass reaches. The effects of tributaries and diversions are important to the entire project area influencing the flow and temperature regimes in the mainstem. Therefore, seasonal tributary and canal flows should be measured. The locations of gages where flow data has been or is to be taken should be displayed on a map to facilitate interpretation. The Service recommends that the Applicant categorize various water supply years (e.g. wet, normal, dry, critically dry, etc.) to allow for a more refined incremental approach to water supply allocation, thus reducing the potential for adverse consequences to aquatic habitat and biota.

#### *Water Quality. Section 6.1.2*

Water Quality measurements in the Project reaches, canals, and reservoirs can be used to assess project impacts on the ecosystem, compliance with the State Water Resources Control Board's (SWRCB) Water Quality Control Plan for the Sacramento River and San Joaquin River Basins (Basin Plan) criteria and beneficial use identification. These measurements serve as chemical indicators that assist the Service in accomplishing its goal of making sound biological decisions that will protect, mitigate, and enhance water quality conditions for fish and wildlife species that inhabit or utilize waters in Project-affected riverine reaches. Meaningful results depend on appropriate seasonal timing, location and frequency of data collection. The PG&E has proposed a one-year water quality study in 2003 under existing release conditions with two samples (once during winter months and once in the summer months) to be taken at each of six locations in Old Cow Creek and six locations in South Cow Creek. While winter and summer months may represent very general differences in flow conditions; as proposed, it is likely that data from this study will provide little information regarding the chemical patterns (including constituent maxima and minima) or overall Project effects on water quality in Project-affected riverine reaches.

The Service recommends the frequency of monitoring be increased to once per month, except for in critical summer months (July-September) when sampling should take place every two weeks, with the exception of trace metals scans which should be taken monthly. We concur with most of the specific constituents to be measured, but we also recommend that barium, cadmium, cyanide,

Ms. Risdon

4

and silver concentrations be measured (and included in Table 6.1-1 of the FSCP) since specific maximum concentrations are listed in the SWRCB's Basin Plan for the Sacramento River. The specific sampling locations were not clear in the FSCP; therefore, no specific comments can be made concerning these sites. The Service does expect, however, that sampling locations will be chosen to best represent the water quality in the entire Project area and the potential impacts of Project operations and facilities. For example, samples should be taken both immediately upstream and downstream of dams, tributaries, and powerhouse tailraces.

For in-situ water quality measurements (pH, dissolved oxygen, air and water temperature, conductivity, and turbidity), a single sample taken in the summer months will not be sufficient. During the critical summer months (July-September), it is particularly important that water temperatures, pH and dissolved oxygen (DO) levels do not deviate beyond limits imposed by the SWRCB's Basin Plan for cold freshwater habitat. This would require that bi-daily or even hourly measurements be taken during these critical periods. The hourly recorders proposed for temperature monitoring in section 6.1.3 are intended to satisfy the need for temperature monitoring during critical periods; however, the effects of Project developments and operations on the daily maxima and minima of the remaining aforementioned measurements should also be assessed during these critical periods. A map indicating the precise locations of all sample sites in relation to natural and constructed physical features including dams, diversions, powerhouses, tributaries, etc. will aid the interpretation of the data. The Applicant should consult with resource agencies to coordinate more meaningful water quality studies.

#### *Water Temperature. Section 6.1.3*

Water temperature is critically important in determining abundance and distribution of aquatic biota because it greatly affects metabolic and growth rates. It also appreciably affects other water quality variables, such as dissolved oxygen concentrations, which are biologically significant. The Service's objective for water quality is to develop an instream flow regime that provides water quality conditions at all times of the year that (at minimum) meet SWRCB standards as prescribed in the Basin Plan. According to the Basin Plan, the Project area is to be managed as cold freshwater habitat and as both warm and cold freshwater spawning habitat. The Service believes that ensuring Basin Plan temperature criteria are met is the first step toward accomplishing its goal of protecting, mitigating, and enhancing fish and wildlife populations that inhabit or utilize Project-affected waters. The Service requires "impaired" and "unimpaired" temperature information to assess the effects of Project developments and operations on temperature regimes in all Project-affected aquatic habitats. Water temperature regimes are characterized by temperature magnitude, duration, frequency, seasonal timing, daily ranges, and rate of change. To determine whether Basin Plan criteria are met, the Applicant plans to monitor water temperatures during the months of July, August, and September in 2003. The Service maintains that meaningful results depend on appropriate seasonal timing, location and frequency of data collection. The Service is generally pleased that the Applicant has developed a temperature monitoring plan. We recommend that temperatures be measured both immediately upstream and downstream of all dams, powerhouses, and tributaries to better elucidate the potential effects that Project developments and operations may have on instream temperatures

Ms. Risdon

5

and whether water temperatures are within the limits required by the SWRCB's Basin Plan. The Service also suggests that temperatures be plotted at a fine scale (e.g. hourly) to aid the interpretation of the biological significance of these data.

#### *Sediment. Section 6.1.4*

The Applicant plans to conduct a qualitative study of the sediment supply and transport characteristics in the Project-affected riverine reaches. While a qualitative description may be somewhat informative, quantitative information that is flow-related is the most useful in developing effective flow recommendations. Therefore, we recommend that sediment supply and transport be studied quantitatively and that a flow relationship be developed describing the flows necessary to transport fines, sands, and gravels in riverine reaches. The study should specifically assess how project developments and operations affect the supply and transport of sediments in riverine bypass reaches.

