April 26, 2006

This is a formal Request for a Hearing by Pacific Coast Federation of Fishermen's Associations ("PCFFA") and the Institute for Fisheries Resources ("IFR"), as license parties in the relicensing of the Klamath Hydroelectric Project (FERC License No. P-2082), under 43 Code of Federal Regulations Part 45, disputing certain material issues of fact asserted by the Bureau of Reclamation ("BOR") in its 4(e) Conditions filing ("BOR 4(e) filing") made March 29, 2006.

**Threshold Jurisdictional Question:** BOR justifies its power rate condition by stating that the BOR is entitled to a special retail power rate under Article IV of the Klamath Compact. However, this is a threshold legal question, not a factual issue, and we contend that setting retail rates of any sort is well beyond FERC jurisdiction and
outside its powers under the Federal Power Act. Both FERC and the Oregon Public Utilities Commission have also already ruled that the Article IV language of the Klamath Compact contains only general guideline objectives and is advisory, not compelling.¹

On at least four occasions FERC has acknowledged that it lacks the legal authority to set PacifiCorp retail electric power rates in this case.² The Federal Power Act gives jurisdiction to FERC only over rates for wholesale power sold in interstate commerce, while leaving authority to set retail power rates strictly to the states. See 16 U.S.C. § 824(a), (b); Federal Power Commission v. Conway Corp., 426 U.S. 271, 276 (1976) ("[t]he [Federal Power] Commission has no power to prescribe the rates for retail sales of power companies."). This is a fundamental separation of powers legal question that the BOR has cleverly glossed over by disguising it as unfounded factual assertions. We therefore ask the ALJ to rule on this threshold jurisdictional legal question prior to taking evidence in what, from the standpoint of law, may be an entirely moot assertion of fact. The ALJ has the authority to make such a ruling under the broad case management mandates of 43 C.F.R. § 45.31. The disputed statements identified below are also non-

¹ See Oregon State PUC Order No. 05-1202 (Nov. 8, 2005) in Oregon PUC Docket No. UE-170; FERC Order issued April 20, 2006 in Docket No. P-2082-041, particularly paragraph 22 ("KWUA’s attempt to assign a very specific intent to the general language of Article IV fails.").
² First, FERC stated that “[w]e do not consider the rates PacifiCorp charges to its customers to be an appropriate issue for analysis in this proceeding.” Response to Additional Study Requests, FERC No. P-2082-027, Oregon and California (March 16, 2005) at 16. Second, in response to a request by the Klamath Water Users Association and DOI to evaluate the environmental and economic consequences related to any increased power costs that would result from discontinuing the On-Project Contact, FERC stated: “[T]he rate that PacifiCorp charges its customers is not an appropriate issue for analysis in this proceeding.” Scoping of environmental issues for a new license for the Klamath Hydroelectric Project, FERC No. P-2082-027, Oregon and California (May 17, 2005). FERC reiterated this position in its January 20, 2006 Order denying a Petition for a Declaratory Order by the Dept. of Interior seeking to extend subsidized retail rates with any annual license extensions: “[T]his Commission clearly has no jurisdiction over PacifiCorp’s retail rates.” (Order page 11, citing statutory and case law to that effect). Most recently, FERC restated this position in the FERC Order issued April 20, 2006 in Docket No. P-2082-041 denying the DOI’s motion for reconsideration of the January 20, 2006 Order (“[W]e may not prevent the states from exercising their retail ratemaking authority."). Section 16.
material if they are found to be outside FERC's jurisdiction, and we ask the ALJ to rule accordingly.

If the ruling is adverse to these objections, then we will put on the following evidence, witnesses, etc. on the issues regarding whether the federal project increases the water flow available to the licensed project, and whether this entitles BOR to a retail rate credit, as set forth below:

**Disputed Material Fact 1:** That the Klamath Compact mandates a separate electrical retail power rate for Klamath Basin irrigators to be based on the "cost of that service to the Klamath Project."

This fact is asserted by BOR in at least two places in BOR's 4(e) filing. On page B-11, BOR states:

"*Article IV of the Klamath River Basin Compact (Compact) directs Oregon (and California: to 'provide for the ... lowest power rates which may be reasonable for irrigation and drainage pumping, including pumping from wells' from the use of water from the Klamath River Basin. Act of August 30, 1957, Pub. Law 85-22, 71 Stat. 497; [codified in Oregon as] ORS 542.620, Article IV - Hydroelectric Power. This directive sets apart the Klamath Basin irrigators from other irrigators in the Klamath Basin or elsewhere in PacifiCorp's service area. ... In reviewing Article IV of the Compact, it is clear that the Compact identifies that power is to be made available for irrigation and drainage pumping at the cost of that service to the Klamath Project.’" (most relevant portions italicized)

On page B-12, the BOR 4(e) filing also states:

"The language of the Compact provides a reasonable basis for establishing Klamath Project cost based power rates for irrigation and pumping associated with the Klamath Reclamation Project."

This assertion (or perhaps it would better be classed as an assumption) is fundamental to the BOR 4(e) filing Provision 1(B), which reads as follows:

"1(B). For the period of the contract the Licensee would agree to furnish electric power for the purposes of pumping Klamath Water for use on Project Land and for the drainage of Project Land at rates no higher than the cost of service from Project 2082." (pg. B-14)
However, the assumption that the Klamath Compact, in and of itself, requires a separate retail rate of any sort, set by some process different from the standards and procedures used by the state PUCs for setting such retail rates under Oregon or California law, is a clear error. The Oregon Public Utility Commission has already ruled on the effect of Article IV of the Klamath Compact and concluded that, as a matter of Oregon State law, the Klamath Compact does not create any special rate classification system, does not over-ride traditional state PUC authority to set retail power rates, and neither mandates nor requires any particular retail power rate, much less such a rate as described by the BOR.\(^3\) What the BOR’s 4(e) filing condition seeks to do is overturn already existing state PUC decisions and undercut state law establishing the proper retail power rates for the irrigation project. This is a sweeping revision of current standards of Federalism in the guise of an assertion of fact that has no legal basis. This effort has already been rejected by both the Oregon PUC and by FERC itself.

**Evidence To Be Presented:** In the event that the ALJ does not rule on the threshold legal question but determines that BOR is permitted, at this time, to pursue its power rate 4(e) condition, we will present the following evidence to dispute BOR’s assertion: (1) Oregon State PUC Order No. 05-726 (June 6, 2005) in Oregon PUC Docket No. UE-171; (2) Oregon State PUC Order No. 05-1202 (Nov. 8, 2005) in Oregon PUC Docket No. UE-170; (3) Oregon State PUC Order No. 06-172 (April 12, 2006) in Oregon PUC Docket No. UE-170; (4) California State PUC Decision 06-04-034 (April 13, 2006) in California PUC Docket No. A05-11-022; (5) FERC Order issued January 20, 2006 in Dockets No. P-2082-039 and -040; (5) FERC Order issued April 20, 2006 in Docket No. P-2082-041; (6) additional evidence to be developed through discovery.

\(^3\) Oregon State PUC Order No. 05-1202 (Nov. 8, 2005) in Oregon PUC Docket No. UE-170.
Witnesses to be Presented: None have been identified as of this filing. If witnesses are later identified, the parties will be promptly informed.

**Disputed Material Fact 2:** BOR asserts that irrigation operations above the Klamath Hydroelectric Project provide additional water to the Klamath River, and that the asserted “positive benefit” to river flows from this “increased water availability” allows more generation of power by PacifiCorp than would otherwise have naturally existed.

The BOR makes numerous statements in its 4(e) filing to this effect, as follows:

“Reclamation provides an average of over 200,000 acre-feet annually in returns to the Klamath River from Project facilities.” (pg. B-14)

“The Reclamation Project provides a positive effect for the Hydroelectric Project. Storage in Reclamation facilities allow for increased flows in the river during the late summer months when there would otherwise be limited ability to produce electricity (the river sometimes went dry below the current Link River Dam before the Project). Klamath Reclamation Project storage also provides flood control which reduces power outages due to high flow conditions in the winter months. Both of these periods of positive effect from storage are prime periods for power sales, due to high demand in the winter for heating and in the summer for air conditioning.” (B-14)

“The Lost River Diversion Channel provides an average of 165,200 acre-feet annually to the Klamath River to augment power production, the Straits Drain provides an average of 106,630 acre-feet annually. An average annual increase of water available to the Hydroelectric Project of over 270,000 acre-feet, almost 23 percent of the flow that passes Keno.” (B-14)

This is the essence of the BOR’s and irrigators’ “credit for value” theory, i.e., that the purported additional flows “add value” to PacifiCorp’s power generation abilities, for which they seek a retail rate “credit” to be imposed by FERC as a matter of law. These assertions, if true, are clearly material to BOR’s claim of a power credit. However, BOR’s assertions are incorrect on the facts for several reasons. First, evidence will show that BOR’s water accounting methods in support of this theory are inappropriate, incomplete and inaccurate. Much of the water it claims as a “benefit” is in the form of “return flows,” i.e., after deducting a portion for use on crops and after irrigation system
transmission losses. BOR does not account for its diversions or transmission losses, seeking only credit for its return flows. This is a clear error. There are numerous other BOR errors of this sort hidden in its analysis. It is the net amount of water left in the river, not the gross amount of return flows, that impacts hydropower generation.

Second, BOR admits (at B-14, 15) that its return pumping of water from the irrigation project back to the river consumes massive amounts of electric power:

“The additional water made available from the Reclamation Project, especially from the Straits Drain, depends on pumping to provide the ultimate benefit to the Hydroelectric Project. The pumps that develop this benefit are those large federally owned pumping plants that ultimately push the accumulated water from the sumps through the Straits Drain to the Klamath River, drainage pumps that are federally owned and operated by irrigation districts under contract, drainage pumps that are owned and operated by irrigation districts, and drainage pumps owned and operated by individual irrigators. Without this integrated system, there would be a substantial reduction in water available for power production.”

Any legitimate calculation of net electrical generation benefits of these return flows to PacifiCorp would first have to take into account the electrical consumption (not to mention normal power and transmission losses), greatly diminishing any net benefit.

Third, BOR does not properly account for the fact that its alleged “increased flows” often are available at times when the water cannot be used to generate power. PacifiCorp has testified in OPUC Rate Case No. UE-170 that this timing problem greatly diminishes any potential power generation benefits, particularly during winter months.

Fourth, BOR does not properly account for the fact that its extensive drainage and development of Upper Basin wetlands has distorted the river’s natural hydrology, so that there is frequently less water in the river today, particularly during summer irrigation months, than would naturally be the case without the irrigation project in place.
As a result, the “benefits” alleged by BOR are non-existent or, at best, would warrant a much smaller power rate adjustment than is claimed.

Evidence To Be Presented: (1) Oregon State PUC Order No. 06-172 (April 12, 2006) in Oregon PUC Docket No. UE-170; (2) FERC “Headwater Benefits Basin Screening Report – Klamath River Basin” (September 2, 1998); (3) Bureau of Power Memorandum to FERC – “Investigation of Headwater Benefits in the Klamath Basin, Oregon-California” (July 25, 1968); (4) “Initial Assessment of Pre- and Post-Klamath Project Hydrology on the Klamath River and Impacts of the Project on Instream Flows and Fishery Habitat,” Balance Hydrologics, Inc. (March, 1996), filed in the Oregon PUC Case Docket No. UE-170 on February 6, 2006 as “ONRC et al., Exhibit 205”; (5) Relevant other testimony, exhibits, briefs and transcripts of hearings from the Administrative Record in Oregon PUC Rate Case Docket Number UE-170 insofar as these are relevant to determining the Klamath Project irrigation tariff rates and the “credit for value” water claims raised in the BOR 4(e) filing that are in dispute herein; (6) additional evidence to be developed through discovery, including flow records from

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* This document will be supplied in discovery, but is not yet available. It is referred to in the 1998 headwaters benefit study.
* The water “credit for value” claim the BOR brings forth and which is in dispute herein was fully litigated before the Oregon Public Utilities Commission during 2005 to April 2006 in Docket UE-170, and the OPUC found “insufficient evidence” to support such a claim. The Administrative Record of that case is directly relevant herein. This Oregon PUC Rate Case Administrative Record is extremely voluminous and it would be physically impractical as well as unduly burdensome to include this entire record with this filing in hardcopy form. However, the entire record is available on the Internet at: http://apps.puc.state.or.us/edockets/docket.asp?DocketID=11708. Access can also be obtained from the Oregon PUC eDocket web site by going directly through the PUC search system at: http://apps.puc.state.or.us/edockets/search.asp, by entering Docket No. UE-170. Please refer to that record as though attached herein. Specific documents and sections of that Record will be identified and introduced as necessary in this proceeding, including for purposes of impeachment. The Transcript from the OPUC No. UE-170 Evidentiary Hearing held February 16-17, 2006 has already been submitted by the BOR for its FERC 4(e) filing. However, many parts of that Record that rebut the BOR’s “credit for value” theory were not included in the BOR filing.
various public gauge data, BOR records from the irrigation project and public agency water use filings.

Witnesses to be Presented: (1) witnesses, as yet unidentified, as necessary to establish a foundation for the above-listed documents; (2) additional expert witnesses, as yet unidentified, as necessary for impeachment purposes at the hearing. Parties will be informed of the identities of these witnesses promptly as they are determined.

Respectfully submitted,

/s/ Glen H. Spain, Esq.
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PCFFA/AppealofBOR4e-04-28-06.doc

PCFFA/IFR Appeal of BOR 4(e) Conditions
FERC P-2082-027 (Klamath Project)
CERTIFICATE OF SERVICE

I hereby certify that I have this day served this “Request for Hearing Under 43 C.F.R. § 45.21,” for PCFFA and IFR, with all attachments, to the Office of Environmental Policy and Compliance (OEPC), US Dept. of the Interior, 1849 C Street, NW, Mail Stop 2342, Washington, DC 20240, by overnight Federal Express, postage prepaid, for immediate filing. I also similarly served by FedEx overnight delivery copies of this document, with all attachments, upon the P-2082 Service List shown below, with copies to FERC for immediate filing. In addition I served an electronic email copy on all those on said FERC Service List with known email addresses, pursuant to FERC rules of service and filed the document with FERC electronically.

Dated: April 26, 2005

/s/ Glen H. Spain

Service List for P-2082-000 PacifiCorp

<table>
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<td>Kokopelli River Guides, UKOA</td>
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<tr>
<td>Matt Dopp</td>
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<tr>
<td>1655 Parker St.</td>
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PCFFA/IFR Appeal of BOR 4(e) Conditions
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<td><strong>MID-WEST ELECTRIC CONSUMERS ASSN.</strong></td>
<td><strong>THOMAS P. GRAVES</strong>&lt;br&gt;EXECUTIVE DIRECTOR&lt;br&gt;MID-WEST ELECTRIC CONSUMERS ASSN.&lt;br SUITE 330&lt;br&gt;4350 Wadsworth Blvd&lt;br&gt;Wheat Ridge , CO 80034641&lt;br&gt;UNITED STATES</td>
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PCFFA/IFR Appeal of BOR 4(e) Conditions<br>FERC P-2082-027 (Klamath Project)
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<td>Brian J. Johnson&lt;br&gt;Staff Attorney&lt;br&gt;Trount Unlimited&lt;br&gt;1808B 5th Street&lt;br&gt;Berkeley, CALIFORNIA 94710&lt;br&gt;UNITED STATES&lt;br&gt;<a href="mailto:bjohnson@tu.org">bjohnson@tu.org</a></td>
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<td>US Bureau of Indian Affairs</td>
<td>**Tom Dang&lt;br&gt;Reg. Program Manager&lt;br&gt;US Bureau of Indian Affairs&lt;br&gt;Department of the Interior&lt;br&gt;2800 Cottage Way&lt;br&gt;W-2619&lt;br&gt;Sacramento, CA 958251846&lt;br&gt;UNITED STATES</td>
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<td>US Bureau of Land Management</td>
<td>**Jon Raby&lt;br&gt;Area Manager&lt;br&gt;US Bureau of Land Management&lt;br&gt;2975 Anderson Ave Bldg 23&lt;br&gt;Klamath Falls, OR 976037886&lt;br&gt;UNITED STATES</td>
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<td>US Bureau of Reclamation</td>
<td>**Dave Sabo&lt;br&gt;Area Manager&lt;br&gt;US Bureau of Reclamation&lt;br&gt;Klamath Basin Area Office&lt;br&gt;6600 Washburn Way&lt;br&gt;Klamath Falls, OR 976039365&lt;br&gt;UNITED STATES</td>
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<td>US Department of the Interior</td>
<td>Daniel Stuart Hirschman&lt;br&gt;Agency Counsel&lt;br&gt;United States Department of the Interior&lt;br&gt;1849 C Street NW&lt;br&gt;MS - 6456&lt;br&gt;Washington, DISTRICT OF COLUMBIA 20240&lt;br&gt;UNITED STATES&lt;br&gt;<a href="mailto:danhirschman@hotmail.com">danhirschman@hotmail.com</a></td>
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<td>US Department of the Interior</td>
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<td>**STEPHEN R. PALMER&lt;br&gt;W-2517&lt;br&gt;US Department of the Interior&lt;br&gt;2800 Cottage Way&lt;br&gt;Sacramento, CA 958251846&lt;br&gt;UNITED STATES</td>
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<td>Roberta Van de Water</td>
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<td>YUROK TRIBE</td>
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<td>Alexander, Berkey, Williams &amp; Weathers L</td>
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**Dave Hillmeier**  
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UNITED STATES
BEFORE THE PUBLIC UTILITY COMMISSION

OF OREGON

UE 171

In the Matter of

PACIFIC POWER & LIGHT

ORDER

Klamath Basin Irrigator Rates.

DISPOSITION: MOTION FOR SUMMARY JUDGMENT
DISMISSED; MATTER REMANDED TO UE 170
FOR FURTHER PROCEEDINGS

Introduction

For almost 50 years, PacifiCorp has served irrigators located in the Klamath River Basin under historic contracts that provide rates below PacifiCorp’s general tariff schedules. Irrigators located within the federally-designated boundaries of the Klamath Project (On-Project Irrigators) buy power from PacifiCorp at rates established pursuant to a contract between PacifiCorp’s predecessor, the California-Oregon Power Company (Copco), and the United States Bureau of Reclamation. This contract (On-Project Contract) expires by its terms in April 2006. The Klamath Basin irrigators located outside the boundaries of the Klamath Reclamation Project (Off-Project Irrigators) buy power from PacifiCorp pursuant to a separate contract between Copco and an association representing irrigation customers. This second contract (Off-Project Contract) was executed April 30, 1956, but contains no express termination date.

As part of its general rate filing pending in docket UE 170, PacifiCorp proposes to move both the On-Project and Off-Project irrigators to standard tariff rates concurrent with the expiration of the On-Project Contract. To ensure this proposal is fully addressed, the Commission opened this docket, UE 171, to determine whether the Klamath River Basin irrigators should continue to be served under these historic contracts after April 2006.

The parties to this proceeding agreed that the issue presented was primarily a legal question best resolved through a motion for summary disposition. Accordingly, PacifiCorp filed a motion seeking a Commission order terminating the rates under the On-Project and Off-Project contracts, effective April 16, 2006. Eight parties filed a response to the motion. Those parties include organizations representing the On-Project irrigators—Klamath Water Users Association (KWUA), the Off-Project irrigators—Klamath Off-Project Water Users (KOPWU), as well as the United States Bureau of Reclamation and Fish and Wildlife Service (collectively referred to as the Bureau), WaterWatch of Oregon, the Hoopa Valley Tribe, Oregon Natural Resources
Defense Council, the Pacific Coast Federation of Fishermen’s Association, and the Commission Staff (Staff).

FACTS

The following facts are undisputed:

1. In 1905, the Secretary of the Department of the Interior authorizes development of the Klamath Project (Project). The Project is to consist of a series of dams and distribution canals to facilitate agricultural irrigation and development of the Klamath River Basin.¹

2. In 1906, the Bureau of Reclamation begins construction on the Project’s main canals and distribution system.

3. At this time, PacifiCorp’s predecessor, Copco, is developing its own hydro-generation resources on the Klamath River in California. When informed that the government lacked funds to immediately build a dam to regulate the flow from Upper Klamath Lake, Copco offers to finance and construct the dam if the government grants Copco the right to operate the dam in the future.

4. Negotiations between Copco and the Department of the Interior eventually result in a 1917 contract (Link River Dam Contract). Copco agrees to supply power for pumping to irrigators on the Project at 7 mills per kWh.²

5. In 1951, Copco seeks authority to construct Project No. 2082, which includes the Big Bend Dam (now called J.C. Boyle) on the Klamath River below Keno, Oregon.

6. The Federal Power Commission ultimately issues the Project 2082 license, but requires Copco and the Secretary of the Interior to either amend the Link River Dam contract, or negotiate a new contract that:

[P]rovides for the storage in and the release of water from Upper Klamath Lake in Oregon, and the use thereof by [Copco] for the generation of electricity under terms and conditions substantially similar to those terms and conditions contained in the existing [Link River Dam] agreement, as amended.

The Federal Power Commission also required that the amended or new contract “cover a time period at least equivalent to the time period of this license[.].”³

¹ See Reclamation Act of 1902, 32 Stat. §388.
7. During negotiations to renew the Link River Dam Contract, an organization representing irrigators insisted that Copco provide contract rates for irrigation and pumping to all customers located within the Klamath River Basin, including those located outside the Project boundaries.

8. Negotiations ultimately result in separate contracts for the on-project and off-project customers.

9. The On-Project Contract is entered between Copco and the Department of the Interior. Under this contract, Copco agrees to furnish electric power to On-Project irrigators at a rate of 0.6 cents per kWh. The contract is effective for a period of 50 years from the date of its approval by the Public Utility Commission of Oregon and the Public Utilities Commission of California, whichever occurs later.\(^3\)


11. The Off-Project Contract is executed between Copco and the Klamath Basin Water Users Protective Association. Under this agreement, Copco agrees to provide service to all Off-Project irrigators at a rate of 7.5 mills per kWh. The agreement contains no express termination date.

12. There is no record of the Public Utility Commission of Oregon expressly approving the Off-Project Contract; however, the rates established by this contract have been included in rates approved by the Public Utility Commission of Oregon since 1956.

13. PacifiCorp becomes a successor to the On-Project and Off-Project Contracts when it acquires Copco in 1961. Both contracts are incorporated in PacifiCorp's Oregon tariffs as Schedule 33, which sets rates for the Klamath River Basin irrigators at the level "specified by applicable contract."

14. Over the last five decades, PacifiCorp has provided electric service to the Klamath River Basin irrigators in Oregon at rates pursuant to the On-Project and Off-Project Contracts.

15. The Federal Energy Regulatory Commission (FERC) is currently reviewing PacifiCorp's application for the continued operation of its Klamath

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\(^4\) Article 5, Exhibit B.

\(^5\) Article 11 and 17.
Hydroelectric Project (FERC No. 2082). FERC is not expected to complete the relicensing proceeding prior to the expiration of PacifiCorp’s current FERC license for the project.

16. In its general rate filing, UE 170, PacifiCorp asserts that the On-Project and Off-Project Contracts terminate in April 2006. After that date, PacifiCorp proposes charging the Klamath River Basin irrigators the same rates paid by other PacifiCorp irrigation customers. These tariffed rates charge customers approximately 73 mills per kWh.

CONCLUSIONS

The Commission initiated this docket to address the continuing validity of the rates contained in the On-Project and Off-Project Contracts after April 2006. Following an agreement by the parties that this issue was primarily a legal question, PacifiCorp filed a motion for summary disposition seeking the termination of rates contained in the On-Project and Off-Project Contracts, effective April 16, 2006.

Now that this issue has been further developed by the parties, we conclude that a ruling on the motion for summary disposition is unnecessary. PacifiCorp’s request implicitly assumes that the Commission must first determine that the contract rates have expired before it can examine the underlying question as to what rates these irrigation customers should pay. No such requirement exists. The Commission’s ratemaking power constitutes the broadest delegation of legislative authority. Multnomah County v. Davis, 35 Or App 521 (1978); Pacific N.W. Bell v. Sabin, 21 Or App 200 (1975). Utilities and customers cannot limit this power by private contract. American Can Co., v. Davis, 28 Or App 207, rev den 278 Or 393 (1977). Although the Commission previously approved the On-Project and Off-Project Contracts, we have the continuing authority and obligation to review the appropriateness of the rates contained in those contracts. American Can Co., v. Davis, 28 Or App at 224. Thus, regardless of the expiration term of either contract, this Commission has the duty to examine the rates contained therein and, upon a proper showing, modify them.

Accordingly, PacifiCorp’s motion for summary judgment is dismissed. This matter should be remanded to UE 170 for further investigation. In this investigation, the Commission will address factual and legal issues, many of which were presented here, that are relevant to determining rates for irrigation customers currently served under the historic contracts. These issues include:

☐ The statutory standard applicable to the setting of electric rates for irrigators located within the Klamath River Basin.

☐ The appropriate rates PacifiCorp should charge the Klamath River Basin irrigators for electric service.
☐ The implementation of any rate change affecting these customers, including how and when these customers should be transitioned from the rates established in the historical contracts.

We deny the request, made by the Bureau and supported by KWUA and KOWPU, to delay action on this matter pending FERC’s examination of this issue in the context of PacifiCorp’s pending relicensing proceeding. We recognize the importance of the relicensing proceeding and the benefits all PacifiCorp customers realize from the company’s Klamath Hydroelectric Project. We also acknowledge FERC’s authority to issue an annual license, extending the terms and conditions of an existing license, to bridge the period between the lapse of an original license and the issuance of a new one.6 For the following reasons, however, we decline to wait for a decision that cannot resolve the issue of the retail rates charged to the Klamath River Basin irrigators.

First, there is no certainty that FERC will, as the Bureau suggests, issue an annual license that temporarily extends the On-Project Contract rates past the April 2006 termination date. In fact, FERC has twice declared that the rates PacifiCorp charges to its retail customers are not relevant to its relicensing review.7 Second, and more importantly, this Commission, not FERC, has jurisdiction over rates charged by PacifiCorp to its Oregon retail customers. Consequently, even if FERC extends the On-Project Contract rates, such action cannot relieve this Commission of the duty to review those rates under the American Can standard discussed above. Finally, as the Bureau concedes, the extension of any conditions through an annual license would affect only those rates paid by the On-Project irrigators, as the original license contained no provision addressing service to Off-Project irrigators. Thus, the deferral of the On-Project rate issue would not delay the review of the Off-Project rate. We believe that the rates of the Klamath River Basin irrigators should be determined through one, not two, regulatory processes.

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7 FERC made both statements as part of its initial review of PacifiCorp’s request for a new license for the continued operation of the Klamath Hydroelectric Project. First, in rejecting a request submitted by the Department of the Interior seeking an assessment of impact on customers associated with the expiration of the contract rates, FERC stated: “We do not consider the rates PacifiCorp charges to its customers to be an appropriate issue for analysis in this proceeding.” Response to Additional Study Requests, FERC No. P-2082-27, Oregon and California, March 16, 2005, p 16. Second, in rejecting a request by KWUA and the Department of the Interior to evaluate the environmental and economic consequences related to any increased power costs that would result from discontinuing the On-Project Contract, FERC stated: “[T]he rate that PacifiCorp charges its customers is not an appropriate issue for analysis in this proceeding.” Scoping of environmental issues for a new license for the Klamath Hydroelectric Project, FERC No. P-2082-27, Oregon and California, dated May 17, 2005. We take official notice of the latter document pursuant to OAR 860-014-0050(1)(a). Any party may explain or rebut the noticed fact within 15 days of the service date of this order. OAR 860-014-0050(2).
In summary, PacifiCorp has raised in its general rate filing the appropriateness of rates paid by the On-Project and Off-Project irrigators. This Commission has the authority and obligation to examine those rates and, upon a proper showing, modify the rates accordingly. Such action is not intended to undermine FERC's authority in its review of the Klamath relicensing proceeding. To the contrary, FERC has acknowledged that the rates for retail service provided by PacifiCorp in Oregon are subject to our jurisdiction, and the exercise of that authority will provide guidance to FERC in its inquiry of federal interests. For all these reasons, an investigation should immediately begin to examine the proper rates to be paid by the Klamath River Basin irrigators for electric service.

ORDER

IT IS ORDERED that:

1) The motion for summary disposition, filed by PacifiCorp, is dismissed.

2) This matter is remanded to UE 170 for further proceedings, consistent with the terms of this order.

3) A prehearing conference shall be scheduled to identify issues and establish a schedule for necessary proceedings.

Made, entered, and effective JUN 06 2005

Lee Beyer
Chairman

John Savage
Commissioner

Ray Baum
Commissioner

A party may request rehearing or reconsideration of this order pursuant to ORS 756.561. A request for rehearing or reconsideration must be filed with the Commission within 60 days of the date of service of this order. The request must comply with the requirements in OAR 860-014-0095. A copy of any such request must also be served on each party to the proceeding as provided by OAR 860-013-0070(2). A party may appeal this order to a court pursuant to applicable law.
BEFORE THE PUBLIC UTILITY COMMISSION
OF OREGON

UE 170

In the Matter of

ORDER

PACIFIC POWER & LIGHT (dba PacifiCorp)

Request for a General Rate Increase in the
Company's Oregon Annual Revenues
(Klamath River Basin Irrigator Rates).

DISPOSITION: RATE STANDARD ESTABLISHED

In this investigation, the Commission must determine electric rates to be charged to irrigators located within the Klamath River Basin. For almost 50 years, Pacific Power & Light, dba PacifiCorp (PacifiCorp) has served these irrigators under historic contracts that provide rates significantly below those paid by other irrigators. PacifiCorp seeks to terminate these contract rates and move these irrigators to standard tariff rates, effective April 16, 2006.

In Order No 05-726, we determined that this Commission has the authority and obligation to examine the rates paid by the Klamath River Basin irrigators and, upon a proper showing, modify the rates accordingly. We concluded that further investigation should proceed and identified three primary issues for resolution. The first issue, which is the subject of this order, focuses on the statutory standard applicable to the setting of rates for these irrigators. The parties present two possibilities: (1) the customary “just and reasonable” standard set forth in ORS Chapters 756 and 757; or (2) a new standard derived from the phrase “lowest power rates which may be reasonable,” which is found in the inter-jurisdictional Klamath River Basin Compact and codified in ORS 542.620.

We conclude that the statutory rate standard applicable to irrigators located within the Klamath River Basin is the same “just and reasonable” standard applicable to rates set for all other customers in Oregon. As further explained below, this conclusion is supported by the unambiguous text and context of the statute, and is consistent with legislative history and rules of statutory construction.

Request for Oral Argument

Before turning to the merits of the rate standard, we must address a preliminary procedural issue. The Klamath Off-Project Water Users (KOPWU) and the

1 See Order No. 05-726 at 4, 5.
Klamath Water Users Association (KWUA) submitted a joint motion requesting that the Commission hold oral argument on the statutory standard applicable to setting electric rates for irrigators in the Klamath River Basin. The request is made pursuant to ORS 756.518(2), which provides that, in a "major proceeding," the Commission must hold oral argument, upon the request of any party, before it issues a final order. A "major proceeding" is defined in OAR 860-014-0023 as "a proceeding that has, or is expected to have, a full procedural schedule with written testimony or written comments" and, as applicable here, has a substantial impact on utility rates or service for energy utilities with over 50,000 customers, or a significant impact on the customers or operations of an energy utility with more than 50,000 customers.

Establishing new rates for the Klamath River Basin irrigators qualifies this case as a major proceeding under ORS 756.518(2). Determining the applicable rate standard, however, is a preliminary issue that does not merit oral argument. This decision will not determine the actual rates to be paid by the irrigators, but rather clarify the statutory framework under which the parties must present evidence and argument as to the appropriate rates. Further proceedings, including the filing of testimony and hearings, will be held prior to the Commission’s issuance of the final order in this docket. Accordingly, while the Commission has the discretion to hold oral arguments at this preliminary stage of the proceeding, we are not required to do so.

The Commission may hold oral arguments during the later stage of these proceedings, either at the parties’ request or upon our own initiative. As to the resolution of this preliminary issue, however, we find that the matter has sufficiently been briefed and decline KWUA’s and KOPWU’s request for oral argument.2

Proposed Rate Standards

“Just and Reasonable” — ORS Chapters 756 and 757

The Oregon Legislative Assembly has delegated to this Commission broad rate-making authority to protect utility customers. American Can Company v. Lodde11, 55 Or App 451 (1982); Cascade Natural Gas Corporation v. Davis, 28 Or App 621 (1977). In the exercise of this authority, the Commission requires utility rates to be fair, just and reasonable. See e.g., In the Matter of PacifiCorp, UE 170, Order No. 05-1050 at 4; In the Matter of PacifiCorp, UE 116, Order No. 01-787 at 5.

This standard, commonly referred to as the “just and reasonable standard,” is derived from numerous statutory provisions. ORS 756.040 provides that the Commission is obligated to protect utility customers from “unjust and unreasonable exactions and practices and to obtain for them adequate service at fair and reasonable rates.” Similarly, ORS 757.210(1) provides that the Commission may conduct a hearing

2 We also note that KWUA and KOPWU previously presented argument on the applicable rate standard during oral arguments on PacifiCorp’s motion for summary judgment. See, e.g., Docket UE 171, Transcript of Proceedings, Oral Argument, May 19, 2005 at 49.
on any rate request to determine whether “the rate or schedule” is “fair, just and reasonable.” The statute further provides that, at such a hearing, the utility bears the burden of showing that the proposed rate “is fair, just and reasonable,” and that the Commission “may not authorize a rate or schedule of rates that is not fair, just and reasonable.”

As PacifiCorp notes, the “just and reasonable” standard established by these statutes has been recognized and enforced in numerous court decisions. For example, in Multnomah County v. Davis, 35 Or App 521, 526 (1978), the court recognized the Commission’s broad regulatory powers and clarified that “[t]he only legislative standards for exercising that authority are that rates be ‘fair and reasonable.’” (citing ORS 756.040). In American Can, 28 Or App at 224, the court declared that the Commission has the right and duty “to set just and reasonable rates[.]”

“Lowest Power Rates Which May Be Reasonable” — ORS 542.620

The statutory provisions governing the management of the state’s water resources are contained in ORS Chapter 542. Among other things, this chapter codifies the terms of several interstate compacts intended to promote inter-governmental cooperation with respect to water resources. ORS 542.610 and ORS 542.620 set forth the terms of the Klamath River Basin Compact (Compact). The Compact, enacted in 1957, is a law of the State of Oregon and a legally enforceable agreement between Oregon, California, and the United States. See ORS 542.610(1); 39 Op Atty Gen 748 (1979).

The Compact is intended to fulfill two major purposes with respect to the water resources of the Klamath River Basin. First, the Compact is intended to “facilitate and promote the orderly, integrated and comprehensive development, use, conservation and control” of the Klamath River for various uses. These uses include the protection of fish and wildlife, hydroelectric development, irrigation, and flood control. Second, the Compact is designed to “to remove causes of present and future controversies” between competing interests by, among other things, providing for the “equitable distribution and use of water among the two states and the Federal Government.” See ORS 542.620(1).

Article IV of the Compact specifically addresses hydroelectric development. That section provides, in its entirety:

HYDROELECTRIC POWER

It shall be the objective of each state, in the formulation and the execution and the granting of authority for the formulation and execution of plans for the distribution and use of the water of the Klamath River Basin, to provide for the most efficient use of available power head and its economic integration with the distribution of water for other beneficial uses in order to secure
the most economical distribution and use of water and *lowest power rates which may be reasonable* for irrigation and drainage pumping, including pumping from wells. *(Emphasis added).*

**Applicable Law**

The determination of the rate standard applicable to the Klamath River Basin irrigators is an issue of statutory interpretation. We begin with the text and context of the statutes. *See PGE v. Bureau of Labor and Industries (PGE v. BOLI),* 317 Or 606 (1993). In this first level of analysis, we give words of common usage their plain, natural, and ordinary meaning. If the legislature’s intent is unclear after a review of the text and context, we examine the legislative history of the statutes considered. If that also fails, we then resort to general maxims of statutory construction. *See Id.* at 612.

**Positions of the Parties**

A total of ten parties filed briefs on the applicable statutory rate standard. The majority of them—PacifiCorp, the Commission Staff (Staff), WaterWatch of Oregon (WaterWatch), Oregon Natural Resources Council (ONRC), Pacific Coast Federation of Fisherman’s Associations (PCFFA), Hoopa Valley Tribe (Hoopa), and Yurok Tribe (Yurok)—contend that this issue is resolved under *PGE v. BOLI’s* first level of analysis. These parties contend that the plain, natural, and ordinary meaning of ORS 756.040 and ORS 757.210 *et seq.* requires that the Commission establish “just and reasonable” rates in all ratemaking proceedings. WaterWatch, ONRC, and PCFFA point out that even rates found in special contracts and alternative forms of regulation are reviewed under the “just and reasonable” standard. *See OAR 860-022-0035; ORS 757.210(b).* These parties conclude that nothing in the Compact requires the Commission to deviate from this well established and universally recognized rate standard.

KWUA and KOPWU contend that the rate standard applicable to Klamath River Basin irrigators is found in the Compact. The two groups contend that the text and context of ORS 542.620 indicate that the Klamath River Basin irrigators have a statutory entitlement to electric rates at the lowest reasonable cost of generating that power using the waters of the Klamath River. KWUA and KOPWU acknowledge this rate standard is unique under Oregon law, but claim that the linking of specific end users to particular generating resources is consistent with numerous federal “preference” laws. They also assert that this specific standard is consistent with the legislative history of the Compact, which confirms the Klamath River Basin irrigators’ statutory right to the lowest power rates reasonable using the Klamath River.

KWUA and KOPWU contend that the use of this different rate standard to set rates for the Klamath River Basin irrigators is consistent with the rules of statutory construction. First, KWUA and KOPWU point out that the Oregon Legislative Assembly specifically chose to adopt the phrase “lowest power rate which may be reasonable” to describe power service to Klamath River Basin irrigators. Because the legislature chose
different words for ORS 542.620 than those used in ORS 756.040, the parties argue that the law presumes they intended to adopt a different rate standard. See, e.g., Premier West Bank v. GSA Wholesale, LLC, 196 Or App 640 (2004).

Second, KWUA and KOPWU contend that Oregon law does not permit any interpretation of ORS 542.620 that would either render it superfluous or fail to give meaning to all of its provisions. See e.g., Keller v. SAIF, 175 Or App 78 (2001); State v. Simpson, 11 Or App 271 (1972). Thus, according to the parties, the Commission must give ORS 542.620 some meaning separate and distinct from ORS 756.040. Third, KWUA and KOPWU contend that any inconsistency between the two rate standards must be resolved in favor of ORS 542.620, which both parties characterize as a particular provision that controls over the generally applicable provision of ORS 756.040. See ORS 174.020(2); In re Allen, 326 Or 107 (1997).

KOWPU also raises an alternative argument. If the Commission determines that the Compact is inapplicable to setting rates for Klamath River Basin irrigators, KOPWU contends that the unique facts and circumstances surrounding the agricultural irrigation and pumping in the Klamath River Basin justify a different rate than PacifiCorp’s standard irrigation tariff. KOPWU asserts that the Commission must establish rates that take into consideration the value of the water provided by these irrigators to PacifiCorp’s hydro projects.

Finally, the United States Bureau of Reclamation and the Fish and Wildlife Service (collectively the Bureau) also assert that the Compact establishes separate rate treatment for the Klamath River Basin irrigators, but presents a different theory. The Bureau agrees with the majority of the parties that the Commission must apply a “just and reasonable” rate standard in all rate proceedings, including this one. However, the Bureau argues that the Compact identifies the Klamath River Basin irrigators as a separate class of customers that are entitled to a different rate than that charged to PacifiCorp’s other irrigation customers.

Discussion

The primary arguments raised by KWUA and KOPWU begin with the premise that Article IV of the Compact establishes a separate statutory standard for Commission rate making. They promote this idea with references to history underlying the Compact and reclamation of the Klamath River Basin, and contend that their premise is supported by maxims of statutory interpretation. In the end, KWUA and KOPWU essentially redraft the language of the Compact to conclude that Klamath River Basin irrigators have a statutory right to purchase power from PacifiCorp at a preferential rate.

We disagree with KWUA’s and KOPWU’s opening premise and, consequently, reject the arguments that follow. Both parties misconstrue and ignore the plain language of the Compact. Article IV sets forth a generalized “objective” that Oregon and California must consider in “the formulation and execution of plans for the distribution and use of the water of the Klamath River Basin.” The desired result of this
objective is "to secure the most economical distribution and use of water and lowest power rates which may be reasonable." This provision, by its own unambiguous terms, does not create new, or modify existing, Commission ratemaking authority. Rather, it merely identifies an objective of the state when formulating and executing plans for the distribution and use of these water resources.

The context of ORS 542.620 supports this conclusion. The Compact is an agreement between Oregon, California, and the federal government aimed at protecting regional water resources and minimizing disputes between competing interests. Article IX of the Compact creates the Klamath River Basin Compact Commission to administer the agreement, and appoints the Oregon Water Resources Commission as Oregon's representative to that body. The Oregon Legislative Assembly added ORS 542.630 to further clarify that the Water Resources Director shall be the "only representative of this state in administering the Klamath River Basin Compact." Thus, while Article IV has full force of law in Oregon, and governs the Water Resources Director and the state in the management of the waters of the Klamath River Basin, the Compact's statutory framework makes clear that Article IV does not apply to or constrain this Commission's wholly separate exercise of its ratemaking obligations under ORS Chapters 756 and 757.

Even if we were to assume that the Compact's reference to power rates speaks to this Commission's ratemaking authority, the language does not establish a distinct ratemaking standard. KWUA and KOPWU focus on the initial word "lowest," while failing to give meaning to the remaining phrase "rates which may be reasonable." Thus, the operative portion of this provision is nearly identical to the "just and reasonable" standard. To conclude that the Compact establishes a new rate standard, we would be required to apply one interpretation of "reasonable" in ORS 756.040 and a different interpretation in ORS 542.620.

KWUA's and KOPWU's reliance on matters outside the terms of the Compact is misplaced. As PGE v. BOLI makes clear, a court may look outside a statute to legislative history and cannons of statutory construction only if the statutory language is unclear. 317 Or at 610. Neither KWUA nor KOPWU claim that Article IV is ambiguous. Accordingly, further inquiry is not necessary. "[C]ourts must presume that a legislature says in a statute what it means and means in a statute what it says. When the works of a statute are unambiguous, then, this first cannon is also the last: 'judicial inquiry is complete.'" Connecticut Nat'l Bank v Germain, 503 U.S. 249, 253 (1992).

Assuming, arguendo, that ORS 542.620 is unclear and requires additional analysis under PGE v. BOLI, we are not persuaded by KWUA's and KOPWU's arguments that Article IV establishes a separate rate standard for Klamath River Basin irrigators. Contrary to the parties' assertions, the "lowest power rate which may be reasonable" language is not analogous to federal power preference clauses. Unlike the Compact, the federal preference clauses cited by KWUA contain express language that (1) identify an entity that (2) must grant a preference to (3) a specified group or entity
(4) with regard to electric service. For example, the Bonneville Project Act of 1937 provides that:

the administrator shall at all times, in disposing of electric energy generated at [the Bonneville] project, give preference and priority to public bodies and cooperatives. 16 U.S.C. §832(c).

Similarly, the Niagara Power Act provides that:

the licensee in disposing of 50 per centum of the project power shall give preference and priority to public bodies and non-profit cooperatives within economic transmission distance. 16 U.S.C. §836(b)(1)

The Compact contains no such directive requiring the operator of a hydroelectric project to provide preferential rates for electric service to Klamath River Basin irrigators.

Much of the extrinsic evidence cited by KWUA and KOPWU to support their interpretation of ORS 542.620 is not based on legislative history, but rather historical information related to the development of PacifiCorp's hydroelectric projects on the Klamath River Basin. While these events help explain the basis for the historic contracts between PacifiCorp and the Bureau that established the historic rates for the Klamath River Basin irrigators, such actions were not linked to the drafting of the Compact and are not even mentioned in the agreement. Consequently, they provide no assistance to the interpretation of ORS 542.620.

The relevant legislative history provided by KWUA, detailing the drafting of the Compact, also provides no support for the irrigators' arguments. The input and involvement of JC Boyle, the president of what is now PacifiCorp, in drafting the agreement does not, as KWUA claims, make the Compact an "electricity law." KWUA Reply Brief at 9 (September 16, 2005). As KWUA acknowledges, the Compact is intended to establish a long-term equilibrium between various interests seeking to use the waters of the Klamath River Basin. See KWUA Opening Brief at 3 (August 29, 2005). Because these competing interests include hydroelectric development, it is not surprising that the president of the only hydroelectric project on the river participated in the drafting of the Compact. KWUA fails to cite any evidence from the Compact Commission notes indicating that Article IV was intended to establish a special rate standard for Klamath River Basin irrigators. To the contrary, KWUA's cited excerpts indicate that the
Compact Commission knew that the setting of electric rates was a matter solely to be determined by this Commission.  

Recent activity by the Oregon Legislative Assembly also confirms the application of the just and reasonable standard to the Klamath River Basin irrigators. During the 2005 Legislative Session, the legislature passed Senate Bill 81 to require the Commission to mitigate rate increases in certain circumstances. This rate mitigation measure is directed at the Klamath River Basin irrigators. *See* SB 81, §3; Minutes of House Committee on Business, Labor, and Consumer Affairs, May 23, 2005. The mitigation requirement applies only if two elements are met, the first of which is relevant here: The rate increase must result from “a transition to an electric company’s generally applicable cost-based rate” from rates provided under the historic contracts. SB 81, §2(a). Because the “generally applicable cost-based rate” is based on the Commission’s generally applicable ratemaking standards, SB 81 is premised on the Klamath River Basin irrigators transition to rates set under the “just and reasonable” standard, not some alleged preferential standard under the Compact.

In addition, while KWUA and KOPWU correctly state the various rules of statutory interpretation, both parties misapply them. First, while Oregon law presumes that related statutes having different terms also have different meanings, ORS 756.040 and ORS 542.620 are not related statutes. They are placed in separate chapters of the revised statutes and not linked to each other. One statute provides the appropriate standard for setting utility rates, while the other identifies objectives related to water use in the Klamath River Basin. Because these two statutes are neither comparable nor related, the court’s holding in *Premier West Bank* is not applicable.

Second, contrary to KWUA’s and KOWPU’s assertions, applying the “just and reasonable” rate standard found in ORS 756.040 does not render Article IV of the Compact superfluous or fail to give meaning to its provision. As detailed above, Article IV does not apply to Commission ratemaking, but rather identifies an objective of the state when formulating and executing plans for the distribution and use of water of the Klamath River Basin. The “lowest power rates which may be reasonable” language has meaning in the context of the stated objective—that is, providing for the most efficient utilization of power to assist in achieving the lowest reasonable rates.

Third, KWUA and KOPWU erroneously conclude that ORS 542.620 is a specific statutory provision that is paramount to ORS 756.040. A plain reading of the two statutory provisions shows that the Commission’s ratemaking authority contained in ORS 756.040 is far more specific than the generalized water planning management.

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3 In an October 14, 1955 letter, JC Boyle updated the Compact Commission on the negotiations of the Link River Dam project. Mr. Boyle indicated that a proposal to reduce power rates for off-project irrigators was discussed at a recent meeting. While indicating that the company would consider the proposal, Mr. Boyle made clear that such a decision was a “matter [that] could only be determined by the Public Utility Commissions of Oregon and California in a regular proceeding in which the Public Utility Commissions would determine whether or not any special rates were proper and legal.” KWUA Reply Brief, Exhibit A at 43 (September 16, 2005).
objective contained in Article IV of the Compact. Consequently, KWUA and KOPWU have it backwards—any inconsistency between the two provisions must be read in favor of ORS 756.040.

In making this interpretation, we agree that, like a treaty, the Compact must “be given liberal interpretation to carry out the intended objectives of the contracting parties.” Atty Gen Letter of Advice dated March 12, 1984 (OP-5559). However, a broad reading cannot change Article IV into something it is not. As WaterWatch, ONRC, and PCFFA explain, the single mention of power rates:

in a non-binding objective statement in Article IV, embedded deep within an interstate water dispute resolution agreement, in turn placed in Oregon Water Resources Code (Title 45) and not its Utilities Code, is far too shaky a scaffold on which to construct a whole new power rate standard and rate setting process, particularly since this would fly in the face of other far more specific, intentionally comprehensive and definite mandatory language in ORS 756.040, 757.210 and numerous other provisions of ORS Title 57, Chapters 756 and 757. WaterWatch, et al Reply Brief at 7 (September 16, 2005) (Emphasis in original).

Finally, we acknowledge KOPWU’s alternative argument, as well as the Bureau’s interpretation of the Compact, which seek to establish the Klamath River Basin irrigators as a separate class of customers. Both assertions are premature, and any speculation as to their merit improper. The sole issue in this phase of the proceeding is to determine the appropriate rate standard for these irrigators, not whether different rate classifications are justified under ORS 757.230. Issues relating to whether there is a substantial and reasonable basis for establishing a separate and distinct class of irrigation customers in the Klamath River Basin, for purposes of service and rates, will be addressed in future phases of this proceeding.

ORDER

IT IS ORDERED that the statutory rate standard applicable to irrigators located within the Klamath River Basin is the “just and reasonable” standard set forth in ORS Chapters 756 and 757. Further proceedings shall be scheduled to determine the appropriate rate to be charged under this standard.

Made, entered, and effective NOV 08 2005

John Savage
Commissioner
Commissioner Baum, concurring.

I join Commissioner Savage in concluding that the statutory rate standard applicable to irrigators located within the Klamath River Basin is the same "just and reasonable" standard applicable to rates set for all other customers in Oregon. However, what is ultimately determined to be "just and reasonable" rates for Klamath River Basin irrigators will be dictated by the unique circumstances of this case. These unique circumstances include, but are not limited to, the terms of the compact, including the "lowest power rates which may be reasonable" language and the historical factors and legal issues surrounding the contracts between the parties, the construction, operation and relicensing of the dams, the use of water rights, and the costs and benefits related thereto.

The exploration of these unique circumstances in future phases of this proceeding will be determinative of whether there is a substantial and reasonable basis for establishing a separate and distinct class of irrigation customers in the Klamath River Basin for purposes of service and rates. The full development of these issues will provide the Commission with the evidence necessary to determine whether the Klamath River Basin irrigation customers qualify for the rates that are less than those charged other irrigators in the Pacificorp system. The dissent of Chairman Beyer raises issues surrounding the language and implications of the compact which I believe are relevant to the issue of whether there should be a separate and distinct class of irrigation customers for the Klamath River Basin.

[Signature]
Ray Baum
Commissioner

Chairman Beyer, dissenting in part; concurring in part.

In this order the majority determines that the standard for setting rates for Klamath River Basin Irrigators (Klamath Irrigators) is the same as for other customers whose rates this Commission sets. Specifically, the majority concludes that ORS 542.620, which provides for "the lowest power rates which may be reasonable" for Klamath Irrigators, does not establish a different standard than we use for all other customers.

I am not ready to conclude that the rate setting standard of ORS 542.620 is the same as the "fair and reasonable" rate setting standard found in ORS 756.040, the statute that describes this Commission's general powers. I, therefore, dissent from the majority opinion insofar as it reaches that conclusion.

The majority opinion points out that the Legislative Assembly has given this Commission, in statutes found in ORS chapters 756 and 757, both general authority to set rates, and specific instructions for some aspects of rate setting. It then argues these Commission statutes trump ORS 542.620.
I disagree. I think the Commission must consider all laws passed by the Assembly. It must attempt to determine if ORS 542.620 applies to Commission rate setting, and if it does, it must harmonize that statute with those in ORS chapters 756 and 757.

I also disagree with the discussion in the majority opinion regarding the “general” language of Klamath Compact. In relevant part, Article IV of the compact provides:

It shall be the objective ... to provide for the most efficient use of available powerhead ... in order to secure the most economical distribution and use of water and lowest power rates which may be reasonable for irrigation and drainage pumping, including pumping from wells. (Emphasis added.)

Clearly, the Assembly had irrigators in mind. And clearly, it had electricity rates in mind and was thinking about the economic use of water for agricultural purposes. Therefore, I cannot conclude, as the majority opinion does, that the rate setting language of the Compact is “just an objective.”

Another issue I want to cover in the second phase of UE 170 is whether there may be another basis for authorizing a lower rate for the Klamath Irrigators than for other irrigators. With respect to this question, I support the language of the concurring opinion of Commissioner Baum, in which he states that, under the “fair and reasonable” standard, “rate(s) for Klamath River Basin Irrigators will be dictated by the unique circumstances of this case.”

One of the unique circumstances that I wish to explore in the second phase is whether the Klamath Irrigators provide benefits to PacifiCorp’s system, and therefore, to its core customers, that may give this Commission a basis for setting rates for these irrigators that are lower than those of other irrigators on the utility's system. If, for example, the Klamath Irrigators provide PacifiCorp some flexibility in how the company operates the Klamath hydroelectric projects, that may be a reason for the Commission to conclude, using its authority to establish rate classes under ORS 757.230, that the
irrigators are entitled to rates that reflect the value of the benefits they provide to PacifiCorp.

A party may request rehearing or reconsideration of this order pursuant to ORS 756.561. A request for rehearing or reconsideration must be filed with the Commission within 60 days of the date of service of this order. The request must comply with the requirements in OAR 860-014-0095. A copy of any such request must also be served on each party to the proceeding as provided by OAR 860-013-0070(2). A party may appeal this order to a court pursuant to applicable law.
ORDER NO. 06-172

ENTERED 04/12/06

BEFORE THE PUBLIC UTILITY COMMISSION

OF OREGON

UE 170

In the Matter of

PACIFIC POWER & LIGHT (dba PacifiCorp)

ORDER

Request for a General Rate Increase in the
Company’s Oregon Annual Revenues
(Klamath River Basin Irrigator Rates).

DISPOSITION: TRANSITIONAL RATES ESTABLISHED FOR KLAMATH BASIN IRRIGATORS

SUMMARY

For almost 100 years, PacifiCorp has provided discounted power for the drainage and irrigation of land in the Klamath Basin. In exchange, PacifiCorp received the right to regulate the flow of water to its hydroelectric plants located on the Klamath River, and to construct additional hydroelectric facilities. The discounted irrigation rates benefited all of PacifiCorp’s customers by allowing the utility to efficiently operate its hydroelectric plants, reducing its overall power costs.

With the expiration of PacifiCorp’s obligation to provide discounted rates to a majority of these irrigators, we must determine the rates that are just and reasonable for these customers. Given the unique and historical link between irrigation and hydroelectric development in the Klamath Basin, we find that the region’s irrigators are entitled to establish that a mutually beneficial relationship continues to exist and seek a rate credit for any quantifiable benefits provided.

In this order, we establish a procedure by which the irrigators may further develop and refine methodologies to quantify whether the provision of inexpensive power for drainage and irrigation in the Klamath Basin continues to benefit PacifiCorp and its customers. We identify certain parameters to be included in such analysis, and encourage PacifiCorp and others to assist the irrigators in this effort.

In the interim, we begin a transition to move the irrigators from the historical rates to PacifiCorp’s general irrigation tariffs. We implement the rate mitigation provisions of recently enacted Senate Bill 81, and exercise our own authority to ensure the irrigators receive a full seven year transition period to cost-based rates.
As a result of our decision, the Klamath Basin irrigators’ rates will increase an average of 34 percent. Rates for governmental pumping will increase an average of 44 percent. Even with these increases, the irrigation rates for Klamath Basin irrigators will be substantially less than those paid by other irrigators served by PacifiCorp. For example, irrigators operating within and around the Klamath Project will pay first year transition base rates of 0.82 and 0.99 cents per kWh, respectively, compared to the cost-based rate of 6.98 cents per kWh. Due to the operation of the protocol governing PacifiCorp’s multi-state allocation of costs and the provisions of SB 81, the revenue shortfall associated with this mitigation results in an approximate $1.7 million rate increase for PacifiCorp’s Oregon ratepayers.

Procedural Background

On November 12, 2004, PacifiCorp filed Advice No. 04-018, an application for a general rate increase. As part of its filing, PacifiCorp proposed to change rates paid by Klamath Basin irrigators, who are currently served under two historic contracts that provide rates significantly below those paid by other irrigators. PacifiCorp seeks to move these irrigators to standard tariff rates concurrent with the April 16, 2006, expiration date of one of the contracts.

Organizations representing the irrigation customers and other interested parties intervened in the rate proceeding and participated in activities related to this issue. The following entities had party status in these proceedings: PacifiCorp, Klamath Water Users Association (KWUA); Klamath Off-Project Water Users (KOPWU); United States Bureau of Reclamation and U.S. Fish and Wildlife Service (collectively, Bureau); Oregon Natural Resources Council, WaterWatch of Oregon, and Pacific Coast Federation of Fishermen’s Associations (collectively, ONRC, et al.); the Hoopa Valley Tribe; the Yurok Tribe; and Public Utility Commission of Oregon Staff (Staff).

Following a suspension and investigation of the rate filing, we approved new rate schedules for PacifiCorp in Order No. 05-1050. In that order, we did not substantively address rates for the Klamath Basin irrigators. Agreeing with the parties that the rate review for these customers need not be completed prior to the expiration date of one of the historic contracts, we adopted the current historic contract rates, set forth in PacifiCorp’s Schedule 33, as interim rates for purposes of setting PacifiCorp’s revenue requirement. See Order No. 05-1050 at 13. We further explained that, once a decision is made regarding the rates for the Klamath Basin irrigators, PacifiCorp would spread any revenue requirement impact arising from that decision to other customer classes through a revenue-neutral adjustment to its rate spread/rate designs.

On January 17, 2006 and February 6, 2006, parties filed simultaneous opening and reply testimony, respectively. On February 16 and 17, 2006, Michael Grant, Chief Administrative Law Judge, held an evidentiary hearing during which parties cross-examined witnesses. On March 6, 2006 and March 13, 2006, the parties filed opening and reply briefs, respectively. Oral argument was held before the Commission on March 15, 2006.
Outstanding Motions

Subsequent to oral arguments, KWUA and KOPWU filed separate evidentiary motions. Because an Administrative Law Judge ruling on the motions would have been issued shortly before the issuance of this order, we decided it was more expeditious to rule on the motions as part of this order. We address each motion in turn.

1. Motion to Reopen Record/Take Official Notice

KWUA seeks to re-open the record to allow consideration of a recent filing by PacifiCorp, in a matter related to its pending hydropower relicensing proceeding with the Federal Energy Regulatory Commission (FERC). KWUA contends that this document, entitled “Answer of PacifiCorp to Comments Regarding Readjustment of Annual Charges for the Use of a Government Dam,” contains statements that are directly related to these proceedings and should be included in the evidentiary record. Because PacifiCorp made the filing on March 20, 2006, KWUA contends it was not possible for the Commission to receive PacifiCorp’s filing prior to the close of evidentiary hearings in this proceeding. In the alternative, KWUA asks that the Commission take official notice of PacifiCorp’s representation to FERC.

PacifiCorp and Staff object to KWUA’s motion. Both parties contend that the introduction of additional evidence at this time may require additional hearings that will prevent a timely final order. PacifiCorp also contends that its filing with FERC is not relevant to these proceedings.

ORS 756.558(1) governs the introduction of evidence after the record has closed. That statute prohibits the taking of new evidence except upon a Commission order and “a reasonable opportunity of the parties to examine any witnesses with reference to the additional evidence and otherwise rebut and meet such additional evidence.” We agree with PacifiCorp that the time needed to allow other parties the opportunity to examine and rebut this new evidence would delay the issuance of this order.

While the Commission has delayed the issuance of other orders when necessary to obtain and review critical information, we will not extend this proceeding for consideration of the document identified here. Although the Commission requested the parties to address the relationship between our authority to set retail rates for PacifiCorp’s irrigation customers and FERC’s relicensing proceeding, the document KWUA seeks to introduce provides no relevant clarification on that matter. Rather, it merely presents the arguments of one party in an official proceeding that has not yet been resolved. Due to this fact, and in the interest of the timely conclusion of these proceedings, KWUA’s request to re-open the record or to take official notice is denied.

2. Motion to Strike
KOPWU seeks to strike an attachment to ONRC, et al.’s reply brief. The attachment, entitled Exhibit 1, is a copy of the complete response filed by WaterWatch in response to a data request by KOPWU. KOPWU introduced portions of the response at hearing, but now objects to ONRC, et al.’s attempt to submit the entire response after the evidentiary record has been closed.

ONRC, et al. responds that Exhibit 1 is necessary to clarify the record. ONRC, et al. contends that KOPWU misled the Commission by offering only portions of the response when it introduced it as evidence at hearing. ONRC, et al. claims that it did not grasp the implications of KOPWU’s actions until after the filing of opening briefs, and attached Exhibit 1 to its reply brief to ensure the Commission had a complete record.

As discussed above, once the evidentiary record has been closed, new evidence may not be admitted except upon Commission order and an opportunity for rebuttal. Therefore, in order to admit Exhibit 1 in its entirety, ONRC, et al. must first file a motion to re-open the record. As with KWUA’s motion above, the Commission would then have the opportunity to weigh the importance of the additional evidence against any delays that its introduction may cause.

ONRC, et al.’s reliance on the Commission’s evidentiary rule of completion is misplaced. That rule, set forth in OAR 860-014-0060(2)(b), provides that, when a party seeks to introduce a partial exhibit, other parties must “be afforded an opportunity to examine the exhibit and to offer in evidence other portions of the exhibit found to be relevant.” That requirement has been satisfied, as ONRC, et al. was afforded that opportunity during the evidentiary hearing, and by its own admission agreed to the admission of the partial exhibit submitted by KOPWU. Allowing the parties to continue arguing evidentiary issues after the record has been closed violates the principles of administrative efficiency and fairness. Due to this, and the foregoing, KOPWU’s motion to strike is granted.

**FINDINGS OF FACT**

Based on the record in these proceedings, we make the following findings of fact:

**Klamath Basin**

The Klamath Basin is located in southern Oregon and northern California and encompasses the area drained by the Klamath River and its tributaries. The Klamath River begins at Upper Klamath Lake near Klamath Falls, Oregon, and flows to the southwest, entering the Pacific Ocean south of Crescent City, California.

Until the early 1900s, much of the Klamath Basin was covered with vast lakes and marshes. In 1905, the Secretary of the Department of the Interior authorized development of the Klamath Irrigation Project (Klamath Project) to drain and reclaim lands, to divert water for irrigation, and to control flooding. Shortly thereafter, the
Bureau began draining the basin's lakes and marshes and, through a network of dams and distribution canals, transformed the landscape into farmland and pasture.

Today, the Klamath Project uses waters of the interrelated Lost River and Klamath River Basins, including water controlled at Upper Klamath Lake through the Link River Dam. Water diverted into the project canals irrigates over 200,000 acres, on which farmers and ranchers produce crops and livestock. The Klamath Project is designed to efficiently use and circulate large amounts of water. The project consists of many flow-regulating structures and pumps, as well as hundreds of miles of irrigation and drainage canals, laterals, and ditches. Water in excess of the needs of irrigators is stored in regulating reservoirs, or returned back to the Klamath River.

The Klamath Project does not occupy all lands within the Upper Klamath Basin. Private landowners and irrigation districts have developed peripheral areas for agricultural uses. These so-called Off-Project lands are located primarily in the Sprague, Williamson, and Lost Rivers sub-basins, as well as areas adjacent to Upper Klamath Lake and the west side of the Klamath River. In addition to diverting waters from the Klamath River and Lost River systems, Off-Project irrigators also pump ground water for irrigation.

**Hydroelectric Facilities**

PacifiCorp operates seven hydroelectric facilities along the Klamath River. As currently configured, the Klamath Hydroelectric Project has a total nameplate capacity of 151 MW and an average annual production of approximately 85 aMW.

The uppermost facility is the Link River Dam, located at the outlet of Upper Klamath Lake. The Link River Dam was constructed by PacifiCorp's predecessor, California Oregon Power Company (Copco), under a 1917 contract with the Department of the Interior. Under the contract, Copco agreed to finance and construct a dam to regulate the Upper Klamath Lake in exchange for the right to operate the dam in the future. Copco also agreed to maintain the lake at specified elevations for irrigation purposes and furnish water to the irrigators, and was allowed to use surplus water to generate electricity. Copco agreed to supply electricity to the United States and the irrigators at fixed rates for the purpose of pumping of irrigation and drainage water.

In 1951, Copco sought authority to construct additional hydropower facilities on the Klamath River. In 1954, the Federal Power Commission (FPC) authorized construction of the resources, but required Copco and the Secretary of the Interior to either amend the Link River Dam contract, or negotiate a new long term contract that extended the fixed rates for irrigation.