Smaller magnitude flood pulse events and freshets, although infrequent, are expected and important elements of the unimpaired hydrographs of California rivers and streams. The containment of such pulse flows by dams and diversions are likely to result in changes to micro-scale in-channel sediment storage dynamics. When changes in storage dynamics are combined with a decrease in sediment supply (also due to dams), textural changes in stream bed composition are likely to occur. These changes may adversely affect aquatic species (e.g. salmonids and macroinvertebrates) that depend on sediments with specific qualities during various life stages.

#### *Aquatic Habitat Mapping. Section 6.3.1*

The Applicant plans to study and map aquatic habitats. The Service generally agrees with the Applicant's proposed substrate classifications; however, we recommend that "gravels" (2-64 mm sediments) be categorized into specific spawning-sized gravels with dimensions and characteristics suitable for rainbow trout, steelhead, and Chinook salmon spawning (e.g. 0.25-1, 1-3, and 1-4 in. gravels, respectively). This additional classification will facilitate the interpretation of aquatic habitat data and the development of effective protection, mitigation, and enhancement (PM&E) measures for salmonid species.

#### *Passage Barrier Identification. Section 6.3.2*

The applicant plans to survey and map potential fish passage barriers in the riverine bypass reaches. Along with these data, the Service requests that the applicant provide specific definitions (and rationale) for "low," "medium," and "high" flows as well as for "partial" and "complete" barriers to fish passage. As presented in the FSCP, the Applicant's Passage Barrier Survey plan is too general for the Service to comment on its sufficiency. For example, statements such as "size will be evaluated" are too vague for evaluation. The Applicant should consult with the National Marine Fisheries Service (NMFS), Service and other appropriate

Ms. Risdon

6

resource agencies to develop effective methods of measuring and validating the severity of each fish passage barrier under a variety of flow conditions.

#### *Instream Flow Study (PHABSIM). Section 6.3.3*

The Applicant plans to conduct Instream Flow Incremental Methodology studies within riverine bypass reaches. IFIM is one analytical tool for making instream flow recommendations. Since on-site development of habitat suitability curves (HSCs) provides for more accurate predictions, the Service suggests that the Applicant develop site-specific HSCs for each flow relationship to be modeled. As presented in the FSCP, IFIM studies are only intended to develop flow-habitat relationships for fish and macroinvertebrates. Investigation and subsequent integration of multiple ecosystem attribute relationships can be an extremely useful tool for making sound biological decisions for complex ecosystems. An integrated instream flow study should not be limited to flow-fish or flow-macroinvertebrate habitat relationships, but should also assess other flow-related relationships such as: 1) stage-discharge relationships for riparian inundation and amphibian breeding area; 2) flow-sediment relationships; 3) flow-temperature relationships; and 4) flow-recreation relationships. In addition, other riverine resources or attributes for which a flow-based relationship could be developed and used to make effective instream flow recommendations should be examined by technical working groups and reported as part of the instream flow study. This type of integration will assist the resource agencies and other stakeholders in jointly developing a flow regime that will effectively protect, mitigate, and enhance the riverine ecosystem and its functions.

#### *Fish Population Studies. Section 6.3.4*

The Applicant's fish sampling methods as proposed in the FSCP are generally acceptable; however, the Service has some suggestions to improve the usefulness of the acquired data. First, sampling methods should be standardized so that data can be compared and contrasted between sample sites. For example, the Applicant should not measure "total length or fork length" for each fish, but should measure both lengths so the data can easily be compared between sample sites or a regression can be run to convert fork length measurements to total lengths for analysis. Also, the Applicant should calculate and analyze the condition factor (an indicator of health) of each juvenile and older salmonid collected. The FSCP does not specifically indicate the locations where fish will be sampled. The Service suggests that fish be sampled in riverine reaches both immediately above and below dams, tributaries, tailraces, and in the Project canals, forebays and lakes. The methods used should be standardized (when feasible) so that population estimates can be compared between sampling sites. For example, snorkel surveys should be conducted prior to electrofishing in Old Cow Creek and North and South Canyon Creeks so that comparisons can be made between fish populations in these reaches as well as those where anadromous salmonids may be present and no electrofishing is to be conducted (e.g. South Cow Creek). The Service does not concur with the fish subsampling methods as proposed in the FSCP. First, 10 fish per 25-mm class may be too few to obtain a good representation of the sample. Instead, 20 fish within each size class would be more informative and the methods of subsampling should produce a random subsample, representative of the original sample. Also,

Ms. Risdon

7

we expect that the total number of fish collected within each size class will be counted and recorded so that a weighted length-frequency distribution can be developed to characterize the population structure. The Applicant should also provide a list of all native and non-native species that may potentially occur in the Project-affected area along with a list of all species collected and observed during 2003 fish surveys.

As part of the fish population study, the Applicant plans to make "general observations" of habitat and physical conditions in the sampling stations including water temperature, specific conductance, DO, substrate type, depth, riparian conditions, and the presence of woody debris and cover. The Service recommends that the Applicant make "specific observations" that are quantitative and descriptive so that it can develop site-specific HSCs that will improve the accuracy of IFIM fish habitat modeling. The Applicant should consult with the Service if it needs further clarification regarding the information required for the development of effective site-specific HSCs.

*Entrainment. Sections 6.3.5 and 6.3.7.1*

The Service intends to exercise its authority to prescribe fish protection facilities (for salmonid species) pursuant to Section 18 of the Federal Power Act by reserving that authority when the Application for New License is ready for environmental analysis. Any future decision to invoke this prescription authority will in part depend on the adequacy of information and analysis developed during the study period. Section 6.3.5 of the FSCP is designed to help describe the potential fish entrainment through the Kilarc powerhouse. Section 6.3.7.1 is intended to describe the efficacy of fish screens that are currently in place on South Cow Creek. We are pleased that studies are to be conducted and analysis made to determine if there are significant project impacts on fish populations due to entrainment at the project facilities. The extent of information needed and final specific study designs should be developed through consultation with resource agencies.

*Project Effect on Macroinvertebrates. Section 6.3.6*

One measure of stream health, as an integral part of the riverine ecosystem, is the state of its macroinvertebrate communities. The Service is pleased that the Applicant plans to evaluate potential habitat for this metric using the PHABSIM methodology. While flow-habitat models are useful in developing instream flow requirements, they can only complement other studies yielding information regarding the distributions and abundances of fish and other aquatic biota. Also, on-site development of HSCs results in more accurate predictions, especially for benthic macroinvertebrates since community composition varies from system to system (Gore *et al.*, 2001). Therefore, the Service recommends that PG&E conduct macroinvertebrate surveys to determine the composition and abundances of macroinvertebrate communities throughout the Project-affected area and to develop site-specific macroinvertebrate HSCs. Developing a flow-biomass relationship for macroinvertebrates may also prove useful for determining the effect

Ms. Risdon

8

various flows have on local populations. The details for macroinvertebrate studies should be determined through coordination and consensus of the Applicant, California Department of Fish and Game (CDFG), NMFS and the Service.

*Sensitive Aquatic Species. Section 6.3.7*

The FSCP only indicates fall-run Chinook salmon and steelhead as sensitive aquatic species that occur in the Project-affected area. The Applicant should also evaluate potential habitat for other sensitive species that may occur in the Project-affected area, especially spring-run Chinook salmon. Fish population studies, fish passage barrier studies, and IFIM studies will aid in the development of PM&E measures for sensitive aquatic species found in the Project-affected area. The Applicant should consult with the CDFG, NMFS, and Service concerning any sensitive aquatic species issues.

*Threatened and Endangered Species*

The Service has provided guidance to the PG&E during this 1<sup>st</sup> Stage Consultation process regarding information and analysis that will be necessary to ensure compliance with the Endangered Species Act of 1973, as amended, at a meeting held on May 3, 2002 at ENTRIX, Inc. The Service provided PG&E with a species list. The meeting included the development of studies and survey protocols for appropriate species of interest to the Service. We also provided PG&E with additional information since that meeting regarding the threatened northern spotted owl (*Strix occidentalis caurina*) and the threatened bald eagle (*Haliaeetus leucocephalus*).

*Wildlife Studies. Section 6.4.*

6.4.1 and 6.4.2 Common and special-status wildlife surveys

Bald eagle and peregrine falcon surveys are to be conducted in the immediate project vicinity and are to be conducted a minimum of two times during the 2003 raptor breeding season. Bald eagle surveys should be concentrated at areas where the bald eagles have been observed perching in the past, (near the Kilarc Forebay), and conducted in the early morning hours when bald eagles are known to be foraging. PG&E should conduct these surveys at a frequency greater than two times throughout the breeding season. A foraging survey protocol should be provided to the Service for review.

Targeted special-status wildlife sites are to be determined for each species by habitat evaluations based on vegetation mapping (Section 6.2.1). The Service requires sufficient information on the location of suitable habitats for special-status species and the presence of these species in order to analyze the direct and indirect effects of Project developments and operations, thus facilitating the development of effective PM&E measures.

Some of the wildlife studies proposed in the FSCP for the targeted special-status species are fairly general in description, such as for the California spotted owl, willow flycatcher, California

Ms. Risdon

9

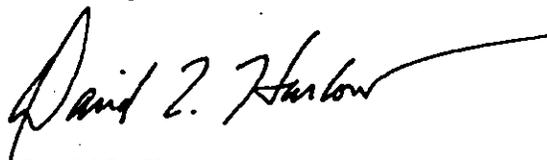
thrasher, ring-tail cat, and several species of bats. Further descriptions of survey methods, along with the frequency and timing of surveys, should be made clear so the proposed study plans can be assessed prior to their inception. Additionally, the Pacific fisher should be added to this list.

#### 6.4.5 Valley Elderberry Longhorn Beetle

At the May 3, 2002 meeting held at ENTRIX, Inc. with PG&E, it was agreed that elderberry (*Sambucus* spp) surveys would be conducted in conjunction with the special-status plant species surveys. It was also agreed that surveys would occur within 100 feet of project facilities and where maintenance activities occur, and 25 feet elsewhere, including the diverted reaches.

If you have any questions regarding our comments on threatened and endangered species please contact Kathy Brown at (916) 414-6600. For other general fish and wildlife issues, please contact Deborah Giglio at (916) 414-6600.

Sincerely,



David L. Harlow  
Acting Field Supervisor

Enclosure

cc:  
Service List

### Literature Cited

Gore, J. A., J. B. Layzer and J. Mead. 2001. Macroinvertebrate instream flow studies after 20 years: a role in stream management and restoration. *Regul. Rivers: Res. Mgmt.* 17: 527-542.