During negotiations to renew the Link River Dam Contract, irrigators insisted that Copco provide contract rates for irrigation and pumping to all customers located within the Klamath River Basin, including the Off-Project irrigators located outside the Project boundaries. Negotiations ultimately resulted in separate contracts for
the On-Project and Off-Project irrigators. The On-Project Contract, entered between Copco and the Department of the Interior, required Copco to furnish electric power to On-Project irrigators at a rate of 0.6 cents per kWh. In addition, Copco was required to provide electric power to the federal government for the removal of water from the Tule Lake and Lower Klamath Lake at 0.5 cents per kWh on-peak, and 0.3 cents per kWh off-peak. The contract, which expires on April 16, 2006, was approved by this Commission on March 9, 1956.

The Off-Project Contract, executed between Copco and an association representing Klamath Basin irrigators, required Copco to provide service to Off-Project irrigators at a rate of 0.75 cents per kWh. The agreement contains no express termination date. While there is no record of this Commission approving the Off-Project Contract, PacifiCorp has provided service to Off-Project irrigators at these rates since 1956.

In 1957, Oregon, California, and the United States executed the Klamath River Basin Compact (Compact). The Compact, enacted in 1957 and codified in ORS chapter 542, is intended to “facilitate and promote the orderly, integrated and comprehensive development, use, conservation and control” of the Klamath River for various uses. These uses include the protection of fish and wildlife, hydroelectric development, irrigation, and flood control. Article IV of the Compact specifically addresses hydroelectric development:

HYDROELECTRIC POWER

It shall be the objective of each state, in the formulation and the execution and the granting of authority for the formulation and execution of plans for the distribution and use of the water of the Klamath River Basin, to provide for the most efficient use of available power head and its economic integration with the distribution of water for other beneficial uses in order to secure the most economical distribution and use of water and lowest power rates which may be reasonable for irrigation and drainage pumping, including pumping from wells.

PacifiCorp became a successor to the On-Project and Off-Project Contracts when it acquired Copco in 1961. Both contracts were incorporated in PacifiCorp’s Oregon tariffs as Schedule 33, which sets rates for the Klamath River Basin irrigators at the level “specified by applicable contract.” Other irrigation customers in Oregon served by PacifiCorp receive service under Schedule 41, which contains the generally applicable cost-based rate, on average, of 6.98 cents per kWh.

Under Schedule 33, PacifiCorp currently serves approximately 1,400 On-Project irrigators and 700 Off-Project irrigators. These irrigators’ average use is greater than the average use of irrigators served under Schedule 41. While the average Schedule 41 customer uses 19.63 MWh, the average On-Project and Off-Project customer uses 39.24 MWh and 75.79 MWh, respectively.
PacifiCorp’s hydroelectric production from its facilities on the Klamath River depends primarily upon the amount, timing, and predictability of water flow. Natural stream flows in the Upper Klamath Basin vary from month to month and year to year. At many times during the winter months, water flows exceed capacity, resulting in water being spilled past the hydropower facilities. In the summer months, flow is greatly diminished due to the lack of rain, but supplemented with releases of stored water in the Upper Klamath Lake.

In recent years, PacifiCorp’s ability to operate its hydroelectric facilities has been limited by competing demands for water in the Klamath Basin and requirements imposed by federal law. In 1997, the Bureau recognized these limitations in a temporary modification to the On-Project contract:

[I]t has become evident that the water supply in the Klamath Basin cannot always meet the needs of the species listed pursuant to the Endangered Species Act (ESA), Tribal trust resources, irrigated agriculture, and wildlife refuges. As a result, PacifiCorp’s ability to exercise its discretion in operating Link River Dam for power purpose has been restricted. In addition, the most recent listing of the Coho salmon under the ESA has caused Reclamation to review its Klamath Project operations.

The FERC is currently reviewing PacifiCorp’s application for the continued operation of its Klamath Hydroelectric Project No. 2082. PacifiCorp’s current license for the Project expired on March 1, 2006.
DISCUSSION

I. What are the appropriate rates PacifiCorp should charge the Klamath Basin irrigators for electric service?

Applicable Law

In this proceeding, we have previously confirmed our authority to examine the rates paid by the Klamath Basin irrigators. In Order No. 05-726, we explained that this Commission's broad ratemaking power cannot be limited by private contract. See American Can Co. v. Davis, 28 Or App 207, rev den 278 Or 393 (1977). Thus, while the Commission had previously approved the On-Project and Off-Project Contracts, we have the continuing authority and obligation to review the appropriateness of the contract rates and modify them upon a proper showing. ¹

We also previously determined that our examination of the rates in this proceeding is governed by the "just and reasonable" standard set forth in ORS chapters 756 and 757. In Order No. 05-1202, we concluded that this standard, used to set rates for all other customers in Oregon, also applied to establishing rates to be paid by the Klamath Basin irrigators.

Before us now is the question whether the current rates paid by the Klamath Basin irrigators are justifiable under the just and reasonable standard. To be just and reasonable, rates must be cost-based and non-discriminatory. No utility may collect from any customer more or less compensation for any service than is collected from any other customer receiving "like and contemporaneous service under substantially similar circumstances." ORS 757.310(1)(b); see also, Publishers Paper Co. v. Davis, 28 Or App 189, 196 (1977).

To approve a rate different than PacifiCorp's standard irrigation tariff set forth in Schedule 41, we must find a substantial and reasonable basis for establishing a separate rate classification for Klamath Basin irrigators. Under ORS 757.230(1), the Commission "may authorize classifications or schedules of rates applicable to individual customers or groups of customers."² The Commission has broad authority under ORS 757.230 and may "use any economic justification—so long as it is a reasonable one—in the creation of customer classes." In re Portland General Electric and PacifiCorp, UE 101/DR 10, Order No. 97-408 at 6.

¹ For this reason, we reject the Off-Project's renewed argument that the Commission may not modify the Off-Project rates because the agreement applicable to those customers contains no expiration date.
² ORS 757.230(1) further provides that "such classification may take into account the quantity used, the time when used, the purpose for which used, the existence of price competition or a service alternative, the services being provided, the conditions of service and any other reasonable consideration."
Summary of Arguments

PacifiCorp, Staff, ONRC, et al., and the Hoopa Valley Tribe contend that the discounted electric rates provided under historic contracts to the On-Project and Off-Project irrigators are not "just and reasonable" under ORS chapters 756 and 757. The parties point out that these rates, which are less than one-tenth of the rates paid by other irrigators, fail to cover PacifiCorp's cost of service. As a result, the parties continue, other PacifiCorp customers subsidize the Klamath Basin irrigators by approximately $10 million per year, thus discriminating against other irrigation customers and imposing additional costs on other customers, including residential and business customers.

ONRC, et al. and Hoopa Valley Tribe also contend that these subsidized power rates encourage increased energy usage and water consumption that adversely affects the environmental health of the Klamath River Basin to the detriment of tribal communities and commercial fishing activities.

According to PacifiCorp, Staff, ONRC, et al., and the Hoopa Valley Tribe, the Klamath Basin irrigators should be served under Schedule 41, which the Commission has previously determined to be "just and reasonable" for agricultural pumping loads under 1,000 kWh. The parties assert that the Klamath Basin irrigators are similarly situated to other irrigation customers served by PacifiCorp in Oregon, noting that they also use power for irrigated agriculture and have similar power usage distributions. The parties contend that there is no substantial difference between power used for agricultural and irrigation purposes in Medford, the Willamette Valley, or the Klamath Basin. They argue, therefore, that the current On- and Off-Project rates are not just and reasonable, are discriminatory, and cannot be justified under Oregon's rate setting statutes.

KWUA, KOPWU and the Bureau claim that there is a substantial and reasonable basis for establishing a separate rate classification for Klamath Basin irrigators. While the parties present varying rationales, collectively they raise two fundamental arguments to justify a lower rate. First, these parties contend that Klamath Basin irrigators have different usage characteristics than other irrigators in PacifiCorp's service territory. They contend that On-Project and Off-Project customers are less costly to serve, and that the On-Project irrigators' end use of power is different than other Schedule 41 customers. Second, they argue that irrigation and hydropower are interdependent in the Klamath Basin, a fact they contend is reflected in the Klamath Basin Compact. These parties claim that, due to this interdependence, the Klamath Basin irrigators provide quantifiable operational benefits to PacifiCorp's system, primarily in terms of increased flows and control and storage of water.

We more fully describe below the irrigators' two primary arguments in support of a separate rate classification. Each summary is followed by a review of the other parties' opposition to each proposal, and Commission resolution.

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3 PacifiCorp notes that one Klamath Basin irrigator has a load size of 1,000 kWh or greater and should be served under Schedule 48.

4 As the Bureau correctly points out, the rates at issue also apply to federal agencies in their use of power for irrigation and drainage purposes within the Klamath Project.
A. Usage Characteristics

Irrigators' Arguments

KWUA, KOPWU and the Bureau contend that the Klamath Basin irrigators are entitled to a separate rate classification because they use more electric power on average than other irrigation customers. This increased use, the parties argue, decrease PacifiCorp’s delivery-related costs for the Klamath Basin irrigators. Using PacifiCorp’s cost of service studies, KWUA calculates this cost differential for On-Project customers to be approximately 1.6 cent per kWh less than other Schedule 41 customers.

KWUA also contends that there are significant differences in the end-use of power between the On-Project irrigators and Schedule 41 customers. KWUA claims that the On-Project irrigators require a significant amount of power to operate the Project, which involves pumping and circulating of large quantities of water for irrigation and returning unused water to the Klamath River. KWUA argues that this increased use, required for the operation of the Project, provides a legitimate basis for treating the On-Project irrigators as a separate customer class under ORS 757.230(1).

Non-Irrigators' Arguments

PacifiCorp, ONRC, et al., the Hoopa Valley Tribe and Staff counter that purported differences in average usage and end-use of power are not a valid basis for a separate customer classification. PacifiCorp contends that the Commission must look beyond a simple comparison of average cost differences and examine whether any differences in general use characteristics actually exist. In that respect, PacifiCorp contends that no service characteristics exist, as the Klamath Basin irrigation customers, like Schedule 41 customers, take service for agricultural pumping, the majority of their usage occurs in the summer, nearly all take service at secondary distribution voltage, and the aggregate load factors are between 12 and 13 percent.

Staff also contends that the Klamath Basin irrigators’ higher use of electricity is simply explained by the price elasticity of demand. Assuming the existence of a negatively sloping demand curve for electricity, Staff states that the higher consumption by the Klamath irrigators is significantly linked to the very low price they pay for electricity.
Commission Resolution

We reject the irrigators' argument that their (the Klamath Basin irrigators') higher average power usage provides a basis for a separate rate classification. A comparison of average use for Schedule 33 and Schedule 41 customers is misleading and ignores the variance in individual customer usage within each schedule. Both rate schedules serve a wide range of customers, from those that consume little or no energy to others that consume over 1,000 MWh per year. A comparison of the average usage for customers served under these two schedules does not demonstrate that the cost of serving each Klamath Basin irrigator is lower than the cost of serving each Schedule 41 customer.\(^5\)

In addition, the irrigators' proposal, if adopted, would discriminate between customers with substantially similar service characteristics. If separate rates were adopted for a subgroup of customers based solely on geographic location and differences in average customer usage, similarly sized irrigation customers in Medford and Klamath would pay different rates, despite no differences in load characteristics. In fact, a large irrigation customer in Medford would pay a higher per-unit rate than a smaller Klamath Basin irrigator—a result contrary to the irrigators' premise that higher-use customers should pay a lower per-unit rate for delivery related costs than lower-use customers.

The irrigators also fail to recognize that Schedule 41 currently accommodates irrigation customers that consume higher than average amounts of electricity. As PacifiCorp points out, basic charges and load size charges under Schedule 41 vary according to customer usage. Thus, irrigators that consume higher amounts of electricity pay a lower per-unit cost than customers that consume less.

We are not persuaded by KWUA’s claim that the On-Project irrigators should be treated as a separate class because they use power for the operation of the Project. As further discussed below, we acknowledge the uniqueness of the Project and further discuss whether its collective activities may provide value to PacifiCorp's hydroelectric projects. However, like other Schedule 41 customers, the On-Project customers, as well as the Off-Project customers, individually use power to pump water and operate sprinklers for the purpose of irrigating crops and draining land. Accordingly, we conclude that there are no service differences that warrant a separate rate classification for the Klamath Basin irrigators.

\(^5\) We agree with Staff that the higher average consumption by the Klamath irrigators is influenced by the low price they pay for electricity. If the On-Project and Off-Project customers were moved to standard tariff rates, economic theory would suggest that their consumption would decrease.
B. Quantifiable Benefits

Irrigators’ Arguments

KWUA, KOPWU, and the Bureau contend that an interdependent relationship exists between the drainage and irrigation of the Klamath Basin and the operation of PacifiCorp’s hydroelectric facilities. The parties assert that discounted electric rates are necessary for the proper irrigation and drainage of lands, both within and adjacent to the Project, and that such activities benefit PacifiCorp and its customers by allowing a more efficient operation of the Klamath hydroelectric facilities and increased peaking capacity. The irrigators maintain that this interdependent relationship is recognized in the historical agreements between PacifiCorp, the federal government and the irrigators, as well as Klamath River Basin Compact. Because of this interdependence, the parties contend that the Klamath Basin irrigators provide quantifiable operational benefits to PacifiCorp’s hydropower facilities.

KWUA, KOPWU and the Bureau introduced substantial evidence in an effort to quantify this benefit for ratemaking purposes. For clarification, we separately address the purported benefits provided by the On-Project and Off-Project irrigators.

On Project

KWUA and the Bureau identified three specific sources of flow benefits provided by On-Project irrigators: (1) The introduction of water from the Lost River Basin; (2) The return flow of water in excess of the Project’s needs to the Klamath River; and (3) The storage and withdrawal of water, primarily in Upper Klamath Lake, that results in Klamath River flows greater than could otherwise occur at certain times of the year.

To quantify On-Project benefits, KWUA compared inflows to Upper Klamath Lake to the flow of water at Keno Dam, with consideration of the Project’s water use. To recognize the fact that the Project has water rights senior to those of PacifiCorp, KWUA adjusted (reduced) the Upper Klamath Lake inflow by amounts estimated to equal the Project’s consumptive use of water. KWUA accomplished this by the use of crop acreage and established evapotranspiration coefficients. KWUA completed its calculations by comparing the adjusted inflow data to the flow at Keno Dam. According to KWUA, when flow at Keno is greater than the adjusted net Upper Klamath Lake inflow, the operation of the Project has resulted in increased flow available for potential generation. KWUA estimated that the additional water to the Klamath River from the Project is approximately 261,000 acre-feet per average water year.

KWUA maintains that these increased flows have a direct monetary value to PacifiCorp. Using average monthly flow volumes, KWUA converted the incremental

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6 Usually abbreviated as ET, evapotranspiration is an estimate of how much water is needed for agricultural land, taking into account both evaporation and plant use.
water supply into energy value using current forward prices. Assuming all additional
water is used for generation, KWUA estimated that this water has an annual value to
PacifiCorp of $10.8 million. KWUA recommends that one-half of this value—$5.4
million or 6.4 cents per kWh—be credited to the On-Project customers. Alternatively,
KWUA suggests the benefit be recognized by setting the On-Project irrigators’ equal to
PacifiCorp’s cost of generation at the Klamath Hydroelectric Project. KWUA calculates
the generation costs of these facilities to be approximately 1.5 cents per kWh.

Off-Project

KOPWU identified two sources of flow benefits provided by Off-Project
irrigators: (1) The increase of flows through pumping of ground water for irrigation; and
(2) The draining of former marshland and open water areas. KOPWU maintains that
water pumped from the groundwater aquifer for irrigation either augments return flow or
decreases surface withdrawals from the Klamath River. Similarly, KOPWU claims
drained lands increase water flow because those lands used more water in their natural
wetland condition through evaporation and increased consumption of water by wetland
plants.

To quantify the increased water supply produced by groundwater
irrigation, KOPWU estimated the amounts and locations of groundwater-supplied Off-
Project lands. It then developed an irrigation water budget for those lands to quantify the
groundwater-derived return flows that ultimately increase the water supply to the
Klamath River. KOPWU estimates Off-Project irrigators pump approximately 120,000
acre-feet of groundwater and return at least 73,000 acre-feet to the Klamath River system.

To assess the increased water supply produced by drainage of lands,
KOPWU estimated the amounts of Off-Project irrigated lands that were former marsh
and open water areas, then quantified the amounts of evapotranspiration associated with
those lands in their pre-development and post-development conditions. KOPWU
estimates that the drainage of the Off-Project lands increases flows in the Klamath River
by approximately 58,000 acre-feet.

KOPWU contends that the increased water from pumping of water for
agricultural irrigation and drainage purposes on Off-Project lands allows PacifiCorp to
generate an additional 81,000 MWh annually. Valuing this additional generation, using
PacifiCorp’s 30-year average power price of $68.86 per MWh, KOPWU estimated the
annual benefit to PacifiCorp to be approximately $5.6 million.
Non-Irrigators’ Arguments

PacifiCorp, ONRC, et al., the Hoopa Valley Tribe and Staff dispute the claims that the Klamath Basin irrigators provide compensable value to PacifiCorp’s hydropower facilities. These parties raise numerous arguments challenging the underlying premise of the claim, the methodologies employed to quantify the benefits, and assumptions and calculations used by the irrigators.

At the outset, PacifiCorp and Staff contend that increased flows from irrigation activities are not a benefit that should be considered in retail ratemaking. They point out that other regulated Oregon electric utilities do not compensate upstream irrigators for increased stream water flows. Staff and PacifiCorp do not believe a utility should provide credits or discounts to a group of customers to compensate them for undertaking activities required by their normal agricultural operations.

Next, PacifiCorp, ONRC, et al., the Hoopa Valley Tribe and Staff contend that the irrigators’ methodologies to quantify benefits are fundamentally flawed. First, the parties claim that KWUA and KOPWU overstate return flows because they ignore the irrigators’ significant diversions and use of water. The parties point out that even KWUA’s analysis shows that the Project diverts significantly more water from the Klamath River system than it returns. Second, they contend the assumption that the irrigators should receive compensation for return flows that reenter the Klamath River is contrary to Oregon water law. The parties explain that all excess and unused waters belong to the public. Because the irrigators have no legal rights in water they do not use for a beneficial purpose, the parties contend these irrigators have no claim to compensation for any subsequent use of the water for hydropower generation.

In addition, PacifiCorp contends that KWUA’s estimates of the Project’s consumptive use are overstated and unreliable. PacifiCorp argues that KWUA’s calculations fail to recognize that some of the consumptive use is satisfied by almost 60,000 acre feet of rain that falls annually on Project lands. PacifiCorp further criticizes the consumptive use analysis for failing to adjust for limitations—both legal and physical—on the Project’s ability to divert water.

Addressing the Off-Project irrigators’ claims of increased flow resulting from groundwater pumping, PacifiCorp and ONRC, et al., argue that KOPWU’s methodology fails to recognize the well documented hydrologic connection between the groundwater aquifer and surface flows in the Klamath Basin. These parties maintain that, due to this connection, groundwater pumping diminishes, rather than enhances, river flows. ONRC, et al., also contend that KOPWU failed to properly account for evaporation resulting from irrigation conveyances and practices that can cumulatively add up to significant water losses.

In addition, PacifiCorp and ONRC, et al., assert there are flaws in KOPWU’s estimates of increased water made available through drainage of natural wetlands. The parties believe that, due to a number of mathematical and hydrologic
errors, KOPWU over-estimates the amount of wetland evaporation that naturally occurred, then under-estimates evaporative losses from croplands.

Finally, PacifiCorp, ONRC, et al., and the Hoopa Valley Tribe contend that the irrigators' analyses are incomplete because they fail to consider whether any purported increases in flow can actually be used to generate electricity. The parties note that KWUA's estimated 261,000 acre feet of increased flow does not reflect any adjustment to account for flows that must be spilled and are unusable for power production. Instead, KWUA simply counted "every single drop" of assumed increase in flow as being used for power generation. Similarly, KOPWU does not account for times when increased flow occurs during high run-off periods that have little or no hydroelectric generation value. Because a significant amount of the purported increase in flow occurs during high water periods or other times when spills are legally required, the parties contend that the irrigators have significantly overestimated the benefit from purported increases in flow between Upper Klamath Lake and Keno. Moreover, PacifiCorp and ONRC, et al., emphasize that, because the return flows are not predictable, they are often not usable for hydropower generation and can cause water management problems.

Commission Resolution

Rate credits are a common regulatory tool used to compensate customers for the value they add to a utility's system. For example, the Commission has authorized PacifiCorp to extend rate credits or compensation to customers that add value to the system through curtailing loads, producing excess electricity, or purchasing renewable energy.  

The concept of providing rate credits to upstream water users is unprecedented, and this Commission has not previously addressed circumstances as unique as those existing in the Klamath Basin. With the coordinated assistance of the federal government, approximately 2,000 irrigators drain and irrigate over 200,000 acres of land located within and adjacent to the Klamath Project. Through an extensive and integrated system of flow regulating structures and hundreds of miles of canals, these irrigators pump, divert and circulate water for irrigation, and return water to the Klamath River for electric generation purposes.

Under agreements with the federal government and the irrigators, PacifiCorp has provided discounted power for the drainage and irrigation of land in the Klamath Basin for almost 100 years. In exchange, PacifiCorp received the right to regulate the flow of water to its hydroelectric plants located on the Klamath River, and to construct additional hydroelectric facilities. These agreements benefited all of PacifiCorp's customers by allowing the utility to efficiently operate its hydroelectric plants and provide additional peaking capacity, thereby reducing its overall power costs.

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7 See, e.g., Oregon Schedules 71, 72 and 73.
Furthermore, the Klamath River Basin Compact recognizes the interdependence between irrigation and hydroelectric development within this region.

In light of this historical link between irrigation and hydroelectric development in the Klamath Basin, we find that the region's irrigators should be given the opportunity to establish that a mutually beneficial relationship continues to exist. While PacifiCorp's obligation to provide inexpensive electricity soon terminates, the irrigators contend that their pumping of groundwater and irrigation water management practices—made possible only through the use of discounted electricity—provide quantifiable operational benefits to PacifiCorp's hydroelectric system. To the extent this assertion can be established, the Klamath Basin irrigators should receive an appropriate rate credit to ensure the continuation of these actions that benefits all PacifiCorp's customers.

The more difficult task is quantifying the value provided by the irrigators for purposes of establishing whether a rate credit is justified. Any rate credit, obviously, necessitates an accurate quantification of the value provided. Unfortunately, as we have learned here, measuring purported benefits from the Klamath Basin irrigators is a complex matter requiring a detailed understanding about the relationship among the Klamath Basin's climate and hydrology, the irrigators' use and management of groundwater and surface flows, and PacifiCorp's operational capabilities of its hydroelectric facilities.

The irrigators have collected extensive data on these matters and proposed methodologies to measure and price this purported value. However, they themselves acknowledge their efforts could be refined with further investigation. PacifiCorp offered no competing methodology. Rather, PacifiCorp admits that the irrigators likely provide some benefit, but questions the ability to quantify any such benefit for purposes of ratemaking. PacifiCorp also joins other parties and criticizes the appropriateness and accuracy of many assumptions and calculations contained in the irrigators' proposals.

We appreciate the irrigators' significant efforts to gather this information and develop methodologies for our consideration. We have learned a significant amount about the relationship between irrigation and hydropower in the Klamath Basin. We find that there is insufficient evidence in this record, however, to support the proposed rate credits. We need more information about the Klamath Basin, the irrigators, and PacifiCorp's hydropower facilities in order to conclusively quantify value and establish any appropriate credit. Moreover, we share some of the concerns raised by PacifiCorp and other parties about the irrigators' proposed methodologies, as well as the underlying assumptions and calculations contained therein.

We need not, however, make a final decision finalizing the rates to be charged the Klamath Basin irrigators in this order. As KWUA indicates, Senate Bill 81 (SB 81), passed by the 2005 Oregon Legislative Assembly, requires this Commission to mitigate any rate increase resulting from the transition of the Klamath Basin irrigators to PacifiCorp's generally applicable tariffs. See, ORS 757.227. As further discussed below, increasing the current Schedule 33 rates by the maximum allowed under SB 81 for the
next two years yields rates less than those proposed by the irrigators. Consequently, there is additional time to improve and refine the calculations of the benefits provided by the Klamath Basin irrigators.

Accordingly, we will begin the process to transition the Klamath Basin irrigators to generally applicable cost-based rates, and direct PacifiCorp to file tariffs consistent with our decisions set forth in Section II below. During the initial phase of this transition, the Klamath Basin irrigators will have the opportunity to further develop and refine methodologies to quantify whether the provision of inexpensive power for drainage and irrigation in the Klamath Basin benefits PacifiCorp and its customers. We encourage PacifiCorp, Staff, and the other parties to this proceeding to work cooperatively with the irrigators in this effort.

The irrigators may then present this information and request an appropriate credit during a future proceeding to review an annual adjustment filing by PacifiCorp to further transition rates to standard tariffs. The Commission may suspend the annual filing for investigation, or allow the adjustment to go into effect subject to refund, to ensure sufficient time to consider the evidence provided. During any such evaluation, the evidentiary burdens will remain unchanged from this proceeding. While PacifiCorp will bear the burden of persuasion as to the reasonableness of any rate change, the irrigators will bear the burden of producing evidence to establish that a rate credit is justified. See ORS 757.210; In Re Northwest Natural, Order No. 99-697.

To assist a future valuation proceeding, we take this opportunity to identify three essential features that must be included in any quantification of benefits to justify a rate credit. First, any analysis must acknowledge that we are setting rates on a going forward basis. Because other customers will be required to absorb any costs resulting from a rate credit, benefits must be quantified on a prospective basis. In other words, for a rate credit to be justified, the Commission must find that the provision of discounted electric rates to the Klamath Basin irrigators will continue to provide value to all of PacifiCorp’s customers. That is, evidence must demonstrate that the amount of operational benefits to PacifiCorp’s system exceeds that which would occur if Klamath Basin irrigators were charged standard tariff rates.

Second, any analysis of benefits must consider all factors that impact the Klamath River stream flow, including the irrigators’ use of water for irrigation. While the irrigators may lawfully be entitled to the beneficial use of this water, the potential impact that these diversions may have on PacifiCorp’s hydroelectric system cannot be ignored. Again, the question is one of ratemaking, not water law. The Commission must examine the entire relationship between discounted electric rates and the effects those rates have on PacifiCorp’s operation of its downstream hydroelectric facilities. No

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8 For similar reasons, questions as to the irrigators’ legal rights to water that re-enters the Klamath River are immaterial to this exercise. The irrigators seek compensation not for the water that has returned to public ownership, but rather for the management practices that purportedly benefit PacifiCorp’s system by increasing and regulating the flow of the Klamath River.
benefit can be found if the net result of the irrigators’ use of discounted electricity actually depletes stream flow and reduces generation capability.

Finally, the mere presence of increased return flows does not, in and of itself, establish a quantifiable benefit. Any analysis must also establish that the augmented flows can actually be used to generate electricity, and provide a reasonable valuation of that electricity. Increased flows that occur during high run-off periods have little or no hydroelectric generation value. Similarly, unpredictable flows often are not useable and may cause water management problems. A proper examination of potential benefits must accurately reflect these and other limitations to PacifiCorp’s generation capabilities and use of any electricity produced.

II. **If any rate change affecting these customers is implemented, how and when should these customers be transitioned from the rates established in the historical contracts?**

Having determined to transition the Klamath Basin irrigators from the rates contained in the historic contracts, we must now address how to implement these rate changes. No party challenges the reasonableness of the rates contained in PacifiCorp’s generally applicable irrigation tariff. Given the significant rate increase that would result from a move from the contract rates to the cost-based rates, however, the irrigators contend that the Commission must mitigate the impact of any such transition.

**Applicable Law**

This Commission has broad ratemaking authority to ensure that rates charged to customers are fair, just, and reasonable. See ORS 756.040. Under this authority, the Commission may mitigate the impact of rate changes to help avoid rate shock. See Order No. 01-988. When allocating a utility’s revenue requirement among customer classes, the Commission has often adopted a policy of gradualism to avoid a substantial rate increase for a particular customer class. For example, in *Re Pacific Northwest Bell*, Order No. 90-920, the Commission had to allocate a telephone company’s revenue requirement between non-basic services, such as long distance, and basic services. Because non-basic services were traditionally priced above cost in order to subsidize basic services, the Commission implemented transitional rates rather than an immediate change to cost-based pricing, in an effort to avoid rate shock.

In addition to this discretionary authority, SB 81, noted above, requires the Commission to mitigate rate increases caused by a change from rates set in contract to those contained in a utility’s generally applicable cost-based tariff. The provisions of SB 81 require a utility to provide a rate credit for seven years to ensure that any such rate increase does not exceed 50 percent per year. The relevant provisions of ORS 757.227 provide:
(2) The Public Utility Commission shall require that an electric company mitigate a rate increase payable by a class of customers [defined to include the Klamath Basin irrigators] if:

(a) The increase results from a transition to an electric company's general applicable cost-based rate from rates established under contracts [defined to include the On-Project and Off-Project agreements]; and

(b) The increase in the cost of electricity to that class of customers by reason of the transition will exceed 50 percent during the first 12 calendar months after the transition occurs.

(3) The commission shall require an electric company to mitigate a rate increase under this section by means of a schedule of rate credits for the class of customers [defined to include the Klamath Basin irrigators]. The rate credits provided by an electric company under the schedule shall automatically decrease each year to the lowest credit necessary to avoid a rate increase that is greater than 50 percent in any subsequent year. Rate credits under this section may not be provided for more than seven years after the transition occurs.

(4) For the purpose of determining the increase in cost of the electricity to a class of customers by reason of a transition described in subsection (2)(a) of this section, the commission shall:

(a) Include the total charges for electricity service, including all special charges and credits other than the rate credit provided under this section; and

(b) Exclude any local taxes or fees paid by the class of customers.
Positions of the Parties

There is no dispute that the rate mitigation provisions of ORS 757.227 apply if the Klamath Basin irrigators are moved from the historical contract rates to PacifiCorp's generally applicable cost-based rate schedules. The parties further agree that these rate mitigation provisions apply to existing metering points at which service is now provided under the On-Project and Off-Project contract rates. This would be the case even for new customers that take service at currently existing metering points. In addition, that the cost-based rate should be based only on energy-only charges, and not include energy demand charges, at least during the transition period.

The parties disagree, however, as to how rates during the transition period should be calculated and, consequently, present different formulas to determine the transitional rates. The primary dispute centers on the rate to which the 50 percent cap applies. On one hand, the irrigators contend that the Commission should use the Schedule 33 rates as adjusted by all applicable special charges and credits. KOPWU explains that the Klamath Basin irrigators' rates are currently subject to three adjustment schedules:

Schedule 91 – Low Income Bill Payment Assistance Fund
Schedule 98 – Bonneville Power Administration (BPA) Exchange Credit
Schedule 290 – Public Purpose Charge

Because ORS 757.227(4)(a) requires inclusion of all “special charges and credits,” KWUA and KOPWU contend that the adjustments must be included to ensure that the Klamath Basin irrigators do not experience a bill increase greater than 50 percent in a given year.

On the other hand, PacifiCorp and Staff contend that the Commission should use the Schedule 33 rates without adjustment. According to PacifiCorp, the highlighted language referring to “all special charges and credits” does not include the BPA exchange credit, and that the BPA credit must be excluded to ensure that this federal benefit is not diluted to qualified customers receiving it. PacifiCorp maintains that this is consistent with Commission practice, adding that the effects of the BPA credit have not been included in determining rate spread and rate design in the company’s recent general rate cases. Staff contends that the irrigators’ methodology circumvents the intent of the legislation to provide the Klamath Basin irrigators a seven-year transition period to standard tariffs.