## **ATTACHMENT B**

**California Energy Commission (CEC). December 21, 2004  
Letter to DFG, filed with FERC. CEC's Review of Energy Issues Associated with the  
Proposal to Decommission the Kilarc-Cow Hydroelectric Project (FERC No. 606)**

## CALIFORNIA ENERGY COMMISSION

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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.

Mr. Robert Koch  
December 21, 2004  
Page 2

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).<sup>1</sup>

#### ***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.<sup>2</sup> 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.<sup>3</sup>

**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

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

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

<sup>3</sup> Personal Communication, Art Hagood, Synergics Energy Services LLC, September 29, 2004.

Mr. Robert Koch  
 December 21, 2004  
 Page 3

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.<sup>4</sup> 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.

<sup>4</sup> 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.

Mr. Robert Koch  
December 21, 2004  
Page 4

The Energy Commission has raised concerns about potential near-term peaking capacity shortages in California, especially in Southern California.<sup>5</sup> 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.<sup>6</sup> 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 Killarc – Cow Creek Hydropower**

At 4.6 MW nameplate capacity, 1.5 MW dependable capacity and 31.1 GWh of production, Killarc – 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.

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

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

Mr. Robert Koch  
December 21, 2004  
Page 5

**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.<sup>7</sup>

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.

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<sup>7</sup> California Independent System Operator *Market Analysis Report for July and August 2004*.

Mr. Robert Koch  
December 21, 2004  
Page 6

- **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.<sup>8</sup> 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, NOx emissions from the power generation sector comprised just two percent of total NOx emissions in 2002.<sup>9</sup>

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.

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<sup>8</sup> 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.

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

Mr. Robert Koch  
December 21, 2004  
Page 7

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,<sup>10</sup> 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.

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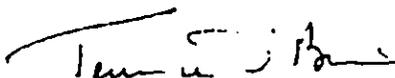
<sup>10</sup> California Resources Agency's Motion To Intervene and Comments on the Federal Energy Regulatory Commission's March 14, 2001 Order Removing Obstacles to Increased Electric Generation and Natural Gas Supply in the Western United States, March 19, 2001.

Mr. Robert Koch  
December 21, 2004  
Page 8

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](mailto:jmckinne@energy.state.ca.us).

Sincerely

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

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

CC: Distribution List

Mr. Robert Koch  
 December 21, 2004  
 Page 9

**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)	MIN <sup>1</sup> 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
<b>Total - Proposed</b>			<b>550.6</b>	<b>38.7</b>			
<b>Total - Approved</b>			<b>80.6</b>	<b>4.6</b>			

<sup>1</sup> 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	612,871	0.089
December	624,120	0.088

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

Mr. Robert Koch  
December 21, 2004  
Page 10

### DISTRIBUTION LIST

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Department of Fish and Game  
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Messrs. Mark Stopher, Randal C.  
Benthin, Steve Turek, Mike Berry,  
Steve Baumgartner, and Annie Manji  
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Redding, CA 96001

Mr. Dan Castelberry  
Deputy Director  
California Bay-Delta Authority  
650 Capital Mall, 5<sup>th</sup> Floor  
Sacramento, CA 95814

## **ATTACHMENT C**

Final Decommissioning Agreement. November 16, 2004.  
Kilarc-Cow Hydroelectric Project (FERC No. 606).  
(Between the Parties and PG&E).

**FINAL AGREEMENT**

Date: 11/16/04

**Kilarc-Cow Creek Project Agreement**

This Agreement regarding the Kilarc-Cow Creek Project ("Agreement") is signed as of \_\_\_\_\_, 2004 ("Effective Date") by and among Pacific Gas & Electric Company, a California corporation (the "Company"), [list names of signing parties with their appropriate abbreviations]. The signatories to this Agreement are referred to individually as a "Party" or collectively as the "Parties".

**PROJECT BACKGROUND**

A. The Kilarc-Cow Creek Project is licensed by the Federal Energy Regulatory Commission ("FERC") as FERC Project No. 606 (the "Project"). The Project is located in Shasta County, California along Old Cow Creek and South Cow Creek. The Project consists of Kilarc Powerhouse and Cow Creek Powerhouse along with related canals, penstocks, forebays and other structures.

B. The current FERC license for the Project expires on March 27, 2007. For the last two years the Company has been following the process prescribed in the Federal Power Act to obtain a new license. The Company's application for a new license is due to FERC by March 27, 2005. The Parties to this Agreement have been participants in the Company's relicensing process for the Project.

C. Due to the complex and competing resource issues associated with the Project, in early 2004 the Company decided to explore decommissioning as an alternative to relicensing the Project. The Company requested that the Parties participate in evaluating actions that would be necessary should the Project be decommissioned. This led to the Parties identifying a list of subjects and desired conditions to be addressed should the Project be decommissioned. The subjects and desired conditions are listed in Attachment A, which is incorporated herein by reference.

D. The Company's evaluation of the cost of decommissioning the Project based on the subjects and desired conditions in Attachment A versus operating the Project under a new license with the anticipated conditions, show that the Project would be a high cost source of energy and would not be competitive with other generation sources. This evaluation was only possible once the relicensing work had proceeded to the point where potential conditions of a new license could be identified by the Parties.

E. Based on the Parties' consensus regarding the subjects and desired conditions in Attachment A, the Company is willing to stop work on relicensing the Project and not file a new license application. The Company is also willing to support decommissioning the Project based on its determination that decommissioning is a viable and cost-effective alternative to relicensing.