The two proposals yield significantly different transitional rates, primarily due to the size of the BPA credit. This credit, provided to qualifying Schedule 33 customers, is currently 0.488 cents per kWh.\(^9\) The following chart compares the

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\(^9\) Certain Schedule 33 customers, including the federal agencies and a golf course, are not qualifying customers for the BPA credit because they do not use electricity for agricultural pumping.
transitional rates, expressed in cents per kWh, for both the On-Project and Off-Project irrigators under the two proposals:

<table>
<thead>
<tr>
<th>YEAR</th>
<th>Irrigators' Proposal</th>
<th></th>
<th>PacifiCorp's and Staff's Proposal(^\text{10})</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>On-Project</td>
<td>Off-Project</td>
<td>On-Project</td>
<td>Off-Project</td>
</tr>
<tr>
<td>Current Rate</td>
<td>0.16</td>
<td>0.32</td>
<td>0.6</td>
<td>0.75</td>
</tr>
<tr>
<td>2006</td>
<td>0.24</td>
<td>0.48</td>
<td>0.9</td>
<td>1.13</td>
</tr>
<tr>
<td>2007</td>
<td>0.37</td>
<td>0.71</td>
<td>1.35</td>
<td>1.69</td>
</tr>
<tr>
<td>2008</td>
<td>0.55</td>
<td>1.07</td>
<td>2.03</td>
<td>2.53</td>
</tr>
<tr>
<td>2009</td>
<td>0.83</td>
<td>1.61</td>
<td>3.04</td>
<td>3.80</td>
</tr>
<tr>
<td>2010</td>
<td>1.24</td>
<td>2.41</td>
<td>4.56</td>
<td>5.70</td>
</tr>
<tr>
<td>2011</td>
<td>1.86</td>
<td>3.62</td>
<td>6.83</td>
<td>8.54</td>
</tr>
<tr>
<td>2012</td>
<td>2.79</td>
<td>5.42</td>
<td>10.25</td>
<td>12.81</td>
</tr>
</tbody>
</table>

Commission Resolution

In analyzing ORS 757.227, we use the method set forth in *PG&E v. Bureau of Labor and Industries*, 317 Or 606, 610-12 (1993). We begin with the text and context of the statute, using rules of construction of statutory text. If the intent of the legislature is not clear from that inquiry, we then examine legislative history. If that too fails, we then turn to general maxims of statutory construction. *See id.*

The statute first defines the triggering event to determine whether a customer qualifies for the rate credit. The trigger is two-fold: First, the increase in rates must result from a change to a utility’s generally applicable cost-based rate from rates established under long-term contracts. Second, the increase in the “cost of electricity” must be more than 50 percent during the first year after the transition occurs. *See ORS 757.227(2)(a) and (b).* Next, the statute provides for a “rate” credit to avoid a “rate” increase that is greater than 50 percent in any subsequent year. Such “rate” credits are limited to a seven year transition period. *See id.* at (3). Then, the statute defines how the Commission must determine the increase in the “cost of electricity” to a class of customers. *See id.* at (4).

The parties dispute the interpretation of the “rate” in subsection (3) that is subject to a cap of a 50 percent increase per year. KWUA and KOPWU appear to argue that the “rate” in section (3) is the same as the “cost of electricity” defined in subsection (4), as including the “total charges for electricity service, including all special charges and credits other than the rate credit” provided by ORS 757.227. In essence, the “cost of electricity” is the actual amount paid by the customer for the electricity after adjusting for any credits and charges. The irrigators’ reading that equates “cost of electricity” with “rate” is a plausible interpretation, considering the parallel structure.

\(^{10}\) The proposals offered by PacifiCorp and Staff differ with respect to the post-calculations treatment of credits and charges, as well as adjustments to the BPA credit. These differences are further addressed below.
between the 50 percent increase in the cost of electricity trigger in subsection (2), and the
50 percent cap on the annual increase in rates in subsection (3). See *Davis v. Wasco IED*,
286 Or 261, 272 (1979) ("whenever possible the court should construe together statutes
on the same subject as consistent with and in harmony with each other").

Under PacifiCorp's and Staff's proposal, the "rate" subject to the cap
refers to the base rate charged for electricity, and does not include all of the charges and
credits that are used to calculate the "cost of electricity." This interpretation is also
plausible. The law refers separately to the "cost of electricity" and the "rate," implying
two different meanings. See *Premier West Bank v. GSA Wholesale, LLC*, 196 Or App
640, 651-52 (2004) ("Ordinarily, when the legislature has used different terms in related
statutes, we infer that it intended different meanings."). Under this interpretation, the
rates subject to the cap in subsection (3) would refer strictly to the gross rates, and would
not include the charges and credits as set forth in subsection (4) that would be included to
determine whether the trigger is met under subsection (2).

Given the two plausible interpretations, we refer to legislative history.
That examination supports the latter reading of the statute: The rate should be increased
each year, without consideration of special charges and credits. During floor speeches in
both the Senate and the House, legislators addressed the rate mitigation for Klamath
Basin irrigators. In the Senate, Senator Whitsett discussed the history underlying the
contract rate and explained that, under the bill, the rate will be increased to reach the "full
market tariff on the 7th year." See Floor Statement, Oregon State Senate, SB 81, July 11,
2005, 10:10 (statement of Doug Whitsett, State Senator). Senator Whitsett concluded
that "this measure will simply prevent the Commission from increasing the rate more
than 50 percent per year." See id. at 14:00. In the House, Representative Garrard
similarly referred to "rates" and not customer bills nor the cost of electricity. See Floor
Statement, Oregon House of Representatives, SB 81, June 2, 2005, 1:34:30 (statement of
Bill Garrard, State Representative).

Both legislators assumed that annual 50 percent increases for seven years
would result in the full tariff rate. Under KWUA's and KOPWU's proposed calculations,
On-Project and Off-Project irrigator rates would be only 40 percent and 70 percent,
respectively, of the standard rates after seven years, falling well short of the result
intended by the legislators. Moreover, because the rate credits may not extend beyond
seven years, these irrigators would again be faced with a substantial rate increase to cost-
based rates that the legislature sought to avoid. Statements by legislators weigh heavily
in our interpretation of ORS 757.227. See *Errand v. Cascade Steel Rolling Mills*, 320
Or 509, 521-24 (1995) (discussing various views of witnesses and upholding views
expressed by two legislators); *Esllamizar v. American States Ins Co*, 134 Or App 138, 145
n 3, rev den 322 Or 228 (1995) (legislative history is useful to the extent that it supports a
plausible reading of the text itself).

Based on the legislative history, we conclude that the Legislative
Assembly intended that the "rates" subject to the 50 percent cap must be considered
separately from the "cost of electricity" used to determine whether the mitigation
provisions are triggered. We find support for this interpretation in the language of the
statute, which distinguishes between the term “cost of electricity,” used in subsection (2) and defined in subsection (4), and the term “rates,” used in subsection (3). See PGE v. BOLI, 317 Or at 611 (“use of the same term throughout a statute indicates that the term has the same meaning throughout the statute”). By using different terms, the legislature indicated that there is a difference in the treatment of rates and the cost of electricity; therefore, rates subject to the 50 percent cap are not subject to calculation including “special charges and credits.”

We reject KOPWU’s statement that a customer-by-customer approach should be taken in calculating rates. The text of the statute refers to “a class of customers.” See OAR 757.227(2).

Applying ORS 757.227 to the case at hand, we first determine the cost of electricity, using special credits and charges, to determine whether the Klamath Basin irrigators are eligible for the rate credit set forth in ORS 757.227(3). Finding that the mitigation provision is triggered, we next determine the transitional rate by increasing the irrigators’ base rate by 50 percent. This calculation yields the maximum first year transitional rates allowed under ORS 757.227. These rates, expressed in cents per kWh, are as follows:

<table>
<thead>
<tr>
<th>On-Project</th>
<th>Off-Project</th>
<th>On-Peak Gov’t Pumping</th>
<th>Off-Peak Gov’t Pumping</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.90</td>
<td>1.13</td>
<td>0.75</td>
<td>0.45</td>
</tr>
</tbody>
</table>

We note that increasing the base rates for On-Project and Off-Project irrigators by the maximum allowable 50 percent each year will result in rates that exceed the Schedule 41 base rate in the seventh year. Similar calculations for base rates for on-peak and off-peak government pumping also exceed the Schedule 41 base rates in the seventh and eighth year, respectively. While such rates are permissible under ORS 757.227, we acknowledge the apparent intent under SB 81 to provide a full seven year glide path to adjust the Klamath Basin irrigators’ contract rates to standard irrigation tariffs. Accordingly, we exercise our discretion and further mitigate rates for these irrigators to fulfill that objective.

To accomplish this, we first identify the target Schedule 41 base rate. Like the current Schedule 33 rates, Schedule 41 rates are subject to the BPA credit, the public purpose charge, and the low income assistance charge. In addition, Schedule 41 rates are subject to additional adjustments not applicable to Schedule 33, including a power cost adjustment mechanism (Schedule 95) and a Senate Bill 1149 surcharge (Schedule 292). For our purposes here, we conclude that a comparable Schedule 41 base rate excludes those adjustments common to Schedule 33, but not others. Using the revenues from net rates and annual megawatt hours reported in PacifiCorp’s compliance filing in UE 170, Advice No. 05-013, we calculate the average Schedule 41 base rate to be 6.98 cents per kWh.
Next, we determine the amount of rate increase that is necessary to transition the Klamath Basin irrigators to this target rate in eight years. The required rate increase will vary among the On-Project, Off-Project, and Governmental pumping customers. This average annual rate change required for this transition, plus the resulting first year transition rates expressed in cents per kWh, are set forth below by customer type:

<table>
<thead>
<tr>
<th></th>
<th>On-Project</th>
<th>Off-Project</th>
<th>On-Peak Gov't Pumping</th>
<th>Off-Peak Gov't Pumping</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rate Increase</td>
<td>35.9%</td>
<td>32.2%</td>
<td>39.0%</td>
<td>48.2%</td>
</tr>
<tr>
<td>Year One Rate</td>
<td>0.815</td>
<td>0.991</td>
<td>0.695</td>
<td>0.445</td>
</tr>
</tbody>
</table>

These rate increases, less than the 50 percent maximum increase allowable under ORS 757.227, will steadily move the Klamath Basin irrigators, over a seven year transition period, from their applicable historic base rates to the uniform cost-based rate charged to other irrigators served by PacifiCorp.

We recognize that the Schedule 41 base rate is not a fixed target. While that current rate is 6.98 cents per kWh, there is no guarantee that the rate will remain constant during the seven-year transition period. Indeed, in its recent rate filing, PacifiCorp proposes to increase the Schedule 41 rates by almost 20 percent.\(^{11}\) Consequently, any change to Schedule 41 rates will require the adoption, at the next annual adjustment to the Klamath irrigators' rate, of a new transition rate aimed at moving the irrigators to the new rate Schedule 41 at the end of the seven-year period. Any such adjustment, obviously, will modify the percentage of the annual increase in base rates. In no event, however, may the increase in rates to the Klamath Basin irrigators exceed 50 percent in any year. See ORS 757.227(3).\(^ {12}\)

To determine the total cost of electricity to be charged to the irrigators, PacifiCorp must finally adjust these transition rates by the applicable charges and credits, which consist of the BPA credit, the public purpose charge, and the low income assistance charge. Because the BPA credit for current Schedule 33 customers is less than for Schedule 41 customers, we adopt PacifiCorp's proposal to increase this credit by 0.08

\(^{11}\) Any party may object to this fact within 15 days of this order. See OAR 860-014-0050(2).

\(^{12}\) The possibility exists that, if Schedule 41 rates increase, this 50 percent cap may preclude the Commission from adopting annual rate increases that are large enough to move the Klamath Basin irrigators to cost-based rates within the seven-year transition period. Upon the termination of that cap in the eighth year, the Commission will have the option to either move the irrigators directly to existing Schedule 41 rates or adopt new rate mitigation measures.
cents per kWh for seven years or until the Klamath Basin irrigators' credit is equivalent to the credit applied to other irrigators, whichever comes first. In addition, we further adopt PacifiCorp's proposed transition of the Klamath Basin irrigators' annual horsepower minimum charges, as modified to reflect the percentage increases applied to the base energy rate.

Due to the operation of PacifiCorp's multi-state allocation protocol and the provisions of SB 81, the parties agree that the revenue shortfall associated with the rate mitigation should be spread equally among PacifiCorp's other Oregon customers. This results in an approximate $1.7 million rate increase for Oregon ratepayers. The increase should be spread among all customer classes on an equal percentage of revenue basis.

ORDER

IT IS ORDERED that PacifiCorp shall file revised tariffs consistent with the conclusions of this order, to be effective on April 17, 2006.

Made, entered, and effective _______ APR 12 2006 _______

Lee Beyer
Chairman

John Savage
Commissioner

Ray Baum
Commissioner

A party may request rehearing or reconsideration of this order pursuant to ORS 756.561. A request for rehearing or reconsideration must be filed with the Commission within 60 days of the date of service of this order. The request must comply with the requirements in OAR 860-014-0095. A copy of any such request must also be served on each party to the proceeding as provided by OAR 860-013-0070(2). A party may appeal this order by filing a petition for review with the Court of Appeals in compliance with ORS 183.480-183.484.
Decision 06-04-034 April 13, 2006

BEFORE THE PUBLIC UTILITIES COMMISSION OF THE STATE OF CALIFORNIA

In the Matter of the Application of PACIFICORP (U 901-E) for an Order Authorizing a General Rate Increase and Implementation of an Energy Cost Adjustment Clause and a Post Test-Year Adjustment Mechanism. Application 05-11-022

(Filed November 29, 2005)

Order Instituting Investigation on the Commission's Own Motion into the Rates, Operations, Practices, Service and Facilities of PacifiCorp. (U 901-E). Investigation 06-03-002

(Filed March 2, 2006)


Morrison & Foerster, LLP, by Peter W. Hanschen for Klamath Water Users Association; Berliner Law PLLC., by Roger Berliner, Attorney at Law; Hanson Bridgett, by Courtney M. Coates, and Frank J. DeMarco, Attorney at Law, for the County of Siskiyou; U.S. Department of the Interior, by Steve Palmer, Attorney at Law, for the U.S. Bureau of Reclamation and U.S. Fish and Wildlife Service; Karen N. Mills, Attorney at Law, for the California Farm Bureau Federation; Anderson & Poole, by Edward G. Poole, Attorney at Law, for Western Manufactured Housing Community Association; Davison Van Cleve, PC, by S. Bradley Van Cleve, Attorney at Law, for Roseburg Forest Products; Morisset, Schlosser, Jozwiak & McGaw, by Thomas P. Schlosser, Attorney at Law, and Grett L. Hurley, for Hoopa Valley Tribe; William F. Grader, Jr., Attorney at Law, and Glen H. Spain, for Pacific Coast Federation of Fishermen's Association; and James V. McCarthy and Steven E. Pedery, for Oregon Natural Resources Council, interested parties.

Diana L. Lee, Attorney at Law, for the Division of Ratepayer Advocates.
OPINION GRANTING INTERIM IRRIGATION RATES
WITHIN THE KLAMATH RIVER IRRIGATION PROJECT

I. Summary
  By this decision, a four-year transition plan is adopted to bring Klamath
Irrigation Project (Project) customers that no longer qualify for fixed rates under
a 1956 Contract between PacifiCorp and the United States Department of Interior
(Interior) up to full PA-20 Irrigation tariff rates. This approval authorizes
PacifiCorp to establish a Klamath Transition Memorandum Account (KTMA)
and to seek recovery of the shortfall tracked in that memorandum account in
subsequent hearings to be held in this proceeding. This approval also authorizes
the Klamath Water Users Association (KWUA) and Interior to seek a separate
rate classification for Project customers and to challenge the proposed level of
generally applicable tariffed rates for irrigation customers in subsequent
hearings to be held in this proceeding.1

II. Background
  The Project is a federal reclamation project that was specifically authorized
by the Secretary of the Interior in 1905. The Project service area is located within
the vicinity of Klamath Falls, Oregon and encompasses reclamation and
irrigation lands in the States of California and Oregon. The Project uses waters of
the interrelated Lost River and Klamath River Basins including water controlled

1 KWUA is a nonprofit corporation comprised of approximately 20 public agencies,
most of which are irrigation districts, and many family farms and ranches and other
agricultural-based businesses located in and around the Upper Klamath River Basin.
Many KWUA members receive water for irrigation through facilities constructed or
improved by Interior as part of the Project.
at Upper Klamath Lake through the Link River Dam. Water diverted into the project canals makes service available to nearly 200,000 acres of family farms and ranches and the Lower Klamath and Tule Lake National Wildlife Refuges within the Project service area.

In 1917, PacifiCorp's predecessor, California-Oregon Power Company, entered into a contract with the United States Bureau of Reclamation whereby PacifiCorp agreed to construct the Link River dam and convey it to the United States in exchange for the right to operate the dam for 50 years. The contract gave PacifiCorp authority to regulate Klamath River stream flows to its existing and future downstream hydroelectric facilities.

Under the terms of the 1917 Contract, PacifiCorp agreed to furnish power at stipulated rates for irrigation and drainage of lands within the Project through 1967. At the end of the 1917 Contract, PacifiCorp was operating five hydroelectric plants, three in Oregon and two in California for a total rated capacity of 51,560 kilowatts.

As the 1917 Contract neared the end of its 50-year term, Interior began studying the prospect of developing its own power resources on the Klamath River for the benefit of the Project. At about the same time, PacifiCorp applied for a federal license for a large, new hydroelectric facility. Interior protested PacifiCorp's license request and subsequently withdrew its protest in exchange for a license condition requiring PacifiCorp to execute a contract to continue providing power to the Project at terms acceptable to Interior.

On January 27, 1954, the Federal Energy Regulatory Commission (FERC), previously Federal Power Agency, granted PacificCorp its requested license amending or extending the 1917 Contract for a time period at least equivalent to
the time period of the license, under terms and conditions substantially similar to those contained in the 1917 Contract.\textsuperscript{2} FERC then issued Opinion 266-A, supplementing and amending its order issuing the requested license.\textsuperscript{3} In that decision, FERC retained the requirement that PacifiCorp amend or renew the 1917 Contract with the United States.

PacifiCorp spent approximately two years negotiating a contract (1956 Contract) with Interior. The terms of the 1956 Contract allowed for PacifiCorp to continue regulating the level of water in Upper Klamath Lake for an additional 50 years. For this new contract, PacifiCorp agreed to provide electricity under its Schedule A (Code 40) for pumping Klamath River water for use on Project land and for drainage of Project land at $0.006 per kWh (kilowatt-hour), a $0.001 reduction from the 1917 Contract amount of $0.007. PacifiCorp also agreed to continue providing electricity to the United States government and its successors in interest under Schedule B (Code 33) for pumping water from Tule Lake and Lower Klamath Lake sumps and for irrigation within the beds of Tule Lake and Lower Klamath Lake at $0.005 kWh during peak hours and $0.003 per kWh during off-peak hours.\textsuperscript{4}

The 1956 Contract was brought before this Commission and the Oregon Commission for approval as it related to PacifiCorp's respective California and

\textsuperscript{2} The Federal Power Agency is now known as FERC. We consistently refer to FERC throughout this decision.

\textsuperscript{3} See in the matter of the California Oregon Power Project No. 2082, 15 F.P.C. 14 (1956).

\textsuperscript{4} It should be noted that the Commission's General Order 96A authorizes public utilities to furnish reduced rates or under conditions otherwise departing from its filed tariffs schedules to the United States and to its departments and to the State of California and its political subdivisions and municipal corporations.
Oregon operations prior to being submitted to FERC in satisfaction of the license condition.

This Commission authorized PacifiCorp to carry out the terms and conditions of the 1956 Contract with the Interior as the Contract related to California, pursuant to Decision (D.) 52809, dated March 27, 1956. The 1956 Contract was also approved by the Oregon Commission. PacifiCorp then submitted the California and Oregon approvals to FERC in satisfaction of the license condition.

The 1956 Contract expires on April 16, 2006. After that date, PacifiCorp no longer has a basis for serving Project customers at the 1956 Contract rates. If PacifiCorp is to continue providing electric service to Project customers in California, PacifiCorp must place those customers on either an established tariff or seek Commission authority to provide service on a new tariff.

III. Applicable Tariff Rate

On January 4, 2006, PacifiCorp filed Advice Letter No. 328-E seeking authority beginning April 17, 2006 to place its Project customers on its current Irrigation Schedule PA-20 tariff rate of $0.07928, an immediate 1,300% increase from the current $0.006, $0.005 and $0.003/kWh contract rates. PacifiCorp stated in that Advice Letter that the Project irrigation rate will also be subject to a subsequent rate change as part of this general rate case (GRC) proceeding.

At the same time, PacifiCorp recommended in this proceeding that Project area customers take electric service in California under PacifiCorp’s Schedule

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5 That decision was reopened by the Commission on April 11, 1956 on an apparent opposition to a new Link River Dam contract. Upon completion of public hearings, the Commission concluded in D.53658, dated August 29, 2006, that the authority granted in D.52809 should not be revoked or altered.
PA-20 tariff at full tariff prices. KWUA, Interior, and other entities filed protests to PacifiCorp’s Schedule PA-20 proposal.

At this proceeding’s January 18, 2006 Prehearing Conference (PHC), all parties agreed to consider an interim irrigation proposal for Project customers pending a final decision in this proceeding. That PHC was continued to January 30, 2006 at which time PacifiCorp, KWUA, and Interior presented their joint agreement on a transition of Irrigation rates to begin at the conclusion of the 1957 Contract.

All parties agreed to an expedited hearing schedule which included the foregoing of opening and reply briefs for an oral argument at the conclusion of the March 7, 2006 evidentiary hearing and a shortened draft decision comment period so that the Commission may vote and issue a decision on interim rates for Project customers prior to the April 16, 2006 contract expiration date.

**IV. Transition Rate Plan**

The transition rate plan proposed by PacifiCorp, KWUA, and Interior is attached to this decision as Appendix A. The plan provides for a four-year, five-step plan to transition Project customers to full tariff pricing by April 17, 2010.  

For the first two years, project customers will be billed a fixed per kWh charge for energy consumption. No load size charges or other demand-based charges will be applicable to Project customers during this time period.

Most Project customers will experience an immediate 333% rate increase to $0.026/kWh from $0.006/kWh, effective April 17, 2006. That rate will be

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6 Oregon Senate Bill 81 (2005) requires a seven-year maximum phase-in of increased rates for Oregon Project customers. Rates may increase a maximum of 50% over the rate that is charged in the prior year.
adjusted by the overall percentage increase approved by the Commission in this proceeding, when new rates become effective, currently projected at January 1, 2007. Effective April 17, 2007, the fixed rate will be increased to $0.0385/kWh plus a further adjustment by the same overall percentage impact when rates become effective from this proceeding, capped at $0.040/kWh. On or about January 1, 2008, this rate will further be adjusted by the overall percentage impact of attrition mechanisms (Energy Cost Adjustment Mechanism (ECAM) and Post Test-Year Adjustment Mechanism (PTAM)) that may be approved in this proceeding, subject to a $0.042/kWh cap.

For the remaining two years, Project customers will be billed according to the terms of the then-applicable standard tariff rate schedule, including load size and other demand-based charges, less a 40% discount in Year Three and 20% in Year Four. At the end of the fourth year, Project customers will pay the full rate of the then applicable standard tariff.

The transition plan also provides for the creation of a memorandum account to track deferral of the revenue shortfall associated with the transition plan beginning April 17, 2006 and continuing until rates are effective in this GRC proceeding, currently projected at January 1, 2007. A memorandum account is a deferral account wherein costs may be accumulated for potential recovery at

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7 The Exhibit 1 draft memorandum account preliminary statement as clarified in the Reporter’s Transcript Vol. 1, p. 81, provides for the application of a carrying charge on the average monthly balance based on PacifiCorp’s authorized return on equity. To the extent this memorandum account may be authorized, the carrying cost should be based on the same basis as other memorandum accounts under this Commission’s jurisdiction. That basis is at the rate earned on prime, three-month commercial paper rate, as reported in Federal Reserve Statistical Release H.15.
some future point. PacifiCorp will seek recovery of the shortfall incurred in 2006 estimated at $2.4 million in test year 2007. Shortfalls associated with the remaining term of the transition plan will be recovered from all non-Project California customers by an equal percentage increase. Finally, KWUA and Interior are to have an opportunity to argue in this proceeding that PacifiCorp’s PA-20 tariff is not the appropriate tariff applicable to Project customers and may present proposals for a separate tariff classification in this proceeding.

A. Support

PacifiCorp, KWUA, and Interior support the transition plan.

PacifiCorp supports the transition plan even though it could not conclude from a cost to serve perspective that Project customer provide quantifiable operational benefits to the PacifiCorp system. This is because full transition to its PA-20 tariff will be a huge percentage increase to a very small number of its customers (approximately 630 of 45,000 California customers) and create a pronounced change in the role of electricity costs in the production process of these customers. While the circumstances of Project customers and existence of the 1917 and 1956 Contracts are unique to PacifiCorp, it contends that this Commission has on many occasions taken steps to moderate the impact

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8 Reporter’s Transcript Vol. 1, p. 81.

9 Correspondence supporting the transition plan was received from various interested parties including the American Rivers, California Trout, Karuk Tribe of California, Klamath Forest Alliance, The Klamath tribes, Modoc County Supervisor District 5, Northern California/Nevada Council of Fly Fishers, Pacific Coast Federation of Fishermen’s Associations, Salmon River Restoration Council, Trout Unlimited, Waterwatch, and World Wildlife Fund.
of rate changes on a particular customer class.\textsuperscript{10} PacifiCorp believes that a reasonably short transition period to full tariff rates will mitigate the impact of economic dislocation on Project customers and limit the level of the revenue shortfall assigned to non-Project California customers.

KWUA asserts that inexpensive sources of electricity are necessary to carry out the purposes of the Project which is based on circulating large quantities of water throughout the project area for national wildlife refuges and irrigation purposes and then returning large quantities of water to the Klamath River for electric generation purposes. KWUA contends that the 1,300\% increase to full PA-20 rates after almost 90 years of low cost electricity will result in extreme rate shock. It will also be prohibitive for Project customers to absorb such a large increase into their respective operations over a short period of time.

KWUA explains that the operating margins for Project customers are very thin and cannot absorb anything near a 1,300\% increase in one of the primary cost components for agricultural operations. These Project customers not only pay for their own electric usage, they must reimburse irrigation districts and the Bureau of Reclamation for the increased cost that those agencies experience. Further, the Project customers and irrigation districts have already set their budgets for the 2006 growing season and have acquired crop loans and assigned assessments for 2006.

KWUA concludes that the appropriate way to mitigate rate shock and to avoid severe economic problems for Project customers is to transition rates

\textsuperscript{10} See, for example, 65 CPUC 2d 362 at 408, Southern California Edison Company’s 1996 GRC decision.
over a four-year period based on a full tariff rate that may be a tariff other than Corp’s Irrigation PA-20 tariff.

Interior, while not providing direct testimony in this proceeding is on record in its protest of PacifiCorp’s license request to build the Big Bend Project on the Klamath River that without low cost power, many thousands of acres in the project would be forced out of production. It further contends that if the water is not available for development of power, the success or failure of a majority of the farmers within the project will depend entirely upon what rate PacifiCorp shall charge.\textsuperscript{11}

\textbf{B. Opposition}

The County of Siskiyou (Siskiyou) and the Division of Ratepayer Advocates (DRA) oppose the transition plan as proposed.

The opposition of Siskiyou is based on a lack of equitable treatment among PacifiCorp’s California ratepayers. Siskiyou finds that while some small farms in the Project area will benefit from this arrangement, the majority of the benefit will go to 10\% of Project customers who use more than 100,000 kWh annually and more than 50\% of the power consumed by PacifiCorp’s entire irrigation class.

Siskiyou could find no benefit flowing to PacifiCorp’s California non-Project customers. It cited both PacifiCorp’s acknowledgment that ratepayers receive no benefit out of this arrangement and results of its own investigation. It also found that PacifiCorp began discussions nearly four years ago (2002) with Project customers on the rate charge will take place. Siskiyou

\textsuperscript{11} Protest of the United States to the Application for License of the California-Oregon Power Company; Project No. 180, June 1, 1951.
contends that the allocation of Project customers' shortfall to PacifiCorp's remaining ratepayers inappropriately requires non-Project California customers who can least afford to pay higher electricity rates to subsidize Project customers fortunate enough to have rates a fraction of what the non-Project customers have paid since 1917.\textsuperscript{12}

DRA's opposition is also based on the lack of equitable treatment among PacifiCorp's California customers. According to DRA, PacifiCorp's entire system, a multi-state system having an interconnected electrical grid of which California has traditionally been allocated approximately 2\% of costs, received benefit from the FERC's license associated with the 1956 Contract. DRA believes that the entire system should continue to share that cost subsidy during the proposed transition period.

DRA identified the California subsidy associated with the 1956 Contract, approved in PacifiCorp's prior GRC proceeding, to have been $68,000 on an annual basis.\textsuperscript{13} PacifiCorp's unilateral discontinuance of its multi-state cost allocation associated with the 1956 Contract hydro facilities shifts a $3.4 million subsidy from the other states to California.

DRA also finds that large Project customers, including Interior, would not suffer a significant hardship if they are required to pay full tariff rates. However, it does acknowledge that smaller Project customers using less than 100,000 kWh per year may be adversely impacted. For those smaller customers,

\textsuperscript{12} The medium income in Siskiyou County is only $29,281 in comparison to the overall California medium income of $49,924.

\textsuperscript{13} D.03-11-018 (2003) approved a settlement resolving GRC rate case issues arising from PacifiCorp's Application 01-03-026.
DRA does not oppose the establishment of a transition rate. In this regard, DRA recommends that a transition rate for small Project customers should be set at a level that at least covers applicable transmission and generation costs. It recommends that a transition rate floor be no lower than 52% of the applicable tariff rate, or $0.041 per kWh with appropriate upward adjustments to full tariff rates during the transition period.

C. Discussion

Under the proposed transition plan, PacifiCorp benefit from the ability to collect its full tariff rates applicable to energy usage of Project customers irrespective of what rate Project customers are billed. Project customers will also benefit. Their benefit will come from paying less than full PA-20 tariff rates for the next four years. An added benefit to Project customers is their ability to seek a rate classification distinctly lower and separate from non-Project irrigation customers. To the extent that a separate rate classification is established, Project customers may benefit through a phase-in to full tariff rates over the transition period.

The following tabulation compares the Project customers' average rate under both the proposed transition plan and under current and proposed PA-20 rates. The estimated $7.4 million shortfall over the entire transition period is to be spread on an equal percentage basis to non-Project customers' bills, resulting in an increase of approximately 2.4% over the transition period. The amount and percentage are based on PacifiCorp's requested test year 2007 application and

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14 These are approximate numbers which assume PacifiCorp's 15.6% requested test year 2007 increase is granted, the requested energy cost adjustment clause (ECAC) is granted and there is a 2.0% ECAC adjustment at January 1st of 2008, 2009, and 2010.
cost allocations subject to a subsequent hearing in this proceeding. To the extent that PacifiCorp’s total request is not adopted and/or a separate rate classification is adopted for Project customers the above identified amounts will be lower.

<table>
<thead>
<tr>
<th>DATE</th>
<th>TRANSITION RATE (Cents/kWh)</th>
<th>FULL RATE (Cents/kWh)</th>
<th>DIFFERENCE (Cents/kWh)</th>
</tr>
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<td>April 17, 2010</td>
<td>11.667</td>
<td>11.667</td>
<td>0</td>
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Clearly, the transition plan is beneficial to both PacifiCorp and Project customers.

The benefits of this plan are not as evident for PacifiCorp’s non-Project irrigation customers or its other customers, including residential and business. These other customers will be required to continue paying full tariff rates as well as to absorb the difference between what Project-customers actually pay and the full tariff rate during the transition period.

From the above discussion we can only conclude that the transition plan does not provide an equitable benefit to non-Project irrigation customers or to PacifiCorp’s other non-Project customers. Therefore, we review D.52809
which was affirmed by D.53658 as to why we approved the 1956 Contract which included fixed energy usage rates for Project customers.

As detailed in that decision, PacifiCorp received the right to regulate the flow of water to its hydroelectric plants located on the Klamath River and to construct and operate a new hydroelectric facility on the same river. This right to regulate the flow of water enabled PacifiCorp to efficiently operate these hydroelectric plants, to conserve water at times of scarcity on occasions when low-cost power was available for purchase, and to provide peaking capacity through the regulated release of water at the time of greatest need. The additional right to construct and operate a new hydroelectric facility enabled PacifiCorp to further increase its peaking capacity.

We concluded from these facts that there was no unreasonable discrimination in the application of rates and charges contained in the 1956 Contract. This contract benefited all of PacifiCorp's customers by PacifiCorp's ability to reduce its overall power cost through a more efficient operation of its hydroelectric facilities and increased peaking capacity.

With the 1956 Contract expiring on April 16, 2006, PacifiCorp no longer has a basis to continue providing fixed rates to Project customers.\textsuperscript{15} The only existing tariff applicable to the energy usage of Project customers is PA-20. As previously mentioned, placing these Project customers on the PA-20 tariff would immediately raise the cost of their energy usage approximately 1,300\%. Hence, the immediate issue before us is: What rate should Project customers pay

\textsuperscript{15} Although we are cognizant that FERC is considering a rehearing of its decision to not extend the 1956 Contract as part of renewing PacifiCorp's Klamath River hydroelectric licenses. Reporters Transcript, Vol. 2, p. 125.
beginning April 17, 2006? Should it be the full PA-20 tariff rate, a transition into the full tariff rate, or a distinctly separate rate classification?

This Commission has traditionally mitigated the impact of rate changes on particular customer classes through rate caps when a rate group may experience a significant increase in tariff rates. Although there exists no specific criteria or level at which this mitigation takes place, both PacifiCorp and DRA acknowledge that mitigation does take place to transition customer classes up to full tariff rates.\textsuperscript{16}

Project customers should be treated no differently than other customer classes faced with a substantial rate increase. This is particularly so since we previously found that there was no unreasonable discrimination in approval of the 1956 Contract and that the contract enabled PacifiCorp to reduce its overall power cost for all customers through a more efficient operation of its hydroelectric facilities and increased peaking capacity. It is reasonable and appropriate to implement a transition plan to bring Project customers up to full tariff rates. The proposed transition plan, providing for an immediate 333\% increase in energy cost to Project customers and a short-term phase-in to full tariff rates, reasonably mitigates a substantial rate increase to Project customers due to the expiration of the 1956 Contract and should be adopted.

\textbf{V. Comment Period}

All parties at the January 30, 2006 PHC agreed to reduce the comment period regarding a decision on this phase of the proceeding so that the Commission may issue a decision in this matter at its April 13, 2006 meeting.

\textsuperscript{16} See PacifiCorp’s Exhibit 2 and DRA testimony in Volume 2, RT 181 and 182.
Accordingly, as provided by Rule 77.7(g) of our Rules of Practice and Procedure, we reduce the otherwise applicable 30-day comment period for this decision. Comments were received from PacifiCorp, KWUA, Interior, Siskiyou, and DRA. Reply comments were also received. To the extent changes were necessary as a result of the filed comments, they were made to in the body of this order.

VI. Categorization and Need for Hearing

PacifiCorp requested that this matter be categorized as ratesetting. By Resolution ALJ 176-3164, dated December 12, 2005, the Commission preliminarily determined that this was a ratesetting proceeding and that hearings may be necessary. There was no objection to the ratesetting categorization.

Notice of the application appeared in the Commission’s Daily Calendar of December 2, 2005. An evidentiary hearing was held on March 5 and 6, 2006 on this irrigation issues. Additional hearings will be scheduled for the remainder of this GRC proceeding.

VII. Assignment of Proceeding

Geoffrey F. Brown is the Assigned Commissioner and Michael J. Galvin is the assigned Administrative Law Judge in this proceeding.

Findings of Fact

1. The Project service area is located within the vicinity of Klamath Falls, Oregon and encompasses reclamation and irrigation lands in the States of California and Oregon.

2. The Project uses waters of the interrelated Lost River and Klamath River Basins including water controlled at Upper Klamath Lake through the Link River Dam.
3. Water diverted into the project canals makes service available to nearly 200,000 acres of family farms and ranches and the Lower Klamath and Tule Lake National Wildlife Refuges within the Project service area.

4. FERC, previously named Federal Power Agency, granted PacifiCorp a license to construct and operate a new hydroelectric facility on the Klamath River conditioned upon PacifiCorp amending or extending the 1917 Contract for a time period at least equivalent to the time period of the license, under terms and conditions substantially similar to those contained in the 1917 Contract.

5. The terms of the 1956 Contract allowed PacifiCorp to continue regulating the level of water in Upper Klamath Lake for 50 years. As per this new contract, PacifiCorp agreed to provide electricity at low fixed rates for use on Project land and for drainage of Project land.

6. This Commission authorized PacifiCorp to carry out the terms and conditions of the 1956 Contract with the Interior as the Contract related to California.

7. In approving the 1956 Contract we found that there was no unreasonable discrimination in approval of that contract and that the contract enabled PacifiCorp to reduce its overall power costs for all customers and to increase its peaking capacity.

8. The 1956 Contract expires on April 16, 2006. After that date, PacifiCorp no longer has a basis for serving Project customers at the 1956 Contract rates.

9. PacifiCorp filed Advice Letter No. 328-E seeking authority to place its Project customers beginning April 17, 2006 on its current Irrigation Schedule PA-20 tariff rate.

10. All parties agreed to consider an interim irrigation proposal for Project customers pending a final decision in this proceeding.
11. PacifiCorp, KWUA, and Interior proposed a transition rate plan which provided for an immediate 333% increase in Project customers' rates.

12. All parties agreed to an expedited hearing schedule which included the foregoing of opening and reply briefs for an oral argument, a shortened draft decision comment period, and reduced public review and comment period so that the Commission may issue a decision on interim rates for Project customers prior to the April 16, 2006 contract expiration date.

13. This Commission has traditionally mitigated the impact of rate changes on particular customer classes through rate caps when a rate group may experience a significant increase in tariff rates.

14. Full transition of Project customers to the PA-20 tariff will be a huge percentage increase, approximately 1,300%, to a very small number of customers (approximately 630 of 45,000 California customers).

15. A memorandum account is a deferral account wherein costs may be accumulated for potential recovery at some future point.

16. The estimated $7.4 million shortfall over the entire transition period will increase non-Project customers' bills by approximately 2.4% if PacifiCorp's entire GRC request is subsequently approved.

**Conclusions of Law**

1. Project customers should be treated no differently than other customer classes faced with a substantial rate increase.

2. It is reasonable and appropriate to implement a transition plan to bring Project customers up to full tariff rates.

3. The proposed transition plan, providing for an immediate 333% increase in energy cost to Project customers and a short-term phase-in to full tariff rates reasonably mitigates a substantial rate increase to Project customers.
4. The proposed transition plan is reasonable in light of the whole record, consistent with the law, and in the public interest.

5. The proposed transition plan should be granted to the extent provided for in the following orders.

6. The decision should be effective immediately so that the rates adopted herein can be put into effect as soon as possible.

ORDER

IT IS ORDERED that:

1. The PacifiCorp, Klamath Water Users Association (KWUA) and United States Department of Interior’s (Interior) agreement on Irrigation transition rates is adopted, as set forth in Appendix A.

2. Within 5 days of today’s date, PacifiCorp shall withdraw its January 4, 2006 Advice Letter No. 328-E proposing to charge full tariff rates to the Klamath Irrigation Project customers.

3. PacifiCorp is authorized to establish a Klamath Transition Memorandum Account (KTMA) as set forth in Appendix B. This memorandum account shall track the shortfall associated with the transition plan beginning April 17, 2006 and ending on the effective date of the rate change resulting from PacifiCorp’s pending general rate case. Interest shall accrue at the rate earned on prime, three-month commercial paper rate, as reported in the Federal Reserve Statistical Release H.15. PacifiCorp may seek recovery of this shortfall in subsequent hearings to be held in this proceeding.

4. KWUA and Interior may argue in this proceeding that PacifiCorp’s PA-20 tariff is not the appropriate tariff applicable to Klamath Irrigation Project customers and may present proposals for a separate tariff classification. To the extent that KWUA is successful in establishing a separate tariff classification, we
may revisit the transition plan being approved in this order to assess the need to modify the transition plan.

5. Within five days of today's date, PacifiCorp shall file an advice letter with appropriate tariffs to implement the new rates approved by this Order. These tariffs shall become effective on April 17, 2006 subject to Energy Division determining that they are in compliance with this Order.

6. Application 05-11-022 and Investigation 06-03-002 remain open to address recovery of the KTMA, a general rate increase for test year 2007, implementation of an energy cost adjustment clause and a post test-year adjustment mechanism.

This order is effective today.

Dated April 13, 2006, at San Francisco, California.

MICHAEL R. PEEVEY
President
GEOFFREY F. BROWN
DIAN M. GRUENEICH
JOHN A. BOHN
RACHELLE B. CHONG
Commissioners
APPENDIX A

Agreement of PacifiCorp, Klamath Water Users Association and Interior on Irrigation Transition Rates

PacifiCorp, the Klamath Water Users Association ("KWUA"), and the Department of Interior ("DOI") have reached an agreement on a transition plan which is designed to move existing customers and their assigns (the "Project Customers") covered by the 1956 contract between PacifiCorp’s predecessor, the California – Oregon Power Company, and the DOI from the current contract rates of $0.006/kWh (6 mills) to full tariff rates, currently schedule PA-20, over a four-year period.* This transition will commence on the day following the expiration of the existing 50-year rate contract, April 16, 2006, and will continue through April 17, 2010, when these Project Customers will begin to pay full applicable tariff rates.

This transition period is proposed by the parties in recognition of the rate shock that would be created by an immediate move to full tariff rates and in order to provide an orderly movement from contract rates to full applicable tariff rates while minimizing the economic dislocation for such Project Customers. The effective average rate for Project Customers under current schedule PA-20 is approximately 100 mills, thus immediate movement to full tariff levels would require an increase of more than 1600%.

The agreement anticipates that other California customers of PacifiCorp would pay rates during the transition period sufficient to cover the differential between the phase-in rates and full tariff rate levels, and calls for the support of the KWUA of such recovery. The agreement also provides an opportunity, in the context of this general rate proceeding ("GRC"), for the KWUA to make its arguments to the Commission in support of the creation of a separate rate classification for Project Customers and/or to challenge the proposed level of the generally applicable tariff rate for irrigation customers.

* For DOI, the contract rates range from $0.003 per kWh to $0.005 per kWh.
The proposed transition plan is as follows:

<table>
<thead>
<tr>
<th>Step</th>
<th>Date</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Step 1</td>
<td>April 17, 2006</td>
<td>Rates move up from 6 mills to 26 mills, an increase of 333%.</td>
</tr>
<tr>
<td>Step 1A</td>
<td>January 1, 2007</td>
<td>Rates are adjusted upward by the percentage increase in overall California system rates awarded by the Commission in this GRC. For example, a 10% system rate increase would result in a further 2.6 mill increase in Project Customers' rates.</td>
</tr>
<tr>
<td>Step 2</td>
<td>April 17, 2007</td>
<td>Rates move up to 38.5 mills, as adjusted by the overall increase awarded in the GRC, subject to a cap of 40 mills. For example, a 10% GRC increase would invoke the 40 mill cap. The effective increase from contract levels is now 666%, although the step increase is about 50%.</td>
</tr>
<tr>
<td>Step 2A</td>
<td>Jan. 1, 2008</td>
<td>The rate in effect as of April 17, 2007 would be adjusted upward to reflect the percentage increase in California system rates afforded by the operation of attrition and ECAC adjustments, if any, awarded by the Commission for January 1, 2008. This increase would be subject to a cap of 42 mills on the effective transition rate.</td>
</tr>
<tr>
<td>Step 3</td>
<td>April 17, 2008</td>
<td>The Project Customers' transition rate will change from the flat rate basis described in steps 1 through 2A, to a percentage discount from full applicable tariff rate levels in effect at the time. The discount for this step is 40%. If, for example, the effective full applicable tariff rate level for Project Customers in April 2008 is 100 mills, the effective Project Customers' transition rate would be 60 mills. Similarly, if the effective full applicable tariff rate level is 110 mills, the transition rate would be 66 mills. The increase is 1100% at this point — the step increase is about 50%.</td>
</tr>
<tr>
<td>Step 3A</td>
<td>Jan. 1, 2009</td>
<td>If the applicable tariff rate is adjusted for attrition and ECAC, the discount would apply to that adjusted rate.</td>
</tr>
<tr>
<td>Step 4</td>
<td>April 17, 2009</td>
<td>The discount from the full effective tariff rate is decreased to 20%. If the effective tariff rate is 110 mills, the phase-in rate is 88 mills.</td>
</tr>
<tr>
<td>Step 4A</td>
<td>Jan. 1, 2010</td>
<td>If the applicable tariff rate is adjusted for attrition and ECAC, the discount would apply to that adjusted rate.</td>
</tr>
<tr>
<td>Step 5</td>
<td>April 17, 2010</td>
<td>The Project Customers move to full applicable tariff rates.</td>
</tr>
</tbody>
</table>

*While the parties anticipate a rate change on January 1, this step increase would be effective on the effective date, if any, of the commission’s decision.*
Other provisions of the proposed transition plan:

1) The KWUA and DOI will support the creation of a Memo Account for tracking of any revenue shortfall that may occur as a result of implementation of transition rates in April 2006. PacifiCorp will seek Commission approval in the context of this GRC proceeding for recovery of the shortfall incurred in 2006 amortized in rates beginning January 1, 2007.

2) The KWUA and DOI will support the company's request for recovery of transition revenue shortfalls, if any, over the period of the transition from other California customers.

3) The KWUA and DOI may, in the context of this GRC, argue that rate schedule PA-20 is not appropriate and present proposals for creation of a separate tariff for application to Project Customers and may, in that process, present evidence and argument regarding the cost of such service and benefits provided by Project Customers.

4) PacifiCorp, KWUA, and DOI will urge the Commission to adopt this transition plan on an expedited basis and in time for its implementation beginning April 17, 2006.

5) Nothing herein shall prevent, preclude or be interpreted in any way as preventing KWUA seeking rehearing of, appealing or seeking redress of the Federal Energy Regulatory Commission's January 20, 2006 Order Denying Petition for Declaratory Order and Issuing Notice of Proposed Adjustment of Annual Charges for the Use of a Governmental Dam in Project Nos.2082-039 and 2082-040.

6) Nothing herein shall prevent or preclude or in any way prejudice KWUA from seeking legislation regarding or relating to electric rates and terms of service to be charged to Project Customers.

7) This settlement regarding transition rates applies to California only and the particular circumstances of that jurisdiction. The parties agree that it is irrelevant and shall not be introduced in proceedings in the State of Oregon.

8) To the extent that they do not add incremental load as measured by equipment total nameplate rating, it is the intent of the parties that new meters installed after April 17, 2006, would be eligible for the transition rates described herein.

(END OF APPENDIX A)
APPENDIX B
4. Klamath Transition Memorandum Account (KTMA)

Klamath Transition Memorandum Account (KTMA)

a. Purpose

Pacificorp is authorized to establish a memorandum account to record the revenue shortfall associated with the Klamath Irrigator transition plan adopted by the California Public Utilities Commission in D. issued April 00, 2006. The transition related revenue shortfall will be accumulated in the KTMA during the period beginning April 17, 2006 and ending on the effective date of the rate change resulting from Pacificorp's currently pending general rate case (A.05-11-022).

b. Operation of the KTMA

1. A monthly debit entry shall be booked to the KTMA for the amount of the revenue shortfall which shall be the difference between the aggregate of the Klamath Irrigators' monthly bills, based on the 26 mills per kWh rate under the Step 1 of the transition plan, and the aggregate of Klamath Irrigators' bills based on the currently authorized Tariff Schedule PA-20. This monthly entry shall begin in April 2006 and continue through the month in which rates are effective from A.05-11-022.

2. A monthly debit entry shall be booked to the KTMA for interest on the average monthly balance, and shall be determined by applying the rate earned on prime, three-month commercial paper rate, as reported in the Federal Reserve Statistical Release H.15 to the average of the KTMA balance on the first and last day of each month. This monthly entry shall begin in April 2006 and continue on a monthly basis as long as the beginning and ending monthly balance produce a positive average balance in the KTMA.

c. Disposition of the Balance

1. Recovery of the shortfall tracked in the KTMA will be addressed in A.05-11-022 and will be subject to CPUC approval.
ORDER DENYING PETITION FOR DECLARATORY ORDER AND ISSUING NOTICE OF PROPOSED READJUSTMENT OF ANNUAL CHARGES FOR THE USE OF A GOVERNMENT DAM

(Issued January 20, 2006)

1. The U.S. Department of the Interior (Interior) requests a declaratory ruling that a contract between Interior and PacifiCorp pertaining to the use of Upper Klamath Lake and the Klamath River for power and irrigation is included in the license for the Klamath Hydroelectric Project No. 2082, which is licensed to PacifiCorp, and that the contract will continue in effect during the term of any annual license that may be issued for the project. Under the contract, PacifiCorp operates a dam owned by Interior’s Bureau of Reclamation (Reclamation) and provides power at fixed rates to Reclamation, the U.S. Fish and Wildlife Service (FWS), and private irrigators of farmland within Reclamation’s Klamath River irrigation project.

2. As discussed below, we are denying Interior’s petition. We are also proposing to modify the annual charges PacifiCorp pays for use of the Government dam in question.

Background

3. Reclamation’s Klamath irrigation project is located in Oregon and northern California. Its principal features, as relevant here, are Upper Klamath Lake and its outlet, Link River Dam. This dam provides storage for the irrigation project and, as described below, hydroelectric power. Part of Upper Klamath Lake is also included in the Upper Klamath National Wildlife Refuge.

4. PacifiCorp’s Klamath Hydroelectric Project consists of seven hydroelectric developments and one non-generating development. The uppermost project features are two small power developments associated with the Link River Dam, East Side and West
Project Nos. 2082-039 and 2082-040

Side. Downstream in Oregon are Keno Dam, which has no generating facilities, and the J. C. Boyle development. There are also three developments on the mainstem of the river in California and a tributary development in California.¹

5. The operation of Link River Dam affects generation at the mainstem hydroelectric developments. It was constructed in the early 20th century by PacifiCorp's predecessor-in-interest, California Oregon Power Company (Copco), pursuant to a contract with the United States (1917 Contract). Under that contract, Copco constructed the dam and conveyed it and the land on which it is situated to the United States for use in the irrigation project, but continued to operate the dam. Copco agreed to maintain Upper Klamath Lake at specified elevations for irrigation purposes, furnish water to the irrigators, and supply electricity to the United States and the irrigators for pumping of irrigation and drainage water for the 50-year life of the contract (i.e., expiration in 1967).² Copco used surplus water released at Link River Dam after these purposes were fulfilled to generate electricity to serve its customers.

6. Some years later, the Federal Power Commission (FPC) investigated the jurisdictional status of Copco's Klamath River hydroelectric developments. As a result, it issued a license to Copco, with a term expiring on February 28, 2006 (1954 Order).³ That order included two provisions relevant to this proceeding. First, Copco was directed, "with and as part of the acceptance of this license,"⁴ to file the 1917 contract with the Commission, amended or renewed to cover a time period at least equivalent to the time period of the license, or to file a new agreement for the same period with substantially the same terms and conditions as the 1917 contract.⁵ Second, license

¹ The project facilities are more particularly described in PacifiCorp's application for a new license, filed February 25, 2004, Volume I at 1-1 to 1-8.

² See 13 FPC at 3.

³ California Oregon Power Company, 13 FPC 1. In later orders, Copco's other Klamath River developments were incorporated into the license. In 1961, Pacific Power and Light Company (PP&L) acquired Copco, and the license was transferred to PP&L. In 1989, PP&L merged with Utah Power and Light Company, and the merged entity was named PacifiCorp.


⁵ 1954 Order, Ordering Paragraph (A), 13 FPC at 9-10.
Project Nos. 2082-039 and 2082-040

article 35(d) stated, pursuant to the provisions of Federal Power Act (FPA) section 10(e)\(^6\) pertaining to payment of annual charges for the use of Government dams and facilities,\(^7\) that the consideration and benefits set forth in the 1917 agreement were reasonable and adequate during the term of that contract to compensate the United States for Copco’s use of Link River Dam.\(^8\)

7. Copco did not immediately accept the license, but sought judicial review. It also continued negotiations with interested parties concerning water rights and other matters. During these negotiations, Copco agreed to provide electricity at fixed rates for pumping of irrigation and return water to all of its customers located in the Klamath River Basin, including those located outside the boundaries of Reclamation’s irrigation project. This led to separate contracts for “On-Project customers” (i.e., irrigators located within the boundaries of Reclamation’s project) and “Off-Project customers,” (those located outside the boundaries of Reclamation’s project).\(^9\)

8. Copco ultimately filed the contract required by the 1954 Order relating to the On-Project customers (1956 Contract).\(^10\) The 1956 Contract extends and revises the 1917 Contract. Under the 1956 Contract, PacifiCorp provides power at fixed rates to Reclamation for use primarily to drain lands it manages within the irrigation project, to FWS to pump water into and drain water from Klamath River Basin National Wildlife


\(^{7}\) A “Government dam” is defined in FPA section 3(10), 16 U.S.C. § 796(10) as a dam “constructed or owned by the United States for Government purposes with or without contribution from others.”

\(^{8}\) 1954 Order, Article 35, paragraph (d), 13 FERC at 11.

\(^{9}\) The Off-Project Contract is between Copco and the Klamath Basin Water Users Protective Association. Under this agreement, Copco agrees to provide service to all Off-Project irrigators at a specified contract rate. That agreement contains no express termination date.

\(^{10}\) Petition, Exhibit 1.
Project Nos. 2082-039 and 2082-040

Refuges, and to the private On-Project customers. The 1956 contract states that it is for a term of "50 years," effective from the date of its approval by the Public Utility Commissions of Oregon and California, whichever is later.

9. To implement the 1956 Contract, and pursuant to Ordering Paragraph (A) of the 1954 Order, Copco filed an application to amend the 1954 Order to add a new license article reflecting the parties' agreements regarding water rights and the above-mentioned service arrangements. The Commission's order granting the application (1956 Order) found that the United States is adequately compensated by the 1956 Contract for the licensee's use of Link River Dam, and changed the effective date of the license to make the license term consistent with the term of the 1956 Contract.

10. Copco still did not accept the license or commence construction. In 1957, the 1954 Order was further amended upon Copco's application to incorporate into the hydroelectric project another proposed development (1957 Order). The 1957 Order affirmed that the provisions of the 1956 Contract adequately compensate the United States for the use of surplus water from Link River Dam. Ultimately, Copco accepted the license and the facilities were constructed.


12. In November 2004 PacifiCorp filed a general retail rate increase application before the Oregon Public Utility Commission (Oregon PUC). In that proceeding, PacifiCorp proposes to move both the On-Project and Off-Project Irrigators to standard irrigation tariff rates when the 1956 Contract expires. Oregon PUC denied PacifiCorp's motion to

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11 Petition at 7.

12 1956 contract, Articles 11 and 17. Approval was received first from Oregon and then, on April 16, 1956, from California, resulting in an expiration date of April 16, 2006.


14 California Oregon Power Company, 18 FPC 364.

15 1957 Order, 18 FPC at 368.

16 Pacific Power & Light Company dba PacifiCorp, Docket UE 170.
Project Nos. 2082-039 and 2082-040
delay action pending this Commission’s examination of the matter in the relicensing proceeding, holding that it has exclusive authority to determine retail rates for Klamath River Basin irrigators.  

13. On October 3, 2005, Interior filed its petition for declaratory order. Timely responses to the petition supporting Interior were filed by the Klamath Basin Water Users Protective Association (KWUA), Karuk Tribe (Karuk), Yurok Indian Tribe (Yurok), and Oregon State Senator Doug Whitsett. Timely responses opposing Interior’s petition were filed by PacifiCorp, Hoopa Valley Tribe (Hoopa), Trout Unlimited and American Rivers (TU), Resighini Rancheria (Resighini) and, collectively, WaterWatch of Oregon, Oregon Natural Resources Council (ONRC), the Pacific Coast Federation of Fishermen’s Associations (WaterWatch). PacifiCorp and KWUA filed answers to one another’s responses.

14. On November 9, 2005, the Commission issued public notice of the petition. Timely motions to intervene or notices of intervention were filed by KWUA, Klamath Tribes, Karuk, Hoopa, OPUC, TU, Waterwatch, ONRC, and Yurok.

Discussion

A. Government Dam Use Charges

15. FPA section 10(e) provides that when the Commission licenses a project that will use a Government dam or other structure, it is to set “reasonable” annual charges to recompense the Government for the use of its property. In doing so, the Commission “shall seek to avoid increasing the price to the consumer of power by such charges. . . .” Charges for the use of dams in Reclamation projects are “subject to the approval of the

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17 Oregon PUC Order No. 05-726 at 3-4 (June 6, 2005), Exh. 3 to Interior’s petition.

18 70 F.R. 69751 (Nov. 17, 2005).

19 Resighini mistakenly believes that it is not required to intervene in this proceeding on the basis that it is consolidated with the relicense proceeding in subdocket P-2082-027, in which it has intervened. In fact, this is a separate proceeding, and intervention in the relicense proceeding does not carry over to this proceeding.
Project Nos. 2082-039 and 2082-040

Secretary of the Interior.” Government dam use charges may be readjusted at the end of twenty years following commencement of operation and at periods not less than ten years thereafter upon notice and opportunity for a hearing.  

16. In 1984, the Commission amended the regulations governing annual charges for projects that use Government dams to provide for graduated flat rates based on the amount of energy produced. The flat rates apply when the annual dam use charges are “not already specified in final form in the license.” As discussed above, the federal dam use charges for the Klamath Project were already specified in final form when the current flat rate charges were established.

B. Interior’s and the Respondents’ Arguments

17. Interior contends that the Commission made the terms of the 1956 Contract “an integral part of the license” and a condition thereof by dictating its essential terms and

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20 Section 10(e) provides, as pertinent to this proceeding:

... the licensee shall pay to the United States reasonable annual charges in an amount to be fixed by the Commission for ... recompensing [the United States] for the use, occupancy, and enjoyment of its lands or other property; ... Provided, That when licenses are issued involving the use of Government dams ... the Commission shall, subject to the approval of the Secretary of the Interior in the case of such dams ... in reclamation projects ... fix a reasonable annual charge for the use thereof, and such charges may with like approval be adjusted by the Commission at the end of twenty years after the project is available for service and at periods of not less than ten years thereafter upon notice and opportunity for hearing. ...


22 18 C.F.R. § 11.3(a) (2005). The exception to the general rule for projects with established charges was made in recognition of the fact that when Order No. 379 was promulgated, there were numerous projects at federal dams for which such charges had already been established.

23 Petition at 8.
ordering it to be filed with the Commission. The terms to which it refers are those pertaining to the storage and release of water for the generation of electricity and for supplying low cost electricity for pumping irrigation and drainage water.\textsuperscript{24} To support its assertion regarding the importance of the contract to project operations, Interior cites the FPC’s assessment at the time of licensing that the project would not be economically feasible without the use of the Link River Dam for storage.\textsuperscript{25} It states that the connection between the contract retail power rates and the licensee’s federal dam use charges is further evidence that the contract is a license condition.\textsuperscript{26}

18. Based on its conclusion that the 1956 Contract is a condition of the license, Interior states that it must be continued during the term of any annual license by operation of FPA section 15(a)(1).\textsuperscript{27} This section provides that, if the United States does not, at the expiration of the existing license, take over the project or issue a new license to the existing licensee, “then the Commission shall issue from year to year an annual license to the then licensee under the terms and conditions of the existing license until the property is taken over or a new license is issued . . .”

19. Interior is supported by KWUA, Karuk, and Yurok. KWUA essentially echoes Interior’s arguments,\textsuperscript{28} and contends that continuation of the 1956 Contract would not create a conflict with Oregon or California because both jurisdictions will permit PacifiCorp to continue charging the 1956 Contract rates during the term of any annual license.\textsuperscript{29} PacifiCorp disputes this contention.\textsuperscript{30} Karuk and Yurok state without elaboration that they support extension of the 1956 Contract.

\textsuperscript{24} \textit{Id.} at 11-14.

\textsuperscript{25} \textit{Id.} at 13.

\textsuperscript{26} \textit{Id.} at 2-5, 8

\textsuperscript{27} 16 U.S.C. § 808(a)(1).

\textsuperscript{28} KWUA at 3-6.

\textsuperscript{29} \textit{Id.} at 7-8.

\textsuperscript{30} PacifiCorp response to KWUA’s comments, filed November 28, 2005 at 5-7.
20. PacifiCorp responds that the 1956 Contract is not a license condition, but was merely accepted (as opposed to approved) by the Commission as a means of setting the licensee’s Government dam use charges for the license term.\textsuperscript{31} PacifiCorp also likens this case to \textit{P.U.D. No. 1 of Chelan County, WA},\textsuperscript{32} where the FPC determined that although a license referenced, and required the licensee to abide by, a contract providing for compensation to an upstream licensee for lost generation due to encroachment by the downstream project’s reservoir, the contract was not part of the downstream project’s license.

21. PacifiCorp contends that the 1956 Contract violates FPA section 10(e) because: (1) section 10(e) requires compensation to the United States to be proportional to the benefit conferred on the licensee,\textsuperscript{33} but PacifiCorp no longer receives a benefit because operating restrictions required by Interior to comply with the Endangered Species Act\textsuperscript{34} and its Tribal trust obligations\textsuperscript{35} give it little or no flexibility to shape flows for power generation; (2) the cost differential between the contract rates and PacifiCorp’s tariff rates for other irrigators forces the latter to subsidize the On-Project irrigators, thereby “increasing the price to consumers of power”; (3) tying federal dam use charges to private contract power rates illegally delegates the Commission’s exclusive authority under section 10(e) to assess annual charges; and (4) the contract compensates the On-Project irrigators instead of the United States.\textsuperscript{36}

\textsuperscript{31} PacifiCorp response to Interior’s petition (hereafter PacifiCorp) at 4.

\textsuperscript{32} 51 FPC 1141 (1974).

\textsuperscript{33} PacifiCorp at 15-16, citing \textit{City of Vanceburg, Ky. v. FERC}, 571 F.2\textsuperscript{nd} 630, 643 (D.C. Cir. 1977).

\textsuperscript{34} 16 U.S.C. § 1531-43 (1996). PacifiCorp references Interior’s obligations to protect the federally endangered Lost River sucker and shortnose sucker, and treaty rights of the Klamath and Yurok tribes. PacifiCorp at 14, n. 52.

\textsuperscript{35} PacifiCorp does not quantify the alleged reduction in the value of project power resulting from diminished operating flexibility. Instead, it asserts that the charges paid by Interior and private entities under the 1956 Contract are $7.2 million less than those entities would be charged under PacifiCorp’s irrigation tariffs filed with the state commissions. PacifiCorp at 15 and Exh. B.

\textsuperscript{36} PacifiCorp at 13-14. PacifiCorp characterizes the below tariff contract rates these customers pay as a payment to them.
Project Nos. 2082-039 and 2082-040

22. PacifiCorp additionally argues that: (1) it is unreasonable for an annual charge scheme to provide discount rates to a subset of PacifiCorp's retail customers; (2) the Commission has no authority over PacifiCorp's retail rates; (3) the Commission cannot compel Interior, a non-licensee, to enter into a contract extension; and (4) using the 1956 Contract to assess annual charges violates FPA section 17, which contemplates that federal dam use charges will be collected from licensees and remitted to the United States according to a formula set forth in that section, rather than paid to private parties.

23. Finally, PacifiCorp asserts that section 10(e) establishes a retained authority in the Commission, which cannot be waived, to adjust federal dam use charges from time to time, and even if the 1956 Contract is a license condition, it expires by its own terms after 50 years. PacifiCorp states that we should set the annual charges for the use of Link River Dam during the term of any annual licenses at the graduated fixed rates established in our rules for non-grandfathered projects.

24. KWUA disputes PacifiCorp's assertion that the 1956 Contract can be terminated or amended during the period of any annual licenses on the basis that the purpose of annual licenses is to preserve the status quo during the pendency of any relicense or

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37 Id. at 17-20. The same argument is advanced by Hoopa (at 2-5), TU (at 2-5), and WaterWatch (at 3-4).

38 PacifiCorp at 21-22.


40 PacifiCorp at 22-23.

41 Id. at 6-7. See also Hoopa at 8-10.

42 PacifiCorp at 10-13. PacifiCorp acknowledges that if the Commission accepts its argument, its right to operate the Link River Dam will expire, with the 1956 Contract, on April 16, 2006.
Project Nos. 2082-039 and 2082-040

federal takeover proceedings. It also charges that although the project has essentially been converted from peaking to baseload operation by Interior’s flow restrictions, PacifiCorp receives various other financial benefits from the 1956 Contract.

25. Hoopa asserts that it has a “federally protected interest in the waters of the Klamath River and its fishery resources” and that extending the 1956 Contract would violate the Commission’s trust responsibility to the tribe by encouraging continued over-appropriation of irrigation water by private parties to whom the Commission has no fiduciary responsibility. WaterWatch similarly urges us to modify the federal dam use charges on the basis that higher electric rates will protect the environment by discouraging over-appropriation of irrigation water.

C. Status of the 1956 Contract

26. Although the participants’ arguments are complex, the essence of this dispute can be stated in simple terms. Interior seeks to protect itself and the On-Project customers from increases in retail electric rates that are likely to result from Oregon PUC’s proceeding. PacifiCorp seeks to free itself from a contract that binds it to charge low rates and no longer provides much countervailing benefit in terms of being able to control the use of surplus water from Upper Klamath Lake for power generation.

27. This dispute is also easily resolved. Even if the 1956 Contract is a license term, it expires by its terms on April 16, 2006. Thus, any annual license for the project following the license expiration date of February 28, 2006, will not include the terms of the 1956

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43 KWUA motion to intervene at 9, citing Lac Courte Oreilles Band of Lake Superior Chippewa Indians v. FPC, 510 F.2d. 198, 205-206 (D.C. Cir. 1975).