F. By not filing an application for new license by the statutory deadline of March 27, 2005, the Company will lose its incumbent licensee status and forgo its opportunity to relicense the Project. Under 18 C.F.R. §16.18, FERC is authorized to issue annual licenses to the Company pending determination of the future status of the Project. The United States may seek to take over the Project, or other entities may apply for the Project license within a time period set by FERC under 18 C.F.R. §16.25. Other entities may also apply for the Project license prior to March 27, 2005. If no timely applications are received, FERC will order the Company to prepare and file a license surrender application in compliance with FERC's rules that provides for the disposition of Project facilities.

## AGREEMENT

### 1. RELICENSING

1.1 The Company agrees not to file an application for new license for the Project. The other Parties support this action.

1.2 Entities other than the Company may seek to acquire a new license for the Project following the FERC prescribed process. The Parties accept that if an entity other than the Company indicates an interest in licensing the Project, the Company will need to provide such entities with Project information as required, including the results of relicensing studies performed to date. Additionally, the Parties accept that in such circumstances the Company will not hinder the efforts of such entities to obtain a license for the Project.

1.3 The Company will continue to operate the Project under the terms and conditions of the existing license until it expires on March 27, 2007, and then on annual licenses issued by FERC under 18 C.F.R. §16.18 until the Project is transferred to another licensee, or is decommissioned. The Company recognizes that during the period of annual license, if any, the Parties may work together, or individually, or with FERC to establish mutually acceptable environmental measures that improve water quality and/or conditions for state and federally protected species. The Parties recognize that FERC may incorporate additional or revised interim conditions in annual licenses if necessary and practical to limit adverse impacts on the environment under 18 C.F.R. §16.18(d). Any Company application for license surrender filed pursuant to 18 C.F.R. §16.25 shall provide for disposition of the Project facilities.

### 2. GOVERNMENTAL PARTIES RETAIN AUTHORITIES

2.1 Notwithstanding this Agreement, the Parties which are governmental agencies retain all of their authorities and mandates related to the Project, the Project-affected resources and the Company's ongoing relicensing or surrender of license proceeding, or to any new licensing proceeding that may be initiated for this Project. Such authorities and mandates are not diminished in any way by these Parties entering into this Agreement. Entering into this Agreement is not in any manner a pre-decisional act or commitment by any of the governmental agencies as to the disposition of the Project assets or water rights.

2.2 Notwithstanding this Agreement, the Parties that are non-governmental organizations retain all of their rights related to the Project, the Project-affected resources and the Company's ongoing relicensing proceeding, or to any new licensing proceeding that may be initiated for this Project. Such rights are not diminished in any way by these Parties entering into this Agreement. Entering into this Agreement is not in any manner a pre-decisional act or commitment by any of the non-governmental organizations as to the disposition of the Kilarc-Cow Creek Project assets or water rights.

### 3. DECOMMISSIONING

3.1 The Company commits to supporting decommissioning the Project based on decommissioning being the viable and cost effective alternative to relicensing.

3.2 If FERC authorizes or orders the Company to decommission the Project, upon a final order from FERC ending Project power operations, the Company intends to transfer its appropriative water rights held for operation of the Project ("water rights") to a resource agency or other entity that: 1) agrees to use the water rights to protect, preserve, and/or enhance aquatic resources, as authorized by applicable laws and regulations, such as Water Code section 1707; and 2) is acceptable to the Parties. Additionally, prior to the transferring its water rights, the Company will work in good faith with other non-Parties to resolve potential water rights issues with the goal of having the water rights used to preserve, protect and/or enhance aquatic resources.

3.3 In the event the Company files or is ordered by FERC to file a surrender application and a decommissioning plan, the subjects and desired conditions in Attachment A represent the Parties' good faith effort at this time to identify the subjects that would need to be addressed and the desired condition of each of these subjects after decommissioning of the Project. It is the Parties' intent that the surrender application and decommissioning plan will define these subjects and desired conditions more fully and identify the actions to be taken by which the desired conditions will be met. If a consensus agreement cannot be reached, the dissenting Party will submit written documentation in the form of a letter to the other Parties explaining the dissenting Party's reasons for not agreeing with the other Parties. This letter will become part of the decommissioning record.

3.4 The subjects and desired conditions in Attachment A are based on limited information and subject to change by consensus of the Parties based on additional information that may become available or compliance with applicable laws and regulations. Consensus means that all Parties involved in a decision can "live with" that decision even if the decision is not exactly as each Party would desire.

3.5 Additional subjects and desired conditions may be added to this Agreement by a consensus decision-making process among the Parties.

3.6 If the Company files, or is ordered by FERC to file a surrender application and a decommissioning plan, the Parties will work collaboratively to develop the surrender schedule and decommissioning plan. The decommissioning plan will identify and refine the actions

necessary to address the subjects and desired conditions in Attachment A following decommissioning of the Project and will be consistent with legal requirements and obligations to FERC, and other applicable state and federal laws. Decisions on actions to address the subjects and desired conditions in Attachment A will be made by consensus of all Parties involved in the decommissioning plan's development.

3.7 To the extent permissible, the Parties will support the Company in the necessary regulatory processes to decommission the Project, including the Company's efforts before the CPUC to recover the costs the Company incurs to decommission the Project in accordance with Attachment A.

#### **4. NEW PARTIES**

Additional governmental agencies, groups and individuals may become Parties to this Agreement.