44 Id. at 12-13. The purported benefits include resolution of Interior’s initial opposition to the original license application; low cost hydropower for PacifiCorp’s system, at a location that enables sales into the California market; and the ability to use project power to firm non-firm power resources for resale at higher prices.

45 Hoopa at 4-8.

46 Id. at 11.

47 Id. at 10-12, citing Covelo Indian Community v. FERC, 895 F.2d 581 (9th Cir. 1990).

48 WaterWatch at 6-8.
Project Nos. 2082-039 and 2082-040

Contract beyond April 16, 2006, and PacifiCorp will no longer have any rights or obligations under that contract. This is not inconsistent with the obligation of a licensee to have all the rights necessary to operate its project because the 1956 Contract authorizes, but does obligate, PacifiCorp to shape flows for the purpose of enhancing electric generation. PacifiCorp may choose to forego this right by letting the contract expire, and its new license application indicates that it intends to do so.49

28. It is also not necessary, as explained in the following section, for the 1956 Contract to continue in effect for annual charges purposes.

D. Readjustment of Government Dam Use Charges

29. We conclude that the most prudent and practical course at this time is to exercise our reserved authority50 to readjust PacifiCorp’s charges for the use of surplus water from Link River Dam. Specifically, we proposed to decouple these charges from PacifiCorp’s retail rates. We do so for several reasons. First, this Commission clearly has no jurisdiction over PacifiCorp’s retail rates.51 Second, continuing to tie Government dam

49 See License Application sections B3.0, B6.2, and B6.4. We note, however, that as long as PacifiCorp’s East Side and West Side developments, which are directly connected to the Link River Dam, continue to receive water released from the dam by Interior, PacifiCorp will need to have an operating agreement with Interior for that purpose.

50 Our authority to periodically readjust charges for the use of Government dams was affirmed in Montana Power Co. v. FPC, 459 F.2d 863 (D.C. Cir. 1972), cert. denied, 408 U.S. 930 (1972). The FPC affirmed the reservation of authority in the 1956 Order. See 15 FPC at 17-18, 20. Nor is there any question that the Commission can amend a license during the terms of an annual license if it has reserved authority to do so with respect to the matter in question. Platte River Whooping Crane Critical Habitat Maintenance Trust v. FERC, 876 F.2d 109 (D.C. Cir. 1989).

51 Our ratemaking jurisdiction under FPA Part II, 16 U.S.C. §§ 824, et seq. (1994), extends only to wholesale sales of electricity. See 16 U.S.C. § 824(f); FPC v. Conway Corp., 426 U.S. 271, 276 (1976). Under FPA section 19, 16 U.S.C. § 812, the Commission may regulate the rates and services of a non-municipal licensee only if its rates and services are not regulated by the state. Under FPA section 20, 16 U.S.C. § 813, we have jurisdiction over a licensee’s rates and services only if they are not regulated by the state, or in the limited circumstance of a disagreement over rates between directly concerned states. None of these circumstances apply here.
Project Nos. 2082-039 and 2082-040

use charges to PacifiCorp’s retail rates creates the potential for conflict between the annual charges we set and those retail rates. Third, there is an established alternative means of setting annual charges in our regulations. Fourth, nothing in the 1954, 1956, or 1957 Orders indicates that the FPC intended to tie the Government dam use charges to the licensee’s retail rates beyond the expiration date of the original license. Finally, this issue is readily severable from the relicensing proceeding, which will not be resolved for at least another year.

30. To this end, we are issuing notice of our intent to set the annual Government dam use charges for Klamath Project No. 2082 at the graduated fixed rates set forth at 18 C.F.R. § 11.3(b), effective upon expiration of the 1956 Contract (i.e., April 17, 2006). Interested persons will be afforded 30 days from the issuance date of this order to file comments.

E. Keno Dam Contract

31. Finally, we turn to the Keno Dam contract. Keno Dam was added to the license in 1965. The license amendment authorized new generating facilities, but they were never built. The dam has always been operated under a contract between the licensee and the United States for the benefit of irrigators. The Keno Dam contract has no expiration date. Interior states that although the operation of Keno Dam “is not included directly in this request for Declaratory Order,” and the Keno Dam Contract is in effect as long as the project exists, the Commission should nonetheless require continuation of its terms and conditions in any declaratory order issued in this proceeding.

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52 See Order No. 379 at 30,954.

53 Issuance of a final environmental impact statement on the license application is currently scheduled for January 2007.

54 We are establishing a separate proceeding for this purpose in subdocket Project No. 2082-040.

55 Pacific Power and Light Co., 34 FPC 1387.

56 The Keno Dam contract is Exhibit 5 to the Petition.

57 Petition at 10 and n.8.
32. We see no reason to address this request because there appears to be no dispute. PacifiCorp contests none of Interior's factual assertions with regard to that contract, and has not indicated any intention to modify or terminate it. Rather, PacifiCorp proposes to remove Keno Dam from the project in the relicensing proceeding. That is the appropriate forum to consider matters relating to Keno Dam.

The Commission orders:

(A) The U.S. Department of the Interior's petition for an exemption from the filing fee for petitions for declaratory order pursuant to 18 C.F.R. § 381.302 (2005) is granted.

(B) The petition for declaratory order filed by the U.S. Department of the Interior on October 3, 2005, in this proceeding (P-2082-039) is denied, as discussed in the body of this order.

(C) Notice is hereby given of the Commission's intent to set the annual Government dam use charges for Klamath Project No. 2082 at the graduated fixed rates set forth at 18 C.F.R. § 11.3(b) (2005), effective April 17, 2006. Interested persons may file comments in P-2082-040 within 30 days from the issuance date of this order.

By the Commission.

(SEAL)

Magalie R. Salas,
Secretary.
115 FERC ¶ 61,075
UNITED STATES OF AMERICA
FEDERAL ENERGY REGULATORY COMMISSION

Before Commissioners: Joseph T. Kelliher, Chairman;
Nora Mead Brownell, and Suedeen G. Kelly.

PacifiCorp Project No. 2082-041

ORDER DENYING REHEARING

(Issued April 20, 2006)

1. This order denies requests for rehearing of our January 20, 2006 Order denying a petition by the U.S. Department of the Interior (Interior) for a declaratory ruling that a contract between Interior and PacifiCorp pertaining to the use of Upper Klamath Lake and the Klamath River for power and irrigation is a condition of the license for the Klamath Hydroelectric Project No. 2082, which is licensed to PacifiCorp, and that the contract will continue in effect during the term of any annual license that may be issued for the project.¹

Background

2. The factual background for this order is set forth in detail in the January 20 Order and will not be repeated here. In brief, the Upper Klamath River Basin is the site of extensive agricultural irrigation systems maintained by the U.S. Department of the Interior and private agricultural interests, and of two national wildlife refuges.

3. An integral feature of the federal irrigation system and wildlife refuges is the Link River Dam. The dam was constructed and conveyed to the United States by PacifiCorp's predecessor in interest (Copco) pursuant to a contract between Copco and the United States (1917 Contract). Under that contract Copco maintained specified water levels at the dam for irrigation, furnished water to the United States and private irrigators, and supplied electricity to the United States and private irrigators at fixed rates. Surplus

¹ PacifiCorp, 114 FERC ¶ 61,051 (January 20 Order).
water released at Link River Dam was used by Copco to generate electricity. The 1917 Contract was to run for a 50-year term ending in 1967.

4. In 1954, the Federal Power Commission (FPC) issued a license to Copco for its Klamath River Basin hydroelectric developments, including two small developments at Link River Dam.\(^2\) Copco was required, “with and as part of the acceptance of this license,”\(^3\) to file the 1917 Contract, amended or renewed, or a new contract with substantially the same terms and conditions, “to cover a time period at least equivalent to the time period of this license.”\(^4\) The FPC found, pursuant to section 10(e) of the Federal Power Act (FPA),\(^5\) that the consideration and benefits set forth in the 1917 Contract were reasonable and adequate to compensate the United States for Copco’s use of Link River Dam.\(^6\)

5. In 1956, Copco filed a new contract (1956 Contract). Like the 1917 Contract, it is for a term of “50 years,” effective from the date of its approval by the Public Utility Commissions of Oregon and California, which have jurisdiction over the licensee’s retail electric rates. The Commission then amended the effective date of the license so that its expiration date (February 28, 2006) would coincide generally with the expiration date of the 1956 Contract (April 16, 2006).\(^7\)

6. Through a series of mergers, the license was transferred to PacifiCorp. In February 2004, PacifiCorp applied for a new license. PacifiCorp has also applied to the

---

2 *Copco*, 13 FPC 1 (*1954 Order*).


4 *Id.* at 9-10.


7 *1956 Order*, 15 FPC 15, 21 (1956). This order also amended the license to reflect an agreement pertaining to water rights and affirmed the FPC’s findings regarding compensation for the use of a government dam.
Project No. 2082-041

Oregon and California Public Utility Commissions to charge the irrigators’ standard irrigation tariff rates following expiration of the 1956 Contract in April 2006.\(^8\)

7. On January 20, 2006, we denied Interior’s request for an order finding that the 1956 Contract is a condition of the license, and therefore must, pursuant to FPA section 15(a)(1),\(^9\) remain in effect during the term of any annual license that may be issued for the project pending disposition of the new license application. Interior and the Klamath Basin Water Users Protective Association (KWUA) filed requests for rehearing.

8. PacifiCorp filed a motion for leave to answer and answer to Interior’s and KWUA’s rehearing requests. Our Rules of Practice and Procedure prohibit an answer to a request for rehearing, unless otherwise ordered by the decisional authority.\(^10\) PacifiCorp’s answer does not increase our understanding of the issues, and will therefore be rejected.

**Discussion**

9. FPA section 15(a)(1) provides that, if the United States does not, at the expiration of an existing license, take over the project or issue a new license to the existing licensee, “then the Commission shall issue from year to year an annual license to the then licensee under the terms and conditions of the existing license until the property is taken over or a new license is issued . . .”

10. In the underlying proceeding, Interior and KWUA argued that the 1956 Contract is a condition of the license because the FPC dictated its essential terms (i.e., terms for the storage and release of water and provision of electricity for irrigation and the wildlife refuges) and directed the licensee to file the contract with the Commission. PacifiCorp responded that the FPC merely accepted the contract as a means of setting the licensee’s annual charges for the use of the Link River Dam during the license term, and cited other instances where the Commission has held that contracts associated with license requirements are not license conditions. We held that even if the 1956 Contract is a license condition, it expires by its terms on April 16, 2006.\(^11\)

\(^8\) It appears that Oregon and California will condition any such rate increases with transition provisions. See www.pacificpower.net/Article/Article49750.html.


\(^11\) January 20 Order, 114 FERC ¶ 61,051 at P 27.
Project No. 2082-041

11. Interior and KWUA continue to argue that the express language of the 1956 Contract is irrelevant because the purpose of section 15(a)(1) is to maintain the status quo at the expiration of a license, in order to protect the interests of the United States and other entities with an interest in continuation of the license pending a decision on federal takeover of the project or, as here, action on an application for a new license.\textsuperscript{12}

12. Section 15(a)(1) is indeed intended to protect the expectations of entities with an interest in a licensed project, but it does so by ensuring that the license continues in effect \textit{according to its terms}. For example, instream flow conditions intended to benefit fish and wildlife resources continue in effect during annual licenses because they have no expiration date. Here, in contrast, the 1956 Contract (assuming, arguendo, it is a license condition) specifies the date on which it expires. No party to or beneficiary of that contract has a reasonable expectation that it will continue notwithstanding its express terms.\textsuperscript{13}

13. KWUA’s next argument is that we have focused on the wrong license condition. According to KWUA, the applicable license condition is not the 1956 Contract itself but the direction in the license order for the licensee to file a contract that covers “a time period at least equivalent to the time period of this license.”\textsuperscript{14} KWUA asserts that this

\textsuperscript{12} KWUA rehearing request at 8-10; Interior rehearing request at 3-7. Interior also argues that PacifiCorp’s assertion that its benefits under the 1956 Contract have diminished have not been substantiated and, in any event, is irrelevant to whether section 15(a)(1) requires the contract to remain in effect during annual licenses. Rehearing request at 7-9. We agree, but did not rely on that assertion in the January 20 Order and do not see what bearing it has on the rehearing request.

\textsuperscript{13} Although we have not amended the license, we note for the record that KWUA’s suggestion that section 15(a)(1) is an absolute bar to license amendments during the term of an annual license (rehearing request at 8-9) is in error. An annual license may be amended if the underlying license reserves Commission authority to amend it in the manner contemplated by the proposed amendment or if the licensee agrees to the amendment. See, e.g., \textit{Central Nebraska Public Power & Irrigation District v. FERC}, 39 FERC ¶ 61,378 (1987), \textit{reh. denied}, 43 FERC ¶ 61,225 (1988), \textit{remanded on other grounds}, \textit{Platte River Whooping Crane Critical Habitat Maintenance Trust v. FERC}, 876 F.2d 109 (D.C. Cir. 1989); \textit{Swinomish Tribal Community v. FERC}, 627 F.2d 499, 505-06 (D.C. Cir. 1980) (approving protested increase in dam height); \textit{PacifiCorp}, 97 FERC ¶ 61,348 (2001) (extension of license term and incorporation of settlement provisions).

\textsuperscript{14} 1954 \textit{Order}, 13 FPC at 9.
Project No. 2082-041

language necessarily requires the contract term to be interpreted to include the terms of any annual licenses.\footnote{KWUA rehearing request at 10-11.}

14. What evidence there is in the record appears to be to the contrary. The FPC directed Copco to file a contract "under terms and conditions substantially similar to those terms and conditions contained in the existing [1917 Contract]."\footnote{1954 Order, 13 FPC at 9-10.} That contract, which was executed before the FPA and section 15(a)(1) were enacted, provided for a 50-year term, and specifically stated that after that time Copco would have no rights to use the Link River Dam in the absence of a new agreement.\footnote{Id., 13 FPC at 3.} The 1956 Contract simply replicates that provision.\footnote{See 1956 Contract, Clause 10.} We also note that the 1956 Contract became effective, not upon any approval by this Commission, but upon approval by California and Oregon. The only reasonable inference of this provision is that the Commission did not intend to interfere with the authority of the states to modify the licensee's retail electric rates, an authority Oregon and Oregon have elected to exercise based on an April 16, 2006 expiration date for the 1956 Contract.

15. KWUA next argues that the true purpose of the 1956 Contract was to ensure that Link River Dam would be operated consistent with Interior's needs and for the benefit of the irrigators, with compensation to the government pursuant to section 10(e) being a mere incidental benefit, and that the Commission failed to reserve authority to modify the contract. The exercise of our general reserved authority in section 10(e) to adjust the annual charges,\footnote{See January 20 Order, 114 FERC ¶ 61,051 at P29.} it asserts, would therefore impermissibly interfere with the true purpose of the 1956 Contract.\footnote{KWUA rehearing request at 11-15.}

16. Again we disagree. First, there is no dispute that the 1956 Contract was intended to benefit Interior and the irrigators, as well as to compensate the government for the use of the dam. As discussed above, however: (1) we are not amending the 1956 Contract, but ensuring that its express terms are carried out; and (2) we may not prevent the states from exercising their retail ratemaking authority. Accordingly, this Commission has
never purported to approve or fix the licensee’s retail irrigation rates, but only found that the 1956 Contract adequately compensates the United States for the use of its property.\footnote{KWUA’s assertion that compensation for the use of the Link River dam was merely incidental is also belied by the fact that Copco vigorously opposed and sought rehearing of the FPC’s finding that the project uses surplus water from a government dam. \textit{See} 1954 \textit{Order}, 13 FPC at 3-4; \textit{Copco v. FPC}, 239 F.2d 426 (D.C. Cir. 1956).}

17. KWUA next advances various arguments that the January 20 Order is not based on substantial evidence. First, it contends that the order should have been preceded by an examination of project operations in the absence of the 1956 Contract because it is unclear who will operate the dam and under what conditions if the 1956 Contract expires. It asserts in this connection that “Interior has no intention” of operating its dam.\footnote{KWUA rehearing request at 15.} Interior’s present-day intentions in this regard, whatever they may be, have no bearing on our interpretation of the 1956 Contract. We have anticipated expiration of the 1956 Contract in terms of operation of the licensed project in the only way we can, by making clear that as long as PacifiCorp operates the two project developments that are directly connected to the dam, it will need to have an operating agreement with Interior for that purpose, even if the 1956 Contract has expired.\footnote{\textit{January 20 Order}, 114 FERC ¶ 61,051 at P 27, n.49.}

18. KWUA next states that the Commission has committed, pursuant to the National Environmental Policy Act of 1969,\footnote{42 U.S.C. § 4321 \textit{et seq.} (2000).} to consider the economic effects of expiration of the 1956 Contract in the environmental impact statement being prepared in the pending relicensure proceeding for Project No. 2082. It asserts that this analysis must be completed before the Commission issues a new license that does not include the 1956 Contract, and that the same analysis must precede any order issued in this proceeding.\footnote{KWUA rehearing request at 16-18.}

19. Issues regarding the Commission’s compliance with NEPA in the relicensing context are premature until the Commission takes final action in that proceeding. NEPA does not apply to this proceeding. The January 20 Order takes two actions, neither of which will affect the environment. First, it denies Interior’s request for a declaratory order. It does not, as KWUA and Interior suggest, terminate the 1956 Contract or amend
Project No. 2082-041

the license. Second, we have proposed to adjust PacifiCorp’s annual charges for the use of a Government dam when the 1956 contract expires. Our regulations implementing NEPA categorically exclude actions concerning annual charges. If KWUA believes that the categorical exclusion should not apply to that action, such concerns should be raised in its pleadings filed in the subdocket we created for that purpose.

20. Lastly, KWUA states that we have failed to explain how expiration of the 1956 Contract is consistent with the terms of the Klamath River Basin Compact (Compact). The Compact, which became effective with the consent of Congress in 1957, created the Klamath River Compact Commission, as a cooperative relationship between Oregon, California, and Interior’s Bureau of Reclamation. The purposes of the Compact Commission are to promote the orderly, integrated, and comprehensive development, use, conservation and control of water for irrigation, protection of fish and wildlife, domestic and industrial use, hydropower, navigation, and flood protection.

21. The Compact is a federal law. KWUA points to Article IV of the Compact, which provides that it shall be an objective of Oregon and California to “secure the most economic distribution of water and lowest power rates which may be reasonable for irrigation and drainage pumping.” This language, KWUA claims, reflects

KWUA asserts that expiration of the 1956 Contract will cause increased retail electric rates which will, in turn, cause economic harm to irrigators and environmental harm from changes in irrigation usage. Rehearing request at 16-18. Such impacts, if any, will result from the exercise by the Oregon or California authorities of their retail ratemaking authority, not from our denial of Interior’s request for declaratory order.


Project No. 2082-040.


See Compact Article I.


Article IV reads, in its entirety:

It shall be the objective of each state, in the formulation and the execution and the granting of authority for the formulation and execution of plans for the distribution of the use of the waters of the Klamath River Basin, to provide for the most efficient use of available power head and its

(continued)
Project No. 2082-041

Congressional affirmation of the federal license for Project No. 2082, including the 1956 Contract, and is therefore a legislative requirement for the continuation of the 1956 Contract as a condition of that license.\(^{33}\)

22. KWUA's attempt to assign a very specific intent to the general language of Article IV fails. Article IV makes no mention of federal licensing or the 1956 Contract, but simply describes in general terms the objectives of the two concerned states with respect to hydroelectric power. This is consistent with the scheme of the FPA, which, as noted, leaves the matter of retail electric rates entirely in the hands of the states. KWUA's interpretation of the article rests on excerpts from a few sentences from the Senate committee report accompanying a bill to consent to the Compact.\(^{34}\) These sentences make no mention of the license or the 1956 Contract. They simply indicate that Congress was aware that Copco was the owner and operator of all existing hydroelectric plants on the Klamath River, and that this Commission has jurisdiction with respect to federal licensing of such plants. The Commission's licensing authority, moreover, requires no federal affirmation in addition to the FPA.

23. In conclusion, none of the arguments advanced by KWUA or Interior cause us to conclude that the January 20 Order was in error.

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integration with the distribution of water for other beneficial uses in order to secure the most economic distribution of water and lowest power rates which may be reasonable for irrigation and drainage pumping, including pumping from wells.

\(^{33}\) KWUA rehearing request at 18-20.

\(^{34}\) Senate Report No. 834, 85th Congress, 1st Session (August 7, 1957).
Project No. 2082-041

The Commission orders:

The requests for rehearing filed in this proceeding on February 21, 2006, by the U.S. Department of the Interior and the Klamath Basin Water Users Protective Association are denied.

By the Commission.

(SEAL)

Magalie R. Salas,
Secretary.
Headwater Benefits Determination
Klamath River Basin
Docket No. HE01-96-11

Steve Clark, Acting Regional Director
U.S. Bureau of Reclamation
Pacific Northwest Regional Office
1150 W. Curtis Road, Suite 100
Boise, ID 83706

Dear Mr. Clark:

Under Section 10(f) of the Federal Power Act (FPA), the Federal Energy Regulatory Commission (FERC) is responsible for determining and assessing headwater benefits for hydropower projects that benefit from the construction of a storage reservoir or other headwater improvement. Headwater benefits are the additional energy generation possible at a downstream hydropower project resulting from the regulation of stream flows by an upstream storage reservoir. Section 10(f) requires the owners of downstream hydropower projects to reimburse the owners of upstream headwater projects an equitable part of the benefits received.

We have completed a review of federal headwater and downstream hydropower projects in the Klamath River Basin and are providing you with a copy of our findings. Our research found five non-federal hydropower plants in the basin with installed capacities greater than 1,500 kilowatts that are located downstream of federal headwater storage projects. All five plants are owned by PacifiCorp and are part of the FERC licensed Klamath Project, P-2082. Any headwater benefits received by these plants are covered under the Link River Dam Agreement for a 50-year period from January 1, 1956 between the United States and PacifiCorp.

PacifiCorp's Iron Gate hydropower plant, which is also part of the Klamath Project, is in a position to receive benefits from federally-owned Howard Prairie, Hyatt, and Klamath headwater storage projects. This plant is not covered under the Link River Dam Agreement and a more detailed analysis may be warranted to determine if the three headwater storage projects provide any benefits.
Please provide any comments on the report within 60 days from the date of this letter. If you have any questions, please contact Mr. Charles K. Cover at (202) 219-2664.

Sincerely,

[Signature]

Carol L. Sampson
Director
Office of Hydropower Licensing

Enclosure

cc: Public Files
HEADWATER BENEFITS
BASIN SCREENING REPORT

KLAMATH RIVER BASIN

DOCKET NO. HB32-96-11

DIVISION OF LICENSING & COMPLIANCE
ENGINEERING COMPLIANCE BRANCH
AUGUST 1998
1.0 INTRODUCTION

1.1 Authority

Headwater benefits determinations are conducted by the Engineering Compliance Branch, Division of Licensing and Compliance, pursuant to the requirements of Section 10(f) of the Federal Power Act. Section 10(f) directs the Federal Energy Regulatory Commission (FERC) to assess owners of downstream non-federal hydropower plants benefited by the regulation of federal or federally licensed headwater improvements.

1.2 Purpose

The purpose of this report is to document the review of current and future developments in the Klamath River Basin as they relate to headwater benefits. Of the many facilities in the basin, only those downstream non-federal hydropower plants which have a nameplate capacity greater than 1,500 kW have been included in this review. As of this report date, there are six non-federal hydropower plants in the Klamath River Basin with a capacity greater than 1,500 kW and located downstream from a federal headwater project that may be subject to Section 10(f) charges.

1.3 Previous Investigation

A previous investigation was conducted by the Commission with the results detailed in a Bureau of Power Memorandum to the Commission: Investigation of Headwater Benefits in the Klamath River Basin, Oregon - California, July 25, 1968. This investigation determined that the six hydropower projects, East Side, West Side, John C. Boyle, Copco No. 1, Copco No. 2, and Iron Gate, all owned by PacificCorp, did not receive headwater benefits from upstream federal storage projects. Federally-owned headwater improvements included in the study are Link River Dam, Gerber, and Clear Lake storage projects, and irrigation and diversion works in the Lost River Basin. In its September 12, 1968 meeting, the Commission directed that no formal investigation should be made for calendar years 1970 through 1966, and that no further headwater benefits investigation should be made until warranted by a change in basin conditions.

2.0 BASIN DESCRIPTION

2.1 Brief Basin Summary

The Klamath River Basin includes a drainage area of 15,600 square miles, of which one-third lies in southern Oregon and two-thirds in northern California. The headwaters of the Klamath River originate at the confluence of the Wood, Williamson, and Sprague rivers in Oregon and in general flows southwest through rugged canyons before discharging into the Pacific Ocean in California. Major tributaries include the Lost, Shasta, Scott, Salmon, and Trinity rivers.

Figure 2-1 is a schematic of the river basin showing the relative locations of the existing headwater improvements and the downstream hydropower plants that were listed in the FERC Hydropower Resources Assessment (HFRA) database dated July 30, 1996 for the Klamath River.
Basin considered in this review. Also listed in the HFRA database were three privately owned licensed hydropower projects (Upper Cold Springs, Luckey Hydro, and Ecker), each less than 1,500 kW, that could not be located in the basin. Figure 2-2 is a map showing the basin boundary and its geographical location.

Figure 2-2 Klamath River Basin Map
2.2 Headwater Improvements

Major headwater improvements in the Klamath River Basin include the Klamath Project, portions of the Talent Division of the Rogue River Basin Project, and portions of the Shasta-Trinity River Division of the Central Valley Project. All of these projects are owned by the Bureau of Reclamation (Bureau). Other headwater improvements in the basin, Bumphead and Round Valley dams and reservoirs, are owned by the U.S. Bureau of Land Management (BLM) and located on unnamed tributaries to the Lost River and Miller Creek respectively.

The Klamath Project includes Link River Dam and Upper Klamath Lake, Clear Lake Dam and Reservoir, Gerber Dam and Reservoir, and Lost River Diversion Dam and Channel. Upper Klamath Lake, impounded by Link River Dam, is the principal storage feature of the project. Link River Dam was built for the purpose of irrigation and for power generation. Link River Dam was constructed in 1921 by the California Oregon Power Company, now PacificCorp, and conveyed to the Bureauc in that same year. Link River Dam is operated by PacificCorp under the Link Dam Agreement dated January 31, 1956.

Clear Lake and Gerber dams and reservoirs and Lost River Diversion Dam all provide additional storage for irrigation and regulation of flow into the reclamation portion of Tule Lake, California. The eight mile long Lost River Diversion Channel, with a 3,000 cubic foot per second capacity, conveys excess water from the Lost River to the Klamath River above Kato Reservoir owned by PacificCorp.

The portion of the Talent Division of the Rogue River Basin Project that lies within the Klamath River Basin includes Fourmile Lake, Howard Prairie, Hyatt, and Keene Creek dams and reservoirs for the primary purpose of irrigation in the Rogue River Basin. Excess flow is diverted from the South Fork of the Little Bute Creek in the Rogue River Basin under the Cascade Divide to Howard Prairie Lake. In addition, Howard Prairie Dam also impounds flow from Beaver Creek in the Klamath River Basin. The Howard Prairie Delivery Canal conveys flow to Keene Creek Reservoir, located on Keene Creek. Runoff is also captured by Hyatt Reservoir located in the headwaters of Keene Creek and conveyed to Keene Creek Reservoir. Flow is then from Keene Creek Dam through the Howard Prairie Delivery Canal, underneath the Cascade Divide, to Green Springs hydropower plant in the Rogue River Basin. Additional flow is supplemented to the Rogue River Basin from storage at Fourmile Lake in the Klamath River Basin. Excess water is diverted from Fourmile Lake, through the Cascade Canal, to Fish Lake in the Rogue River Basin.

The portion of the Shasta-Trinity River Division of the Central Valley Project located in the Klamath River Basin includes Trinity Dam and Clair Eagle Lake and Lewiston Dam and Reservoir. Both reservoirs are located on the Trinity River and are part of a system to divert water from the Trinity River for use in the Sacramento River Basin's Central Valley. The Clear Creek Tunnel diverts water 11 miles from Lewiston Reservoir to the Judge Francis Carr Powerhouse and Whitneytown Lake in the Sacramento River Basin.
Of the federally owned headwater projects, ten federal dams and reservoirs are located in a position to provide benefits to downstream hydropower plants. The location of these federal headwater projects is shown in Figure 2-1. Pertinent information regarding these projects is presented in Table 2-1. Photographs of the headwater projects are presented in Appendix A.

### Table 2-1

<table>
<thead>
<tr>
<th>RESERVOIR</th>
<th>STREAM</th>
<th>OWNER</th>
<th>INITIAL YEAR OF OPERATION</th>
<th>DRAINAGE AREA (ac-ft)</th>
<th>STORAGE CAPACITY (ac-ft)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fourmile Lake</td>
<td>Fourmile Cr.</td>
<td>BuRec</td>
<td>1916</td>
<td>11</td>
<td>15,800</td>
</tr>
<tr>
<td>Upper Klamath Lake</td>
<td>Link River</td>
<td>BuRec</td>
<td>1921</td>
<td>3,812</td>
<td>873,500</td>
</tr>
<tr>
<td>Round Valley</td>
<td>Lassen to Klamath Cr.</td>
<td>BLM</td>
<td>1958</td>
<td>N/A</td>
<td>2,719</td>
</tr>
<tr>
<td>Gerber</td>
<td>Miler Cr.</td>
<td>BuRec</td>
<td>1925</td>
<td>234</td>
<td>123,000</td>
</tr>
<tr>
<td>Clear Lake</td>
<td>Lost R.</td>
<td>BuRec</td>
<td>1910</td>
<td>N/A</td>
<td>556,000</td>
</tr>
<tr>
<td>Bumphead</td>
<td>Lassen to Lost R.</td>
<td>BLM</td>
<td>1957</td>
<td>N/A</td>
<td>1,450</td>
</tr>
<tr>
<td>Lost River Diversion Pool</td>
<td>Lost R.</td>
<td>BuRec</td>
<td>1912</td>
<td>N/A</td>
<td>2,300</td>
</tr>
<tr>
<td>Howard Prairie</td>
<td>Beaver Cr.</td>
<td>BuRec</td>
<td>1958</td>
<td>79</td>
<td>76,700</td>
</tr>
<tr>
<td>Hyatt</td>
<td>Konoa Cr.</td>
<td>BuRec</td>
<td>1922</td>
<td>12</td>
<td>16,200</td>
</tr>
<tr>
<td>Konoa Cr.</td>
<td>Konoa Cr.</td>
<td>BuRec</td>
<td>1916</td>
<td>111</td>
<td>340</td>
</tr>
</tbody>
</table>

### 2.3 Downstream Hydropower Plants

The Klamath River Basin currently includes seven private hydropower plants owned by PacifiCorp and include under FERC License No. 2082. Fall Creek hydropower plant is not located downstream of any headwater project. Of the remaining six plants located downstream of a federal headwater project, five have a nameplate capacity greater than 1,500 kW. The East Side and the West Side hydropower plants are located on the Link River downstream of the federally owned Clear Lake, Gerber and Lost River Diversion headwater projects. The John C. Boyle, Copco No. 1, Copco No. 2, plants are located on the Klamath River downstream of the federal owned Fourmile Lake, Upper Klamath Lake, Clear Lake, Bumphead, Gerber, Round Valley, and Lost River Diversion headwater projects. The Iron Gate hydropower plant is located downstream of all the federal headwater improvements listed in Table 2-1. Table 2-2 lists pertinent information regarding the six hydropower plants and photographs of the plants are included in Appendix B.
Table 2-2
Pertinent Hydropower Plant Data

<table>
<thead>
<tr>
<th>HYDROPOWER PLANT</th>
<th>OWNER</th>
<th>YEAR ON-LINE</th>
<th>NAMEPLATE CAPACITY (KW)</th>
<th>PROJECT TYPE</th>
</tr>
</thead>
<tbody>
<tr>
<td>East Side</td>
<td>Pacificorp</td>
<td>1924</td>
<td>3,200</td>
<td>DIV</td>
</tr>
<tr>
<td>West Side</td>
<td>Pacificorp</td>
<td>1908</td>
<td>600</td>
<td>DIV</td>
</tr>
<tr>
<td>John C. Boyle</td>
<td>Pacificorp</td>
<td>1958</td>
<td>79,990</td>
<td>DIV</td>
</tr>
<tr>
<td>Copco No. 1</td>
<td>Pacificorp</td>
<td>1918</td>
<td>20,000</td>
<td>DIV</td>
</tr>
<tr>
<td>Copco No. 2</td>
<td>Pacificorp</td>
<td>1929</td>
<td>27,000</td>
<td>DIV</td>
</tr>
<tr>
<td>Fall Creek</td>
<td>Pacificorp</td>
<td>1903</td>
<td>2,200</td>
<td>DIV</td>
</tr>
<tr>
<td>Inn Gate</td>
<td>Pacificorp</td>
<td>1962</td>
<td>18,000</td>
<td>DIV</td>
</tr>
</tbody>
</table>

1 DIV - diversion. ROR - run-of-river. STG - storage.
2 Fall Creek Hydropower Plant is not located downstream of any headwater project.

2.4 Water Rights and Diversions in the Basin

Based on the limited scope of this preliminary investigation, diversions were found which may have an impact on headwater benefits in the Klamath River Basin.

Water is diverted from Fourmile Creek Reservoir through the Cascade Canal to the Rogue River Basin. In addition, water is diverted from the South Fork of Little Butte Creek in the Rogue River Basin to Howard Prairie Reservoir and returned from Keene Creek Reservoir in the Klamath River Basin to Green Springs hydropower plant in the Rogue River Basin.

Diversion canals and laterals primarily used for irrigation, not shown in Figure 2-1, also exist in the Klamath River Basin that may impact potential headwater benefits. As of 1981, the BuRec owned 185 miles of diversion canals, 532 miles of laterals, and 37 pumping plants. These diversion facilities irrigate approximately 225,000 acres of farm land and are operated by the various irrigation districts in the Klamath River Basin. The number of private irrigation diversion canals that may also exist in this river basin could not be determined.

3.0 PRELIMINARY HEADWATER BENEFITS INVESTIGATION

On February 14, 1917, a contract for a period of 50 years was made between California Oregon Power Company (Copco) and the United States, for the purpose of adjusting water rights in the Upper Klamath Lake and Klamath River between power and irrigation uses. Under the provisions of the contract, Copco constructed the Link River Dam at the outlet of Upper Klamath Lake and conveyed the dam and the land upon which it is situated to the United States, in consideration for which Copco agrees to regulate the lake between certain specified elevations, to furnish water for
irrigation purposes, and to supply energy at low rates for pumping purposes in connection with irrigation. In a January 28, 1954 order, the Commission issued a major license to Project No. 2082, Docket No.E-6390, stating:

The benefits received by the United States under the Link Dam Agreement, dated February 24, 1917, as amended, constitute reasonable compensation for the use of surplus water from that Government dam, and no additional charge therefor should be made under the license during the term of that agreement or extension thereof.

On January 31, 1956, the United States and Copco entered into a new 50-year agreement superseding the February 14, 1917 contract. PacifiCorp compensates the United States under Link Dam Agreement by providing energy for pumping Klamath water for irrigation and reclamation purposes. These compensations are considered under section 10(e) of the Federal Power Act for the use, occupancy, and enjoyment of Link Dam.

The Commission's July 25, 1968 headwater benefits review, determined the net effect of the operation of Clear Lake and Gerber projects and certain irrigation and diversion works in the Lost River Basin resulted in a substantial loss in power generation at the John C. Boyle, Copco Nos. 1 and 2, and Iron Gate hydropower projects. There have been no new federally-owned headwater improvements constructed in the Lost River Sub-basin since 1968 that would provide benefits to downstream PacifiCorp-owned hydropower projects. In this review we conclude that conditions in the Lost River Sub-basin have not changed to warrant further investigation of Lost River Basin storage projects.

Fourmile Lake Dam, constructed in 1916 and located on Fourmile Creek, upstream of Link River Dam and Upper Klamath Lake, was in operation at the time of previous headwater benefits investigation. Although, not discussed in the 1968 review, Fourmile Lake provides storage for irrigation in the Rogue River Basin. In this review, we conclude that because the primary purpose of Fourmile Lake Dam is to store and divert water from the Klamath River Basin to the Rogue River Basin, conditions have not changed since 1968 to warrant further study of Fourmile Lake Dam.

A more detailed review of the Klamath River Basin is required to evaluate potential headwater benefits provided by the Howard Prairie, Hyatt, and Keene Creek storage projects to PacifiCorp's Iron Gate hydropower plant. The diversion canals and laterals that exist in the Klamath River Basin should be included in the evaluation of any potential headwater benefits received at the Iron Gate hydropower plant.

4.0 POTENTIAL BASIN DEVELOPMENT

To identify the potential developments in the Klamath River Basin, the HPRA database listing dated July 17, 1997 for the Klamath River Basin was reviewed. Only hydropower plants which have a potential capacity greater than 1,500 kW, are located downstream of an existing federal facility, and have an active license status are considered to be potential developments.
As of July 17, 1997, there is one potential hydropower plant listed in the HPRA database that meets these criteria. The Lorella PS pump-storage hydropower plant, to be located on the Lost River downstream of the federally owned Gerber, Clear Lake, Bumphead, and Round Valley storage projects, has an application pending with the FERC for a major license. Lorella PS, FERC Project No. 11181A, has a potential capacity of 1,000,000 kW.

5.0 CONCLUSION

There are five non-federal hydropower plants in the Klamath River Basin with a nameplate capacity greater than 1,500 kW that are located in a position to receive headwater benefits from upstream federal headwater projects. However, any headwater benefits received are covered under the Link River Dam Agreement for a 50-year period from January 31, 1956 between the United States and PacifiCorp.

The Iron Gate hydropower plant is in a position to receive benefits from federally-owned Howard Prairie, Hyatt, and Keene Creek headwater storage projects. A more detailed analysis may be warranted to determine if the headwater improvements provide any benefits to Iron Gate hydropower plant. This analysis should include a review of the basin hydrology and compare the current conditions to those existed prior to the 1968 investigation to determine whether changes have occurred that might impact headwater benefits.
APPENDIX A

HEADWATER PROJECTS
APPENDIX B

DOWNSTREAM HYDROPOWER PROJECTS
Iron Gate Plant (FERC P-2082 A)

Fall Creek Plant (FERC P-2082 B)
INITIAL ASSESSMENT OF PRE- AND POST-KLAMATH PROJECT HYDROLOGY ON THE KLAMATH RIVER AND IMPACTS OF THE PROJECT ON INSTREAM FLOWS AND FISHERY HABITAT

Prepared on behalf of:
The Yurok Tribe

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March 1996.
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INITIAL ASSESSMENT OF PRE- AND POST-KLAMATH PROJECT HYDROLOGY ON THE KLAMATH RIVER AND IMPACTS OF THE PROJECT ON INSTREAM FLOWS AND FISHERY HABITAT

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# TABLE OF CONTENTS

1. INTRODUCTION ............................................................... 4  
2. GEOLOGIC AND HYDROLOGIC SETTINGS .............................. 6  
   2.1 Geologic Setting .................................................. 6  
   2.2 Long Term Climatic Record .................................... 9  
3. PRE- AND POST-PROJECT FLOWS ON THE KLAMATH RIVER .......... 13  
   3.1 Pre-Project Flows ............................................... 13  
   3.2 Post-Project Flows ............................................. 15  
      3.2.1 Project History ....................................... 15  
      3.2.2 Changes in Flow at a Station Over Time .......... 17  
      3.2.3 Downstream Changes in Flow Patterns ............... 19  
      3.2.4 Changes in Flow Recession Rates ................... 19  
      3.2.5 Keno Flows as Percent of Flows at the Klamath River Mouth ........ 20  
4. CAUSES OF SEQUENTIAL CHANGES IN FLOWS ....................... 21  
5. CHANGES IN WATER QUALITY ASSOCIATED WITH THE PROJECT ...... 23  
   5.1 Implications to Fisheries .................................... 23  
   5.2 Implications for Human Health ............................... 26  
   5.3 Need for Additional Water Quality Information ........... 26  
6. PHYSICAL SOLUTIONS ..................................................... 28  
   6.1 Increasing Water Storage in the Upper Klamath Basin ...... 28  
   6.2 Ground Water Conservation and Use ........................... 29  
      6.2.1 In-Lieu Pumpage and Conjunctive Use ............... 29  
      6.2.2 Occasional Pumping Directly to Streams .......... 30  
      6.2.3. Water Quality ...................................... 32  
   6.3 Increase Irrigation Efficiency and Other Measures ......... 32  
   6.4 Artificial Recharge ........................................... 32  
7. CONCLUSIONS ............................................................. 34  
8. REFERENCES CITED ....................................................... 37
LIST OF TABLES

Table 1. Estimated pre-Project mean monthly and annual stream flow: Keno and Iron Gate Dams

Table 2. Hydrogeologic characteristics and historic pumpage: Upper Klamath River ground water basins

LIST OF FIGURES

Figure 1. Map of Klamath River watershed

Figure 2. Mean monthly flow as a percentage of mean annual flow: Trinity, Eel, and upper Klamath Rivers (prior to construction of large storage projects)

Figure 3. Comparison of mean daily flows for Sprague and Applegate Rivers: Water Year 1987

Figure 4. Mean monthly flows for Sprague and Applegate Rivers: Water Years 1982-1990

Figure 5. Mean annual precipitation at Yreka by rainfall years: 1872 through 1994

Figure 6. Mean annual precipitation at Klamath Falls by rainfall years: 1905 through 1994

Figure 7. Bureau of Reclamation estimates of annual inflow to Upper Klamath Lake: Water Years 1906 through 1995

Figure 8. Cumulative deviation from mean annual precipitation at Yreka: Rainfall Years through 1994

Figure 9. Cumulative deviation from mean annual precipitation at Klamath Falls: Rainfall Years through 1994

Figure 10. Cumulative deviation from mean annual inflow to Upper Klamath Lake: Water Years 1906 through 1995

Figure 11. Minimum, mean, and maximum monthly flows in Klamath River at Keno gage as percentage of total annual flow: Water Years 1906 through 1912

Figure 12. Monthly flow in Klamath River at Keno gage
Figure 13. Minimum, mean, and maximum monthly flow in Klamath River near Seiad Valley: Water Years 1913-1926

Figure 14. Mean monthly flow for selected periods: Klamath River at Keno/Spencer Bridge gage as percentage of mean annual flow

Figure 15. Pre- and post-project monthly flows: Klamath River at Keno gage (above normal runoff year)

Figure 16. Pre- and post-project monthly flows: Klamath River at Seiad Valley gage (above normal runoff year)

Figure 17. Pre- and post-project monthly flows: Klamath River at Seiad Valley gage (below normal runoff year)

Figure 18. Pre- and post-project monthly flows: Klamath River at Klamath (above normal runoff year)

Figure 19. Pre- and post-project monthly flows: Klamath River at Klamath (below normal runoff year)

Figure 20. Pre- and post-project monthly flows: Trinity River at Hoopa (below normal runoff year)

Figure 21. Mean monthly flows: Klamath River Basin: Water Year 1913 (above normal runoff year)

Figure 22. Mean monthly flows: Klamath River Basin: Water Year 1985 (above normal runoff year)

Figure 23. Mean monthly flows: Klamath River Basin: Water Year 1918 (below normal runoff year)

Figure 24. Mean monthly flows: Klamath River Basin: Water Year 1987 (below normal runoff year)

Figure 25. Mean monthly flow as percent of mean annual flow: Klamath River near Klamath (above normal runoff year)

Figure 26. Mean monthly flow as percent of mean annual flow: Klamath River near Klamath (below normal runoff year)

Figure 27. Klamath River flow at Klamath as a percentage of flow from Keno
Figure 28. Temperature and dissolved oxygen measurements from the Klamath River at Iron Gate Dam, the confluence with the Scott River, and Ishi Pishi Falls (June 8-22, 1994)

Figure 29. Ground water basins in the upper Klamath basin

Figure 30. Changes in extent of lakes and perennial wetlands, upper Klamath basin

Figure 31. Comparison of dry-year pumpage, applied irrigation and representative estimate of ground-water safe yield, upper Klamath basin

APPENDICES

Appendix A. Rainfall/Runoff Correlations

Appendix B. Transcription of Yurok Tribal Elder’s Account of Drought and Famine in the mid-19th Century
EXECUTIVE SUMMARY

1. Salmon, steelhead, and other anadromous fish sustained by instream flows of the Klamath River are central to the economy and culture of the Yurok People. These fisheries are in decline. The Bureau of Reclamation's Klamath Project (Project) has had a major impact on the character of seasonal flows in the Klamath River below Iron Gate Dam that in turn has negatively affected fish habitats.

This report summarizes our initial findings regarding how the Project has changed flows in the Klamath River below Iron Gate Dam. It supports analyses and findings which we presented at the Klamath Project Operations Plan (KPOP) meeting on January 16, 1996, and at subsequent technical forums. Our findings may be revised and expanded once we have (a) a better functional grasp of Bureau of Reclamation models, presently undocumented, being used to develop the March 1996 KPOP, (b) further refined an unimpaired flow record in the upper Klamath basin, and (c) obtained additional in-depth information from the research of aquatic biologists on the constraining ecological factors of the river. Our approach may also change as new information becomes available describing water quality and related effects on fish populations.

2. Instream flow needs to sustain tribal trust fisheries are likely to emulate to some degree those which prevailed prior to the Project, as well as prior to a number of subsequent changes in natural flows in other portions of the watershed. The anadromous fish species crucial to the Yurok Tribe were well-adapted to the natural flows in the Klamath River prior to diversions by the Project. Hence, we developed estimates of pre-Project (i.e., pre-1912) flows and how they have changed since inception of the Project. Relative to pre-Project flows, the overall effects of the the Project are an increase in winter flows and a decrease in late-spring and summer flows. These changes may adversely affect both spawning and rearing of salmonids and may compound water-quality constraints to summer habitat in the river. Project operations and other land and water uses during early fall also result in a slight increase in October and November flows in most years, which may impair spawning and egg incubation of fall-run chinook.

3. Under pre-Project conditions, the Klamath basin above Keno seems to have provided about 30 to 40 percent of late-spring and summer flows at the mouth of the Klamath
River, based on detailed analysis of two pairs of hydrologically-similar years (1908/1985 and 1918/1987).

4. There are important long-term cycles in both rainfall and runoff which must be understood to know how the Project has affected and will affect the Klamath River fishery. We have analyzed both rainfall and runoff records of these cycles using conventional hydrologic techniques. Significantly wetter-than-normal conditions occurred during the decades prior to about 1915 and about 1984; sustained dry periods extended from 1915 to 1950 and from about 1987 to the present. Yet there seems to be little or no general appreciation of these cycles reflected in most of the KPOP technical documents or related reports which we have read, and it is likely that provisions modifying operations during such cycles will not be included in the March 1996 KPOP document. Planning for multi-year drier-than-normal periods is needed to avoid undue adverse effects on the downstream fishery, as well as on other users of Project water.

5. Numerous pervious units within the thick sequence of volcanic rocks beneath the upper Klamath basin act like a large reservoir for the Klamath River, storing runoff and maintaining fairly steady outflows to the streams and lakes during seasonal and short-term droughts. Other portions of the Klamath River watershed do not have the extensive aquifers which can maintain flows through multiple dry years.

6. Differences between pre- and post-Project flows have progressively been widening during the past 30 to 50 years. Summer flows below Iron Gate Dam or Keno have become an increasingly small fraction of those in the river at various points downstream. During drought years, the proportion of summer and early-fall flows originating in the upper basin have progressively lessened, apparently due to water-management decisions made in each successive drought. During the past six years, both daily and monthly minimum flows released by the Project have at times fallen sharply lower than at any time since Iron Gate Dam began operations in the early 1960s.

7. Principal impacts on water-quality which currently affect fish populations seem to be (a) nutrients, elevated temperatures, and indirect effects on dissolved oxygen and pH of the growth which they stimulate, and (b) the wider, shallower channel of the river and the reduced stability of the bed in which eggs of the tribal trust species incubate. While informative as to cause, the pertinent data are sparse and poorly controlled. No information is available on pesticide concentrations in the runoff from the first storms of the
wet season; such data are needed not only because of the susceptibility of the many eggs and swim-up fry in the river at such times, but also because the Project operations have increased the proportion of such ‘first-flush’ flows entering the stream and have diminished the ability of wetlands to retain and attenuate pesticide and nutrient concentrations. It seems prudent to assess these implied constraints before attempting further biological evaluations which presume suitable water-quality and stable bed conditions conducive to fish propagation and growth.

8. Knowledgeable use of ground water, restoration of a portion of the pre-Project wetland functions and areas, and active recharge of selected aquifer units can help alleviate a number of these Project-related changes which adversely affect fish (including, i.e., undesirable shifts in the annual pattern of flows, disproportionate impacts during droughts, and water-quality constraints). In some cases, increased power generation may more than offset much of the costs of these restorative measures.

9. Important efforts are underway in the upper Klamath basin to increase on-farm efficiency of water use and to reduce further pesticide inflows to the two downstream national wildlife refuges. These efforts merit fullest encouragement and are consistent with management of the tribal-trust species.

10. As measured at Klamath, changes in summer flows associated with the Project are larger (both proportionately and in absolute terms) than those associated with the Trinity Project. Both changes cumulatively affect the condition and use of mainstem habitat within the full length of the Yurok Reservation downstream from the mouth of the Trinity River.
1. INTRODUCTION

This report was prepared by Balance Hydrologics, Inc. (Balance) for Alexander & Karshmer, Attorneys at Law, counsel to the Yurok Tribe on behalf of the Yurok Tribe of Northern California. Its principal aim is to describe the historical nature and quality of instream flows of the Klamath River that sustain (but today sustain only at risk) the anadromous fish species central to the economy and culture of the Yurok People. These fisheries are widely considered to be in decline.

Presented in this report are analyses of hydrologic, geologic, and water-quality conditions developed to identify the extent to which these instream flows depend on or are influenced particularly by the Project. They accompany a report by Trihey & Associates which presents instream-flow recommendations for tribal trust species in the Klamath River below Iron Gate Dam. Balance was asked to prepare the hydrologic, geologic and related analyses to establish the extent to which these needs are influenced by waters used, impounded, or diverted by the Klamath Project. Trihey and Balance were asked to develop a first approximation of the timing and amounts of water that can be released to the Klamath River at Iron Gate Dam to meet the near-term instream-flow needs of the anadromous species of the Klamath River. The two firms were also asked to begin considering what operations of the Klamath Project and other Bureau of Reclamation projects in the Klamath watershed will eventually be needed to meet instream flow and related environmental needs over the longer term. Balance was also asked to evaluate water-quality factors which may affect such instream flows and to suggest approaches to physical solutions that might help ensure that other important water needs of the Project area are satisfied in years when there is no surplus water available. The six primary goals of this study were:

1) to characterize and quantify pre-Project flows in the upper basin for Trihey & Associates, which has been developing instream flow recommendations for anadromous fisheries in a companion study;

2) to develop an understanding of the long-term hydrologic patterns experienced in the basin and what effects they have had and could have;

3) to characterize the importance of sustaining flows emanating from the upper Klamath basin (above Iron Gate Dam) during summers and during dry years, critical periods for certain anadromous species;
4) to identify and describe how Project operations have changed Klamath River flows and to begin considering how proposed changes in operations may further impact flows; and

5) to assess water-quality considerations likely to affect near- and long-term instream-flow needs and to identify some of the more crucial data gaps; and

6) to identify approaches to physical solutions which meet the needs of the anadromous and Upper Klamath Lake fisheries while also helping provide for the consumptive water needs of Project irrigators and wildlife refuges during years when there is no surplus water available for these more junior water-rights holders.

Balance was asked to initiate this study after the Bureau of Reclamation indicated that it did not know how to quantify the reserved water rights of the Yurok Tribe (Mike Belchik, personal communication, November 27, 1995), even though this information was needed to complete the Klamath Project Operations Plan (KPOP). This report and the companion study by Trihey & Associates are intended to provide easier reference to materials presented to Reclamation and other KPOP participants on January 16, 1996. It does not, however, include all technical contributions by the Yurok Tribe or its counsel. As additional data and information become available, the Tribe (a) may seek revision of the analyses included in this document, and (b) may make additional technical comments regarding the hydrology (including water quality) affecting the fisheries and the river upon which they depend.

Specifically, this report presents a description of Klamath River pre-Project hydrology, the changes in flow and water quality on the river due to construction and operation of the Project, a description and discussion of the importance of the upper basin geology to flows in the river, a description of long-term climatic conditions within the upper Klamath basin, and proposed physical solutions which would promote a distribution of flows on the river more representative of pre-Project conditions which were and would be more favorable to the fisheries. This study was completed in close association with Trihey & Associates and their investigation to characterize an instream flow schedule on the upper Klamath River which would best sustain anadromous fisheries on the Klamath River downstream of Iron Gate Dam (Trihey & Associates, 1996). Our report provides much of the hydrologic background used by the Trihey staff to develop their recommendations.
2. GEOLOGIC AND HYDROLOGIC SETTINGS

The geologic and hydrologic setting of the upper Klamath Basin is unique relative to most other large northern California and southern Oregon rivers. As will be described in detail below, pervious volcanic rocks act as aquifers within the upper basin, sustaining flows in the Klamath River which were more conducive to fishery habitat than in other non-volcanic portions of the Klamath watershed. With the advent and development of the Project, the physical setting within the upper basin has been so modified that the important sustaining baseflows during summers and dry years seldom occur when especially needed by instream habitat. This transition is probably contributing to, if not directly causing, the degradation of several anadromous fisheries within the Klamath River system.

Throughout this and other sections of the report, we commonly reference a number of stream flow and precipitation gage records collected in the Klamath River basin. Almost all United States Geological Survey (USGS) gaging records from the Klamath River and tributaries were reviewed to some degree during this investigation. Stream gages with long-term records which most assisted us in our analyses included (from upstream to downstream): Link River at Klamath Falls, Oregon; below Keno Dam, Keno, Oregon; at Spencer Bridge near Keno; below the J.C. Boyle power plant near Keno; below Iron Gate Dam; near Seiad Valley, California; at Orleans, California; and at Klamath, California (Figure 1). We also repeatedly reference a record from a gage on the Trinity River at Hoopa, California, just above the confluence with the Klamath River. All precipitation records referenced throughout the report are presently recording rain gages maintained by the U.S. Weather Bureau and located at Yreka, California; Klamath Falls, Oregon; Medford, Oregon; and Lakeview, Oregon; although older records may have been collected under other aegises.

2.1 Geologic Setting

Straddling the Oregon/California border, the upper Klamath River basin includes approximately 4630 square miles of surface drainage area above Iron Gate Dam (see Figure 1). For purposes of this report, the upper Klamath basin is also considered to include a number of closed, interior-draining valleys, such as Lost River, Butte Valley, and Lower Klamath Lake. In Oregon, the Klamath River basin is located almost entirely in
Klamath County. In California the upper basin occupies the northeastern portion of Siskiyou County and northwestern portion of Modoc County. The main tributaries to the Klamath River within the upper basin are, from north to south, the Williamson, Wood, Sprague, and Lost Rivers.

Under natural conditions, i.e., similar to those which we call pre-Project, the upper basin was the principal source of flow for the lower basin during late summer and fall, in years of below-normal precipitation, and periods of extended drought.1 The upper basin is underlain by water-holding volcanic rocks, which are the principal source of its disproportionate importance in sustaining flows during dry periods, even though coastal portions of the basin receive much greater precipitation. The upper basin is also at higher elevations, allowing seasonal accumulation as snow, and it is also the site of numerous lakes and wetlands which further store and gradually release the winter's precipitation. The following paragraphs describe these influences. In later sections, their relation to the historical changes in flows and to potential physical solutions is discussed.

The upper Klamath River basin lies within the northwest corner of what is known in geomorphic terms as the Basin and Range Province, immediately east of the Cascade Mountain range. Geologically, the basin consists of a complex series of northwest-southeast trending valleys occupying elongated crustal blocks bounded on both sides by faults and separated by uplifted crustal blocks or ridges. They developed in the late Pleistocene through extension and block faulting of the Basin and Range Province. Typically, the valleys are filled partially with deposits from alluvial fans and lacustrine (lake) clay sediments interbedded with occasional thin volcanic basalt flows. Beneath these surface deposits is a laterally extensive, thick sequence of basalt flows, commonly referred to as the “lower basalt unit,” “the High Cascade Volcanics,” or more recently the “Basin and Range Basalt.” Most of the ridges between valleys are underlain by this lower basalt unit.

The basalts of the upper Klamath River basin commonly are columnarly jointed, fractured, and scoriaceous (covered by small cavities formed by the expansion of gas bubbles or steam during cooling of the lava flow). They are the most prolific water-bearing units in the upper Klamath River basin. Although some of the alluvial fans extending onto valley

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1Throughout this report we refer to “normal” flow or rainfall conditions, which we define to be a reasonable range bracketing the long-term average for the entire period of available record. The extent of “reasonable range” will vary, depending upon the context and the parameter being described (e.g., rainfall, flow, ground-water levels, etc.).
floors can also serve as productive aquifers, they are not as thick and laterally extensive as the basalts. Typically, basin valleys are covered with a surface layer of fine grained lacustrine sediments which generally respond as low-permeability zones. The highly-permeable nature of the lower basalt unit flows (which predominate in the higher ridge-top areas) recharge and store an unusually high percentage of rainfall and runoff within the basin. The vast expanse and vertical thickness of these flows, together with the abundance of structurally controlled valleys, allow large quantities of seasonal runoff to be recharged and stored as ground water within the upper Klamath River basin. From this storage, the upper basin basalts provide a steady release of ground water through seeps and springs to marshes and tributaries, resulting in naturally high year-round flows uncommon to most other California and Oregon crystalline and sedimentary drainage basins. Analyses of long-term runoff records by Balance and by Craig Bienz, biologist with the Klamath Tribes (personal communication, 1996), indicate that the annual amount of runoff within the upper Klamath basin rivers depends on precipitation during the prior several years. We believe it will prove helpful to evaluate these flows using a weighted function of precipitation during the preceding four years, with current or more recent years weighted more heavily. Appendix A presents a description and example of this function.

In addition to the presence of volcanics, a fairly dependable snow pack occurs each year in the mountains surrounding the upper Klamath River. The combined effects of various snow and geologic conditions on seasonal runoff patterns are illustrated in Figure 2. Figure 2 is a plot of mean monthly flow hydrographs for the Eel, upper Trinity, and upper Klamath Rivers. The Eel River, underlain by sedimentary and crystalline rocks with relatively little storage capacity, is a good example of a stream with a runoff pattern largely responsive to rainfall. The peak runoff events occur in the wet season followed by late season low flows. The upper Trinity River, also underlain predominantly by crystalline rock, is an example of a stream with a seasonal runoff pattern dictated by snowmelt, with peak runoff occurring during April, May, and June but also having late summer and fall low flows. In contrast, the upper Klamath River has a drainage area largely composed of often-permeable volcanic rocks with a relatively large storage capacity, resulting in a fairly uniform year-round baseflow in the rivers of the upper basin, as discussed above.

The contrast in runoff patterns between a volcanic and crystalline bedrock-influenced drainage can also be seen by comparing daily flows of the Sprague and Applegate Rivers. The Sprague River basin, located in the upper Klamath basin above Upper
Klamath Lake, is largely underlain by pervious volcanic units, while the Applegate River, located in the mountains to the west of the upper Klamath basin, drains crystalline, sedimentary, and non-basaltic volcanic rocks. The mean annual runoffs for the Sprague and Applegate Rivers are quite similar, even though the seasonal runoff distributions of the two rivers vary. Figure 3 is a plot of mean daily flow on the Sprague and Applegate Rivers for water year 1987. Compared to the Applegate River, the Sprague River has a more uniform runoff pattern characteristic of permeable volcanics; lower peak flows during high runoff periods and higher late season base flows. These more uniform and persistant flows on the Sprague can also be seen over multi-year periods. Figure 4 presents a flow hydrograph for the Sprague and Applegate Rivers for water years 1982 through 1990. Here again, runoff on the Sprague River is more uniform from year to year than that on the Applegate River, with lower peak flows during wet years like 1981 and higher sustained flows especially during relatively dry years like 1987 and 1988.

2.2 Long Term Climatic Record

Only a few long-term records have been identified to assist us in characterizing the long-term weather and runoff patterns for the upper Klamath River area: continuous annual precipitation records from 1872 through 1994 for Yreka, California (Figure 5) and from 1905 through 1994 for Klamath Falls, Oregon (Figure 6), and an estimate of annual runoff from the upper basin to Upper Klamath Lake for the period 1906-1995 used by Bureau of Reclamation staff in modeling (Figure 7). The rainfall records were taken from two sources: the data for rainfall years 1871 through 1948 came from the California Department of Water Resources Bulletin 58, and the 1948 through 1994 period was taken from EarthInfo’s CD ROM entitled, “NCDC Summary of the Day, West 1.” The Bureau of Reclamation’s inflow data were taken from the 1995 KPOP Workbook.

2 Precipitation data are presented (as is customary) for rainfall years, which end on June 30th of the named year. For example, rainfall year 1996 will end on June 30, 1996. Most other numerical data in this report are presented for water years, which end on September 30th of the named year. Water year 1996 (WFY1996) will end on June 30, 1996. Little rainfall occurs in the Klamath basin during July, August, and September of most years.

3 Based on the following assumption, “inflow - outflow = change in storage,” the Bureau estimated the net inflow to Upper Klamath Lake from known historic changes in reservoir storage and measured outflow (i.e., evaporation and evapotranspiration are not dealt with as independent outflow variables). However, based on conversations with Reclamation staff, the only outflows considered were releases through Link River Dam and diversions to the A Canal. “Lesser” diversions, such as annual out-of-basin deliveries to the Rogue River Valley, were not considered. It is also unclear to us how the Bureau extended the inflow record back to 1906, since Link River Dam was not completed until 1920.
Precipitation and runoff records were analyzed to characterize long-term trends by tabulating the cumulative deviation from their long-term averages. The cumulative deviation for a given record is calculated in the following manner. First, the average for the entire rainfall/runoff period of annual record is calculated. The long-term average is then subtracted from each annual rainfall/runoff value to calculate the annual deviation from the long-term norm; positive results indicate that the year had higher amounts of rainfall or runoff than the long-term average, negative results indicate that the year experienced lesser amounts. By keeping track of the chronological sum of annual deviations, the cumulative effects of prolonged wet or dry periods are easily identified.

Figures 8 through 10 are the results of this analysis and represent deviations from the long-term average for the Yreka, Klamath Falls, and Upper Klamath Lake inflow records, respectively. These figures clearly indicate similar long-term wet-and-dry cycles: a period of above-normal precipitation and runoff from approximately 1905 to 1917, followed by a long-term period of below-normal rainfall and runoff (1918 through 1950), followed by another period of above-normal rainfall and runoff (1951 to 1985). In addition, the Yreka precipitation record suggests a prolonged dry period extending from at least 1872 through the early 1890's. Important oral-history evidence from interviews with Yurok tribe members indicates a period of below-normal rainfall during the late 1840s/early 1850s, with at least one drought year with consequences of far greater severity than recorded in recent times. Both traditional and historical sources identify a period of above-normal rainfall in the 1860s. These cycles are also indicated on Figure 8 and further described in Appendix B.

While there have been wet and dry cycles since 1960, the length and degree of these fluctuations has been markedly less than during the prior century (see Figures 8 and 10). The most recent drought period (1987 through 1992 or 1994) is also evident on the Yreka precipitation and Upper Klamath Lake inflow deviation curves in Figures 8 through 0,

4These wet and dry cycles correspond approximately to periods of certain predominating atmospheric circulation patterns thought to have affected both annual precipitation and the magnitude and frequency of major storms in northwestern California (Coghlan, 1984). This study, by Redwood National Park Staff, made a distinction between periods with predominantly zonal circulation (typified by mid-latitude storms) and those with meridional circulation (typified by either high-latitude storms moving down the coast, or low-latitude storms originating near Hawaii). Based on these patterns and the regional hydrologic record, Coghlan recognized four periods: 1861 to 1890 — many severe storms (but perhaps less than normal rainfall); 1890 to 1915 — few major storms, but annual rainfall totals ‘consistently well above the average;’ 1915 to 1940, or possibly 1950 — precipitation ‘well below average,’ with ‘uniformly small and infrequent flood events;’ 1950 through the mid-1980s (time of publication) — prevailing meridional circulation, with above-average precipitation and number and size of storms.
respectively. However, it is quite noticeable how smooth and steady the cumulative runoff deviation curve is compared to the Yreka and Klamath Falls rainfall deviation records. The smoothness of the Upper Klamath Lake deviation record is directly related to the ground water storage capacities and persistent flows of the upper Klamath River basin discussed above. Thus, the geology of the upper Klamath River basin effectively smoothes or dampens peaks in runoff associated with the seasonal and longer-term wet-and-dry cycles commonly seen in the Klamath River tributaries downstream of the Shasta River which drain non-basaltic type rocks.