#### **5. COMMUNICATIONS TO THE PUBLIC**

This Agreement and the work that may be needed to assist the Company and the Parties in developing a detailed decommissioning proposal are open to members of the public.

#### **6. TERM OF AGREEMENT**

6.1 This Agreement shall remain in effect until the later of 1) March 27, 2007; 2) the date the Project license is transferred to a new licensee; or 3) completion of the decommissioning of the Project under a FERC order and the final order from FERC ending the Company's responsibilities as the licensee of the Project, unless this Agreement is terminated sooner pursuant to the terms of this Agreement.

6.2 Each Party has the option of withdrawing from this Agreement by providing written notice to the other Parties explaining the reasons for the proposed withdrawal and affording the other Parties thirty (30) calendar days to consult and seek alternatives to such withdrawal. All Parties agree they will not arbitrarily withdraw from the Agreement and will make a good faith effort to consult with the other Parties to resolve any dispute prior to withdrawal.

6.3 Withdrawal by the Company terminates this Agreement.

6.4 This Agreement can be terminated with unanimous agreement of the Parties.

#### **7. MISCELLANEOUS PROVISIONS**

7.1 There are no intended third-party beneficiaries of this Agreement.

7.2 This Agreement does not create any rights, interests, claims or causes of action at law or in equity for any Party against another Party, or for any non-party against any Party.

7.3 Each person signing this Agreement on behalf of a Party represents that she or he is authorized to sign the Agreement on the Party's behalf.

7.4 This Agreement does not make any Party the agent or representative of any other Party, and this Agreement does not create any partnership or venture between or among the Parties.

7.5 This Agreement may be signed in counterparts by the Parties, and the signed counterparts taken together shall constitute one complete Agreement. A facsimile signature by a Party on a counterpart of this Agreement is as valid as the original signature.

**Attachment A: Kilarc-Cow Creek Project Decommissioning Agreement Subjects and Desired Conditions**

In Witness Whereof, the Parties have signed this Agreement as of the date first written above.  
**[Signature blocks]**

## **ATTACHMENT D**

City of Redding's Electrical Utility Staff Report.  
June 10, 2005.  
Kilarc-Cow Hydroelectric Project (FERC No. 606).

ITEM NO.	4-5 (b)
MEETING DATE	6/21/05
APPROVED BY	
DEPARTMENT DIRECTOR	 James C. Feider
CITY MANAGER	 Michael Warren

CITY OF REDDING

**REPORT TO CITY COUNCIL**

**DATE:** June 10, 2005

**CODE:** E-120-050

**FROM:** Electric Utility Director

**SUBJECT:** Request to decline filing of Notice of Intent for Kilarc-Cow Creek Hydroelectric Project, FERC Project No. 606

***Recommendation***

Redding Electric Utility (REU) staff recommends that the City Council decline to file a notice of intent in the Federal Energy Regulatory Commission (FERC) licensing process for the Kilarc-Cow Creek Hydroelectric Project.

***Background***

The Kilarc-Cow Creek Hydroelectric Project (Kilarc Project) currently owned and operated by Pacific Gas & Electric (PG&E) is located approximately 30 miles east of Redding near Whitmore. The Kilarc Project totals 5 megawatts (MW) of electric capacity and consists of two powerhouses and associated canals, penstocks and forbays. The Kilarc powerhouse on Old Cow Creek was built in 1904 and has a capacity of 3.2 MW. The Cow Creek powerhouse on South Cow Creek was built in 1907 and has a capacity of 1.8 MW. The average annual energy output of this project is about 30 million kWhours or approximately 4% of REU's energy requirements.

PG&E's current FERC operating license is set to expire on March 27, 2007. Due to the involved process to obtain a license renewal, PG&E in early 2001 began working with various stakeholders and resource agencies.<sup>1</sup> Through that process (costing several hundreds of thousands of dollars), it became clear to PG&E that new license provisions would result in the project no longer being an economic source of power. Of the many new or enhanced license provisions, a couple of these provisions stand out as to why operating the project beyond the term of the current license did not make sense. First, the amount of water mandated to stay in the natural channels of the Old Cow Creek and South Cow Creek to support fish habitat ranges from 6 to 10% of the natural flow depending on the season of the year and/or how wet or dry the water year has been. The expected new license requirements imposed by the resource agencies would be higher by a factor of 10 leaving

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<sup>1</sup> The resource agencies include the U.S. Department of Commerce National Oceanic and Atmospheric Administration (NOAA), National Marine Fisheries Service, State Water Resources Control Board (SWRCB), California Department of Fish and Game (CDFG), and the United States Fish and Wildlife Service (USFWS).

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very little water for power generation. Such a large increase in water staying in the steam beds and not going through the diversion canals to the power houses would easily by itself render the project uneconomical

Simply put, the Kilarc Project under those operating conditions would not produce enough kilowatt hours of energy to cover the costs of upgrading, maintaining and operating the facilities even in California's high cost power market. On top of that, many physical attributes of the project were expected to have to be modified. For example, a fish ladder built in 1980 on South Cow Creek appears to not provide adequate conditions for meaningful fish passage. The facilities in Old Cow Creek have no fish ladder at all and therefore significant capital costs would be incurred by the project to correct these deficiencies. Please see the attached letter from the National Marine Fisheries Service to PG&E regarding the above-mentioned issue and other project enhancements expected to be part of the relicensing process.

Aside from these direct impact issues mentioned above, the Kilarc Project over the last 100 years has seen a number of conflicts over water uses. The Cow Creek Watershed serves agricultural, domestic, and power production needs. These conflicts resulted in the adjudication of water rights on Little Cow Creek in 1932, Oak Run Creek in 1932, Clover Creek in 1937, and the Old Cow/South Cow Creek system in 1969. The adjudication of Little Cow, Oak Run, and Clover Creeks identified 116, 23, and 26 water rights, respectively. The adjudication of water rights on the Old/South Cow Creek System established 116 water rights on these streams. Any new license requirements would probably have some impact on how all these water rights would be satisfied. Water rights issues can be highly contentious and could involve significant potential litigation.

As a result of all these issues, in early 2005 PG&E and the various resource agencies crafted an agreement which could lead to the decommissioning of the Kilarc Project. Upon decommissioning the agreement designated that all of PG&E's Kilarc Project water rights to be used for providing additional habitat for the federal listed spring run Chinook salmon and steelhead trout.

### ***Issue***

Should the City Council authorize REU to take the first step by issuing a Notice of Intent in the FERC relicensing process? The filing deadline for the Notice of Intent is July 7, 2005.

### ***Alternatives; Implications of Alternatives***

The City Council has the following options:

1. Direct REU to file a Notice of Intent. The implication of this alternative is that it believes it is in the best interest of the City Council to enter into the FERC relicensing process for the Kilarc Project.

- 
2. Do not direct REU to file a Notice of Intent. The implication of this alternative is that the City Council does not believe it is in the best interest of the City to enter into the FERC relicensing process.

***Fiscal Impact***

Filing a Notice of Intent in the FERC relicensing process for the Kilarc Project would be the first step in a multi-year effort costing anywhere from several hundred thousand dollars to several million dollars without a guaranteed positive outcome at the end of the process. REU is actively working on an on-going basis other power supply projects. For example, the recent purchase of wind based energy through Redding's participation in the Modesto-Santa Clara-Redding (MSR) agreement with PPM. Exploration efforts such as the Kilarc Project are not part of the FY06-07 budget, therefore appropriate adjustments would have to be made to existing budget priorities.

***Conclusions and Recommendation***

The Kilarc Project has provided many years of cost effective power to PG&E customers. However, with the environmental and operating restrictions expected under a new license, this would no longer be the case. That coupled with the uncertain outcome of a lengthy FERC licensing process and the water use complexities for such a small portion of REU's resource portfolio, REU staff recommends that the City Council does not direct REU to file a Notice of Intent in the FERC relicensing process.

FERC 606  
File 025.39



UNITED STATES DEPARTMENT OF COMMERCE  
National Oceanic and Atmospheric Administration  
NATIONAL MARINE FISHERIES SERVICE

Southwest Region  
777 Sonoma Avenue, Room 325  
Santa Rosa, California 95404

In response reply to:  
May 5, 2003 150304SWR03SR8649-SF

<b>POWER GENERATION</b>	
MAY 09 2003	
FERC NO.	ORIG: <i>AR</i>
FILE NO.	CC:
TRACK NO.	
ACTION:	

Angela Risdon  
245 Market Street, Room 1123B  
San Francisco, California 94177

Dear Ms. Risdon:

This concerns relicensing of the Kilarc-Cow Hydroelectric Project (FERC No.606). The National Marine Fisheries Service (NOAA Fisheries) appreciate the opportunity to provide comments on your "Traditional" relicensing proceeding. On March 20, 2003, we participated in a site visit to inspect certain project facilities and to conduct an informal barrier survey at an unnamed waterfall upstream of the Kilarc powerhouse on Cow Creek. This letter provides our conclusions regarding the barrier survey and documents other issues raised during the meeting that potentially affect anadromous salmonids. Some of these issues can be addressed this season, while others will require additional study and feasibility analysis. Issues discussed include the following:

- 1) Completing habitat mapping on South Cow Creek.
- 2) Gaging flows on Old Cow Creek.
- 3) Screening Kilarc diversion intake.
- 4) Moving the fish water release on the Kilarc diversion closer to the point of diversion to minimize length of diverted reach.
- 5) Lining the 11-mile long Kilarc power canal to minimize seepage.
- 6) Excluding fish, stalked in the Kilarc forebay, from moving through the Kilarc spill channel to Old Cow Creek.
- 7) Upgrading screens and ladders at South Creek diversion to meet current standards including a monitoring system for alerting operators when screens or ladders become clogged.
- 8) Determining the habitat quality in Mill Creek and South Cow Creek Canal to inform decisions regarding the need for minimum flows, fish exclusion, and/or habitat enhancement.
- 9) Providing fish passage on Old Cow Creek.
- 10) Determining the relative benefit of preventing fish from moving upstream past the Abbott Diversion.

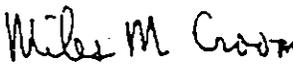


Regarding the barrier survey, the unnamed waterfall is located approximately 2.3 miles upstream of Kilarc powerhouse. The geology in this area is unstable with loosely or unconsolidated volcanic material and shale overlaying bedrock. The lowest point on the waterfall occurred at a side chute, approximately 5.5-feet above the base of the waterfall. The depth of the plunge pool (potential jump-pool) at the base of this chute was difficult to gage because low flows in effect during the survey would not be indicative of up-stream migration flows and because the bed-rock pool was filled with loose shale. At the time of the inspection, a fallen tree was partially blocking and deflecting flows in the chute, thus reducing scour. Accordingly, once the tree breaks loose and moves past the falls, flows and consequent scour would likely increase and deepen the plunge pool. In conclusion, we do not believe this waterfall to be an absolute barrier to steelhead migration.

We look forward to the next opportunity for an agency meeting. It is our hope that during the next meeting the above issues can be discussed in more detail and the need for additional study or other actions agreed to in a timely fashion. This is necessary to ensure that short term measures to reduce or avoid impacts to salmon and steelhead are in place this season and the steps necessary to finalize study plans or long-term measures are actively pursued.

My staff stands by to assist you in preparing study plans for meeting your obligations under the Endangered Species Act, Magnuson-Stevens Fishery Conservation and Management Act and Federal Power Act. If you have questions concerning these comments, please contact Mr. Steve Edmondson at (707) 575-6080.

Sincerely,



Miles M. Croom  
Northern California Supervisor  
Habitat Conservation Division

- cc: Secretary, FERC, ES-1 (8-copies)
- Randal S. Livingston, Director, Power Generation, PG&E Company
- M. Accituno, NOAA Fisheries
- Howard Brown, NOAA Fisheries
- Eric Theiss, NOAA Fisheries
- David K. White, NOAA Fisheries

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## **ATTACHMENT E**

U.S. Fish and Wildlife Service. June 10, 2004. Letter sent to PG&E.  
"Request for Review of the Habitat Assessment for the California Red-legged Frog,  
Kilarc-Cow Project, FERC No. 606, Shasta County, California."



# United States Department of the Interior

FISH AND WILDLIFE SERVICE  
Sacramento Fish and Wildlife Office  
2800 Cottage Way, Room W-2605  
Sacramento, California 95825-1846



In reply refer to:  
1-1-04-I-1535

JUN 10 2004

Steve Nevares  
Project Manager  
Pacific Gas and Electric Company  
Mail Code N11D  
Post Office Box 770000  
San Francisco, California 94177

Subject: Request for Review of the Habitat Assessment for the California Red-legged Frog, Kilarc-Cow Project, FERC No. 606, Shasta County, California

Dear Mr. Nevares:

This is in response to your letter dated April 20, 2004, requesting review and comments on *Habitat Assessment for the California Red-legged Frog, Kilarc-Cow Project, FERC No. 606* (habitat assessment), in Shasta County, California. Your letter was received in our office on April 23, 2004. Pacific Gas and Electric Company (PG&E) owns and operates the federally licensed Kilarc-Cow Creek project. The project is currently under the relicensing process, with the current license expiring in March 2007.

At issue are impacts to the California red-legged frog (*Rana aurora draytonii*), which is listed as threatened under the Endangered Species Act of 1973, as amended (Act). Your habitat assessment concluded that *"No habitat deemed likely to support CRLF (California red-legged frog) spawning activity was found within the Project Area, but several ponds on private land within the Site Assessment may be suitable. Potential "summer habitat" exists along Hooten Gulch within 100 meters of its confluence with South Cow Creek, but only if confirmed spawning habitat exists within one mile of Hooten Gulch. Any future protocol surveys for CRLFs should be concentrated in these areas"*. Also stated in your habitat assessment was *"Time and accessibility constraints made complete ground Site Assessment of the entire Site Assessment Area or Project Area impossible, so three representative reaches of Old Cow Creek and two reaches of South Cow Creek were selected for ground Site Assessments based on their similarity to the remaining portions of the creeks from the helicopter surveys"*. According to the habitat assessment, 55 sites were identified in the helicopter survey as having suitable habitat because of water and sunlight, and only 11 of these sites were assessed on the ground because they appeared to be a representative sample, or because they appeared to offer more elements to support California red-legged frogs besides water and sunlight.

Attachment 2



Mr. Steve Nevares

2

In your letter dated April 20, 2004, you stated that a meeting occurred between the Service and PG&E, where an agreement was reached on a modified study approach for the habitat assessment. The Service was unaware of this modified study approach, and we sent an email on May 10, 2004, requesting meeting notes on the subject. In a subsequent email to Kathy Brown of this office on May 19, 2004, you stated that the reference to that agreement on a modified study plan in the April 20, 2004 letter was in error.

Based on our review of the information contained in your correspondence and information in our files, and the fact that only a representative sample of suitable habitat was assessed, the Service, under normal circumstances, would request that PG&E assess the remaining 44 suitable habitat sites viewed from the helicopter survey, and conduct species surveys for the California red-legged frog, where access is permitted, within the identified suitable aquatic habitats within one mile of the project site, using the Service's 1997 Guidance on site assessment and field surveys for California red-legged frogs.

However, the Service has recently been involved in meetings with PG&E, other resource agencies, and stakeholders regarding the decommissioning of this project. PG&E cites several reasons for pursuing this option, including project age, its small size, and under current license conditions, it is marginally economically feasible. The Service believes that the decommissioning of this project would conserve and restore essential attributes of the watershed ecosystem affected by the project, consequently benefiting fish and wildlife resources, including the California red-legged frog. Therefore, the Service will not be requesting further assessment or species surveys at this time. However, if PG&E decides that the project will not be decommissioned, and continues with the relicensing of the project, then a timely meeting between PG&E and the Service should occur to discuss the issues identified in this correspondence.

We appreciate your cooperation and participation in the conservation of listed species. Please contact Kathy Brown or Roberta Gerson of my staff at (916) 414-6600 if you have questions regarding this letter.

Sincerely,



Catrina Martin  
Deputy Assistant Field Supervisor