For example, relatively high inflow totals to Upper Klamath Lake in 1910 and 1916 indicate that the upper Klamath lake drainage continued to release ground water from storage at above-normal rates even when rainfall totals for these years were below normal (normal being defined as the long-term averages). Conversely, inflow to Upper Klamath Lake is maintained at a fairly steady level throughout the 1938 to 1943 period, a time of above-normal rainfall. The effect of this increased rainfall is barely noticeable on the long-term runoff record to Upper Klamath Lake (Figure 10) as it occurs during a long-term drought cycle when ground water reserves were probably significantly depleted.

The existence of long-term wet-and-dry cycles can significantly affect the calculation of average basin rainfall and runoff. For example, if natural flow conditions on the Klamath River are characterized based on a historic record when rainfall and runoff were above normal (i.e., 1906 through 1918), estimates of average flow will be higher than those calculated from a record during a period of average rainfall and runoff. The implications of such an overestimation (or underestimation if calculated over a prolonged dry period) not only affect the characterization of normal conditions, but skew the characterization of wet, dry, and critically dry year-type conditions. However, if the only data set available does not represent average conditions, adjustments such as correction factors (or indices) can be derived from a longer-term record which coincides with the period of interest but which also is long enough to approximate average conditions. Similarly, rainfall and runoff extremes need to be accounted for when characterizing wet or critically dry conditions. A period of record which does not contain long-term wet or dry cycles will significantly underestimate extreme conditions.

Current operational criteria utilized by the Bureau of Reclamation are based on hydrologic assumptions developed and calibrated from periods of record beginning in 1960, when Iron Gate Dam began operation. Data from earlier years, when more-
pronounced and longer climatic cycles were prevalent, are not included. Operational decisions would benefit from applying a more representative range of cyclic and episodic conditions. Commitments of water made without due consideration of the traditional and historical record can disproportionately jeopardize resources depending on flows from the upper basin. They may also conflict with existing entitlements.
3. PRE- AND POST-PROJECT FLOWS ON THE KLAMATH RIVER

This section of the report presents the results of our analysis of pre- and post-Project flows. Characterization of these flows was required in order for Trihey & Associates to develop recommendations regarding instream fishery flow needs. This section of the report also documents changes to flow on the Klamath River as induced by completion and operation of the Project. We illustrate these changes in a variety of different ways.

3.1 Pre-Project Flows

The characterization of pre-Project flows on the Klamath River is important to understand the conditions under which fish have evolved and thus the conditions they will need for continued existence. The earliest and most reliable flow record for the Klamath River within the Project is from the USGS gage at Keno (1905 to 1914), although it is likely that flow at this gage even in 1906 was discernibly influenced by upstream diversions for irrigation. However, flows were probably not extensively altered from natural conditions until approximately 1912, when the Lost River Diversion Dam was built. Thus, the 1905 through 1912 period is currently the best approximation of pre-Project “natural” flows at Keno. The mean monthly flows at Keno for the 1905 through 1912 period are presented in Table 1.

We believe that prior to the Project, flow on the middle reaches of the Klamath River was notably persistent, displaying relatively little seasonal variability in base flows relative to other nearby California and Oregon rivers. Figure 11 is a plot of mean monthly flows as a percentage of the mean annual flow for the period for the Klamath River at the Keno gage from 1905 through 1912. This figure illustrates how little mean monthly flows changed on the upper Klamath River throughout the year. Also plotted on this graph are the minimum and maximum monthly flows for the same period. Again, there is little variability in the distribution of flow during any given month, including rainy seasons which are typically characterized in most other river systems by high runoff.

It should be noted here that Yreka rainfall and inflow to Upper Klamath Lake records suggest that the 1905 through 1912 period was one of slightly greater-than-average rainfall and runoff in much of the upper Klamath basin. Mean monthly and annual
flow values at the Keno gage for 1905 to 1912 are slightly above the actual long-term averages, although the relative distribution of total annual flow throughout the year or the relative relationship between mean, minimum, and maximum monthly flows are unlikely to be affected. The annual values, however, can be normalized to a period of average rainfall using annual precipitation indices. We accomplished this by dividing the average flow/annual precipitation during the 1906 through 1912 period by the average flow/annual precipitation value derived over a long-term period. Indexing of this type is commonly applied by hydrologists in basin studies (cf. Bulls. 1, 58).

We derived such indices from the Bureau of Reclamation's annual inflow record for Upper Klamath Lake (1906 through 1995) and long-term annual precipitation records for Klamath Falls (1905 through 1994) and Yreka (1872 through 1994). Indices derived from precipitation records suggested that conditions between 1905 and 1912 were wetter in northern California at Yreka (index 1.21) than in southern Oregon at Klamath Falls (index 1.04); i.e., the higher the index above 1.0, the wetter the 1905-1912 period relative to the long-term average. If this trend of decreasing relative wetness to the north and east is extrapolated up into the upper Klamath basin, we could surmise that much of the upper basin experienced normal conditions (index of 1.0) during the 1905-1912 period. The index derived from the Bureau of Reclamation's inflow record was 1.34 for this period, suggesting much wetter conditions than either of the rainfall records would suggest. However, this index is probably inflated for the following reason: inflow to Upper Klamath Lake has continuously decreased during the 20th century due to upstream diversions and withdrawals from the Sprague and Williamson River systems. This artificially reduces the long-term inflow average which, as the denominator in the index calculation, leads to an inflated index.

One of the key uses of the Keno pre-Project flow record has been to characterize "natural flow" conditions in the upper basin. Currently, anadromous fish are restricted from migrating any further upstream than Iron Gate Dam. Thus, all anadromous fishery-related flow issues on the upper Klamath River are restricted to discussions of flow emanating from Iron Gate Dam. To estimate pre-Project flows at Iron Gate Dam,

\[5\text{We chose to use the Klamath Falls index because it is closer to the center of the upper basin and appears to be an accurate and primary record. It is preferable to the longer but more distant record from Yreka, which also includes data of lesser quality for the years 1911 and 1912. There were no established stream gages operating in the upper Klamath basin during 1905-1912; the estimates of inflows to Upper Klamath Lake constitute a record computed in several steps or ways from power company observations and with little subsequent review or reinterpretation.}\]
historical accretions between Keno and Iron Gate Dams must be added to the Keno flow record. However, because no stream gaging was initiated at Iron Gate Dam until 1960, there is no simple way of estimating pre-Project accretions between the dams. On behalf of the Bureau of Reclamation, CH2M Hill has completed and presented the results of their analyses characterizing wet, normal, dry, and critical year accretions between Keno and Iron Gate. These analyses were completed using USGS flow records during post-Project conditions, specifically the period 1960 through 1995. Until a better method or approach is devised, these estimates are the best approximation of natural accretions between Keno and Iron Gate Dams.

After adding accretions to the pre-Project flows at Keno, we conclude that mean annual flow in the Klamath River at Iron Gate was approximately 1.8 million acre feet per year prior to inception of Project operations (Table 1). This value does not account for diversions upstream of the Keno gage during 1905-1912. The estimate is expressed as a value with two significant figures since that is the apparent precision of the data upon which it is based.

3.2 Post-Project Flows

3.2.1 Project History

Construction of numerous facilities associated with the Bureau of Reclamation’s Project between Upper Klamath Lake and Shasta River have significantly altered natural flow patterns on both the upper and lower Klamath River. Key facilities constructed on this stretch of the Klamath River include: the A-Canal (1906/1907), the Lost River Diversion Dam (1912), Copco No. 1 Dam (1918), the Link River Dam (1921), Copco No. 2 Dam (1925), J.C. Boyle Hydroelectric Dam (1958), Iron Gate Dam (1962), and Keno dams (1967). Numerous other diversion dams, pumping plants, and hydroelectric facilities built on upper Klamath River tributaries also affect flow on the Klamath, but the ones listed above are the largest.

The first key Project facility that significantly impacted flow on the Klamath River was

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6The Klamath Project was authorized under provisions of the Reclamation Act of 1902 (32 Stat. 388). One of the first sub-projects to affect flow on the Klamath was initial construction of the Fell Creek Diversion Dam and powerhouse in 1902. Fall Creek is a tributary to the Klamath River located about 0.4 miles south of the Oregon/California border. We assume this sub-project’s hydrologic and water quality effects were localized.
the A canal constructed in 1906 and 1907. It conveys water out of Upper Klamath Lake to areas to the southeast. In 1912, the Lost River Diversion Dam was constructed to direct potential flood waters from the Lost River to the Klamath River at rates up to 3,000 cfs. The next project facility built was Copco Dam No. 1, completed in 1918 on the Klamath River and located 35 miles downstream of Upper Klamath Lake. Link River Dam was constructed at the outlet of Upper Klamath Lake in 1921 and controls an active storage capacity of 465,000 ac-ft (draft KPOP “Key Facilities” technical memo, 1995). Link River Dam diverts water for the East Side and West Side power plants. In 1925 Copco Dam No. 2 was completed a quarter mile downstream of Copco No. 1. Each of the Copco dams impounds and regulates approximately 20,000 ac-ft of water for peak power generation. In 1958 the J.C. Boyle Dam was constructed one mile south of the Oregon/California border to store and divert water for the J.C. Boyle powerhouse. Iron Gate Dam, located about seven miles downstream of Copco No. 2 was completed in 1962 to regulate the peak flows from operation of upstream power plants and to divert water to its own powerhouse. The last project to be built on the main stem of the upper Klamath River was Keno Dam. Completed in 1967, it regulates flow of the Klamath River and maintains the elevation of Lake Ewauna.

Figure 12 illustrates how these dams alter the flow of the upper Klamath River. This figure presents hydrographs of mean and minimum monthly flows at the USGS gage at Keno, Oregon, operated from 1905 through the present. Although there is a break in the USGS record for this gage from 1915 to 1930, the 1905 to 1912 period documents flow on the Klamath River at Keno prior to completion of the Lost River Diversion Dam, while the 1930-to-present record illustrates how the flows changed after construction of the Lost River and Link River dams. The two most dramatic changes illustrated by Figure 12 are 1) reduction of minimum monthly flows by over an order of magnitude and 2) alteration of the natural seasonal variation of the flow hydrograph through regulation of the river to meet peak power and diversion needs. Even with the addition of accretions from downstream tributary inflow, changes in the Klamath River flow pattern occur at least as far downstream as the USGS gage near Seiad Valley (see Figure 13, which highlights the 1912-1926 period).

The cumulative effect of all these facilities on Klamath River flow mimics and even enhances the changes seen in the post-1930 hydrograph for the Keno gage. As designed, Iron Gate Dam helped mitigate the high variability of flows downstream from the Project
facilities, but it did not restore the natural runoff pattern seen in the pre-1912 hydrograph (Figure 12).

3.2.2 Changes in Flow at a Station Over Time

Changes in flow induced by the Project have evolved steadily with time in direct response to the construction of dams, diversions, and agricultural development in the area. The main changes in flow on the Klamath are best exemplified by the progressive changes in mean monthly flows at Keno Dam. Figure 14 is a graph of average mean monthly flows at Keno during three different periods between 1905 and the early 1990's. The 1905 to 1920 period curve represents pre-Project conditions which are compared to curves for the post-Project periods 1921 to 1950 and 1951 to the early 1990's. The intermediate position of the 1921 to 1950 curve in Figure 14 illustrates the transitional change from pre-Project to current conditions, as well as the proportionately smaller winter and snowmelt peaks which typify this relatively drier period.

To analyze the effect of Project operations on Klamath River flow at a given station through time, we used another approach:

- We first selected and assessed USGS flow records on the Klamath which are long enough to include pre- and post-Project conditions. Pre-Project conditions were considered to be the period of record prior to the end of 1918, or 1912 for winter flows. USGS gages on the Klamath River meeting these requirements included the Keno, Selig Valley, and Klamath gages. We also included the Hoopa gage on the Trinity River to assist us in distinguishing how Bureau of Reclamation operations in the upper Trinity basin affect flow on the Klamath River at Klamath.

- Next, we calculated exceedance intervals\(^7\) for the years 1906 through 1995 using both the Yreka and Klamath Falls rainfall records and the Bureau of Reclamation’s records of annual inflow to Upper Klamath Lake. Our objective here was to select similar pre- and post-Project water year types for comparison. We paid close attention both to matching water year types and to selecting years

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\(^7\)Exceedance intervals (typically calculated from statistical analysis of recorded total annual flow values and expressed as percentages) indicate the probability that a certain flow will be exceeded during any given year. For example, a 75% exceedence interval means that flow will be reached or exceeded 75% of the time and is representative of a dry year. For purposes of this report, we define wet, normal, dry, and critical years as those years having at least 20%, 50%, 75%, and 90% exceedance intervals.
which had experienced similar earlier short-term and long-term conditions (e.g. both 1916 and 1985 are years which experienced above-normal runoff, below-normal precipitation and were preceded by four to five years of above-normal precipitation and runoff). The pre- and post-Project years we selected for comparison included the 1916/1985 and 1918/1987 pairs for each of the stations discussed above, with the exception of the Keno gage, which is discussed below. According to our calculated percent exceedances, the 1916/1985 year pair approximates above-normal runoff conditions (approximately 33% exceedance) while the 1918/1987 pair represent below-normal runoff conditions (i.e., approximately 66% exceedance values).

Because the Keno gage was not in operation in 1916 or 1918, we selected the 1908/1985 year pair for analysis at Keno. According to our calculated percent exceedances, the 1908/1985 year pair also approximates above-normal runoff conditions (approximately 33% exceedance). No below-normal runoff analysis was performed for the Keno gage, due to a lack of sufficient records from the pre-Project period.

The final step of the analysis was to plot mean, minimum, and maximum monthly flow volumes at a given station for each of the year pairs selected and thus characterize observed project-induced changes in flow patterns.

Results

Results of our at-a-station analyses are presented on Figures 15 through 20. Comparison of mean, minimum, and maximum monthly flows at Keno for the 1908/1985 year pair is presented in Figure 15; flows at Seiad Valley for the 1916/1985 and 1918/1987 year pairs are presented in Figures 16 and 17, respectively; flows on the Klamath River at Klamath for the 1916/1985 and 1918/1987 year pairs are presented in Figures 18 and 19, respectively; and flows on the Trinity River at Hoopa for the 1918/1987 year pair are presented in Figure 20. From analysis of these plots, we made the following observations:

- The 1908/1985 year pair analyzed at Keno (Figure 15) indicates that prior to the Project, there was much less variability between mean, minimum, and maximum flows than after the project (as previously observed in Figures 11 and 12 and discussed above).
• Most figures presented above suggest that the timing of peak and low flows changes significantly after construction of the Project. For example, prior to the Project, flows were usually higher during the late spring/early summer months (May through July). Project operations decrease late spring and summer flows and increase flows in October and November, and perhaps in September.

3.2.3 Downstream Changes in Flow Patterns

Approach

We analyzed the effect of Project operations on downstream flow patterns in the Klamath River by comparing mean monthly flow hydrographs for each of the Keno, Seiad Valley, Klamath, and Hoopa gages for the years 1913, 1918, 1985, and 1987. Again, the 1913/1985 year pair approximates pre-and post-Project conditions during an above-normal runoff period, while the 1918/1987 year pair reflects conditions during a below-normal runoff period. We plotted together all available gage records from these four stations for each given year.

Results

Results of these analyses are presented on Figures 21 through 24: mean monthly flows for 1913 at all four stations are plotted in Figure 21, while flows for water year 1985 are presented in Figure 22; flows for water year 1918 at all gages except Keno (no record for this period) are presented in Figure 23 and for 1987 in Figure 24. In order to better illustrate changes during low flows, magnified scales are presented in the lower diagram of each figure.

Our analyses of downstream changes in flow on the Klamath River confirmed many of the findings from the at-a-station analyses presented in the preceding section. Specifically, Project operations reduce late spring and summer flows (May through July or August) and increase October, November, and possibly September flows.

3.2.4 Changes in Flow Recession Rates

We used two methods to analyze changes in flow recession rates following seasonal peak flows at the Klamath gage due to completion of the Project. First, we developed daily flow hydrographs for water years 1916, 1918, 1985, and 1987 for the Klamath
River at Klamath gage. Second, we developed graphs of monthly flow as a percentage of mean annual flow for the 1916/1985 and 1918/1987 year pairs (Figures 25 and 26, respectively). Once again, these figures suggest that Project operations alter the natural flow pattern on the Klamath River by reducing late spring/early summer flows while enhancing late summer/early fall flows.

3.2.5 Keno Flows as Percent of Flows at the Klamath River Mouth

The proportion of flows at the mouth of the river (as measured at the Klamath River at Klamath gage) originating in the upper Klamath basin above Keno has decreased over the years, largely as a result of the Project. Figure 27 shows how these flows have diminished by month for two wet periods, once preceding substantial Klamath Project diversions (1911-1913), and the other (1983-1985) being the most comparable recent period. During droughts, the proportion of flows at the mouth originating above Keno have progressively decreased, illustrated in this figure as a comparison of the 1976-1977 and 1991-1992 dry periods. We note that flows at Keno are also affected by diversions upstream of the Klamath Project, and there have been significant diversions from basins downstream as well.
4. CAUSES OF SEQUENTIAL CHANGES IN FLOWS

The processes leading to the changes in flow patterns discussed above are all related, directly or indirectly, to operation of the Project. The construction of Project dams and diversions obviously have a direct effect on Klamath River flow. These structures were also designed and are operated to store as much wet season runoff as possible for subsequent diversion in the summer. However, the relatively low storage volume of Project reservoirs does not come close to compensating for late season diversions. Thus, the decrease in summer flows are a direct effect of project diversions.

The Project has also been supplying progressively expanding and intensifying agricultural development. For example, even prior to the recent droughts, diversions into the A Canal have gradually increased over the years from about 190,000 acre feet in 1929 to about 290,000 acre feet in 1989 (c.f., Gearheart and others, 1995, fig. 3.3). Diversions tend to be greater during dry years, when irrigation demand is often highest, but this is also when the needs of the downstream fisheries are at their greatest.

Expanding agricultural activities both within and beyond the Project boundaries has also led to the draining of wetlands and lakes which, ironically, at one time provided stored water and which ultimately sustained late season flows in the Klamath River. The lakes and wetlands also retained much of the runoff from the first storms of the year, probably improving water quality and holding back some of the flows which now cause 'flashy' rises and falls of the river while most chinook eggs are in the gravels. The post-Project increases in storm runoff early in the rainy season are also attributable to decreased infiltration capacity of Project soils. The soils now retain considerable moisture from summer irrigation, and can absorb less rainfall. Additionally, many fields are pre-irrigated in October, further reducing infiltration from the early-season storms, and increasing the proportion of runoff.

During the wet season months, the Project effectively operates like a flood control project. Spreading peak runoff into the river and reducing the natural storage of water in the upper basin, it contributes to higher wet-season flows at the Keno gage today than during the pre-Project period. This has also led to the diversion of water not only to satisfy irrigation needs but also to sustain wetland habitat in the Lower Klamath Lake, Tule Lake, and to some extent, Clear Lake National Wildlife Refuges.
Historically, the latter two wetlands were sustained primarily by direct runoff from the Lost River and its tributaries. However, the draining of the Lost River system to the Klamath River during the wet season now requires that additional dry season diversions be made from the Klamath River to sustain refuge habitat at Lower Klamath and Tule Lakes.
5. CHANGES IN WATER QUALITY ASSOCIATED WITH THE PROJECT

5.1 Implications to Fisheries

Water quality affects the populations of several anadromous species, especially those resident during the summer months, such as spring-run chinook, coho, and steelhead. Principal water quality parameters of concern are:

- Water temperature: Water temperatures constrain summer rearing and fall spawning. Summer water temperatures often reach higher than acceptable levels for the rearing of most salmonid species; and occasionally they reach levels lethal to juveniles. Water temperatures are usually above those lethal to eggs until mid-October, and sometimes later.

During summer, intermittent water-temperature measurements in the Klamath River at sites downstream from the Iron Gate gage often record daily peaks above 25°C or 26°C during July and August (Clawson and others, 1986a), even during wet years. Temperatures above 24°C are thought to cause extreme physiological stress among young salmonids and are not acceptable; the California Department of Fish and Game will generally not plant salmon or steelhead when stream temperatures exceed 20°C.

The mortality of incubating salmonid eggs increases as water temperature rises from 13.3°C (56°F) to 15.6°C (60°F), often considered as the lethal limit. Since water temperatures downstream from Iron Gate Dam are reported to exceed this range through mid-October, the periods during which successful incubation occurs have narrowed markedly for spring-run chinook, which spawn from mid-August through late-October and for fall-run chinook, which spawn from mid-September through early-December.
The extent to which Project operations affect summer and fall water levels is complex, and remains unclear. Certainly, key habitat areas and cool tributaries within which spring and fall chinook formerly spawned are no longer accessible. The presence and operations of Iron Gate Dam and Reservoir and other impoundments preclude the spawners' use of those cooler reaches fed by ground water which, prior to the Project, likely persisted in dry years and provided vital habitat. It is evident that water temperatures add to stresses imposed by other water-quality factors associated with the Project, described below, and that measures which might reduce summer and fall water temperatures could potentially offset other project effects and/or contribute to restoration of the summer-resident species and of chinook.

- **Nutrients and biostimulative effects**: Overall nitrogen and phosphorus concentrations in the main stem of the Klamath River are higher than reported in most coastal drainages (Clawson and others, 1986a; Regional Water Quality Control Board, Basin Plan, 1993) and likely are considerably higher than under pre-Project conditions. These nutrients stimulate growth of aquatic plants throughout the reaches downstream from Iron Gate Dam. Photosynthetic activity by the plants now creates large daily fluctuations in pH and dissolved oxygen concentrations, especially on warmer days (e.g., Figure 28). For much or most of many days, values of pH commonly exceed the objective of 8.5 units sought in the Basin Plan (Regional Water Quality Control Board, Basin Plan, 1993). The Basin Plan’s dissolved oxygen objective of 8 mg/l may not be met as concentrations fall below 5 mg/l for periods of several weeks at a time during the key summer months (see Figure 28), the level at which direct mortality of salmonids may be expected. Direct mortality can also be caused by un-ionized ammonia, which becomes increasingly lethal at high pH and elevated water temperatures.

- **Trace elements and related constituents**: We anticipate that trace elements from the Project area will not be a major concern, based on results of scattered analyses in the Oregon basins and more detailed analyses for the Alturas Valley (Clawson and

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8The Klamath has probably always been a relatively warm river. Insolation (solar radiation) and ambient air temperatures are primary factors affecting water temperature in most rivers, including the Klamath; both of these climatic factors are independent of Project operations, and increasingly govern water temperatures with distance downstream from Iron Gate. On the other hand, it is reasonable to suppose that the anadromous species evolved so they could cope with this natural warming and that Project operations that compound or change the timing of warming and other stress factors have had and will continue to have an adverse effect on the long-term viability of the salmonid populations of this river.
others, 1986b) and for Shasta and Butte Valleys (Poeschel and others, 1986). Geologic conditions are generally not conducive to trace-element sources or mobility. One possible exception is agricultural drainage, in which occasionally-elevated levels of mercury and arsenic have been reported by federal scientists in the Tule Lake and/or LKL areas (Sorenson and Schwarzbach, 1991; [California] North Coast Regional Water Quality Control Board, 1993), but effects on fisheries in the Klamath River are unlikely.

In the mid-1950s, “drainage and leaching from abandoned copper, gold, and silver mines” were regarded as “major sources of surface water quality impairment” in the Klamath watershed (DWR, 1957). “Mine leaching ordinarily causes a considerable increase in mineral content and turbidity. Minor dredging operations on the Scott and Trinity Rivers also create a quality impairment of these major streams similar in nature to that caused by mine waste discharges” (ibid.). Recent water-quality analyses have, however, shown very low levels of trace elements in the main stem of the Klamath River, and it is unlikely that instream flows will be needed to control metals or drainage from abandoned mines, as is done on the Sacramento River.

- **Pesticides and other synthetic organic chemicals:** Summaries of work to date state that pesticides in current use in the Project area do not exert toxicity. A brief summary of contemporary thinking about Tule Lake effluent is included in a recent UC Extension document: “Based on results from an intensive monitoring effort conducted cooperatively by the United States Fish and Wildlife Services (USFWS) and the USGS in 1991 and 1992, pesticides in current use have not been detected in amounts of toxicological significance in water in the TID or Tule Lake.” (Kaffka and others, 1995).

These findings are reasonable and consistent with the considerable efforts being made by the agricultural community in the Project area to control the quality of summer tailwater. These efforts also are helping to protect the quality of water in the Tule Lake and Lower Klamath Lake refuge areas. The findings should not, however, be taken to mean that no adverse effects on the Klamath River fishery should be expected, because no information seems to have been developed on the quality of runoff entering the Klamath, especially during the initial storms of each season.

Persistent compounds no longer in use, notably chlorinated hydrocarbons, may be of considerable habitat-management concern in certain channels, wetlands, and estuaries downstream from irrigated areas throughout California and Oregon. We have not yet
seen the primary data collected by the field investigators, so we cannot develop an independent opinion as to potential effects in the Klamath River system.

The first-flush issue, concerning the quality of runoff during the initial storms of each season, calls for investigation as soon as possible. As discussed above, flows in the Klamath River during the initial months of the rainy season are greater than they were prior to the Project, and they constitute a much larger proportion of annual flows. If our inferences regarding the processes responsible for these recent fall 'peaks' are valid, runoff comes disproportionately from irrigated lands and the associated waterways. Additionally, these flows pass down the river during months when eggs are incubating in the gravels, or swim-up fry are emerging from the bed; these two life stages are especially susceptible to many pesticides from either former or current use. Finally, many of the physical solutions which we raise in the next section are based on retaining and/or recharging this early-season runoff; how these waters are routed and managed should depend very much on their quality.

5.2 Implications for Human Health

Summer flows are needed as well to protect the health of people who enter the Klamath River. We are told of one occurrence near Seiad Valley in which several individuals who spent considerable time in the river during the summer of 1994 contracted a disease which a local public-health official eventually attributed to a cattle-borne pathogen. Long term residents from this area believe that the source of this outbreak was likely the Scott River and attribute its occurrence to insufficient dilution in the Klamath River due to the very low flows which prevailed during the summer of 1994 (oral comm., Richard Myers, Yurok Tribal Council).

5.3 Need for Additional Water Quality Information

Key questions to resolve before making mid- or long-term decisions regarding instream flows include:

- How do operations of the Project affect downstream concentrations of biostimulants and related daily fluctuations of dissolved oxygen, pH, and unionized ammonia?
- What is the quality of runoff during the first fall storms? Do these waters contain constituents which may harm incubating eggs or adult spawners? Are
they suitable for retention and recharge?

- Are there concentrations of arsenic, selenium, or other trace elements which may impair beneficial uses in Lower Klamath Lake National Wildlife Refuge or in Tule Lake, or which may require supplemental diversions from other sources during dry years?

- How might the problem of excessive temperatures best (a) be quantified, and (b) be acted upon, through measures such as managing flows, small-scale alluvial pumping into sloughs, making the channel narrower and deeper, management of riparian woodlands along the main stem and tributaries?

- Are there lingering contributions from mining downstream from Iron Gate of heavy metals or other trace elements of concern from public health, fisheries, or regulatory perspectives?
6. PHYSICAL SOLUTIONS

Much of the work which we have previously presented to KPOP and further discuss in this report indicates that flows from the upper Klamath basin have been significantly changed by Project operations. At the request of the Yurok Tribal Council, which seeks to help guide the Project toward proactive and restorative measures, we have identified several proposed approaches or measures which may reduce the negative effects of Project operations on aquatic habitat. These efforts focus upon (a) diminished late-spring and summer flows and (b) increased runoff during the fall months, which together adversely affect habitat values during most years. Similarly, we continue to seek measures which will help emulate the pre-Project hydrologic functions, such as sustaining flows during dry seasons or more extended droughts. Proposed physical solutions are outlined and discussed below.

6.1 Increasing Water Storage in the Upper Klamath Basin

As described above, the Project and expansion of irrigated agriculture in the upper Klamath Basin have reduced the persistent and sustained outflow during summer and during droughts. Specifically, small reservoir volumes and flood control requirements preclude the retention of early season peak flows, while irrigation deliveries deplete critical summer flows. One approach to this set of problems would be to increase usable storage capacity of natural depressions, aquifers, and/or existing facilities in the upper basin.

Expanding the area and/or volume of Upper Klamath Lake would enable the retention of more early season runoff for release later in the season. If storage in Upper Klamath Lake is increased, it should be done in a manner consistent with public safety and with fish and wildlife needs. Where safe and where owners are willing, existing levees might be breached, reclaiming the natural marshlands which have been drained and cultivated. In addition to an increase in storage, this measure may benefit the habitat of Upper Klamath Lake sucker and salmonid species. These restored marshes would also likely act as buffers or filters to enhance water quality in the Lake, a benefit to all users. Smaller-scale pilot efforts have been proposed by the Klamath Basin Water Users Protective Association (1993), and are being pursued by a coalition of cooperators.
6.2 Ground Water Conservation and Use

Some of the most important losses of flow in the river associated with the Project are those occurring during summer months or during long-term droughts. During droughts, in years prior to the Project, the reliable, “spring-like” flows from upstream of Iron Gate Dam were especially important in sustaining fish in the California reaches. Summer baseflows in the mainstem Klamath River can be supplemented from deep aquifers, if needed, to meet reserved rights associated with instream flows. Basically, there are two approaches to augment river flows with ground water:

1) use of ground water by growers during dry years in lieu of water diverted from Upper Klamath Lake;

2) occasional direct discharge to the stream during the months of low flow from basins or aquifers remote from the rivers and lakes.

6.2.1 In-Lieu Pumpage and Conjunctive Use

In many valleys throughout the western states, irrigators draw upon ground water when surface supplies are not readily available. It will likely prove feasible to irrigate from ground water in many locations within the Project, particularly if the Project assisted in providing technical guidance and fiscal support for well construction and operation. A few of the many ways of providing such support are described in the next section.

Almost every valley within the upper Klamath River basin and within the Project boundaries serves as an actual or potentially productive ground-water basin capable of supporting at least partially an in-lieu or conjunctive-use program (see Figure 29). Table 2 lists a few of the key hydrogeologic characteristics and historic ground-water use data from the more developed ground-water supply areas upstream of Iron Gate Dam. Perhaps because surface water has been readily and economically available, relatively little hydrogeologic work has been done to characterize and quantify the ground water resources in the upper Klamath basin, and specific estimates of local ground water reserves within these valleys are sparse. The published estimates which do exist indicate that easily-developed reserves are, conservatively, in excess of 2,000,000 acre feet. At least some areas of high permeabilities and yields occur in most valleys (Table 2). In fact, both regular and supplemental (in-lieu) ground-water pumpage is increasing, sometimes rapidly, in several parts of the upper basin; for example, there were 36
pending applications for ground water in the Langell Valley, totalling 143.33 cfs, as of December 1993, which would approximately double local ground-water use (c.f., Gorham, 1994; CH2M-Hill, 1994).

The use of ground water during drier periods is consistent with both state and federal policies promoting conjunctive use. Oregon recognizes a water right to supplemental water when water from a primary entitlement is not available for any reason. While California has no equivalent category, the State Water Resources Control Board maintains policies which strongly encourage conjunctive use. Hence, regulatory incentives may effectively complement potential economic support (discussed below) to help locate willing participants for an in-lieu program.

6.2.2 Occasional Pumping Directly to Streams

A program of occasional pumping directly to streams of the upper basin, rotating among basins whose residents are prepared to participate in a program of this type, could help in maintaining flows needed to support anadromous fish during periods of short-term need. A more innovative approach than in-lieu pumpage, directly augmenting the Klamath River merits consideration in these areas because of the generally high rates of recharge, the large number of valleys among which such pumping might rotate, and the potential for creating income by generating power with the extra flow. The income and power benefits may make this approach attractive to the landowners and agencies whose interest is essential in realizing such a program.

In our presentations, we have spoken of a hypothetical block of about 35,000 to 40,000 acre feet as one which might meet key short-term needs for supporting fish populations, and as one which might realistically be obtained with a careful pumping program in any one of a number of likely ground-water basins. The most effective programs likely to be sustainable may be pumping for continuous periods of 60, 120, or 180 days during certain critical and/or dry years. A ‘block’ of 35,700 acre feet would provide 60 days of releases at 300 cfs, 120 days of releases at 150 cfs, or 180 days of releases at 100 cfs. Pumped water would be naturally replenished during subsequent normal or wet years. It will likely prove feasible, during certain critical years, to pump two (or perhaps more) ‘blocks’ without significant impacts, especially if pumpage is spread or rotated amongst 10 or 12 suitable hydrogeologic basins or units.
Properly implemented, pumping of this magnitude and type might temporarily lower water tables to a moderate degree. The added costs of pumping may be recoverable in part from power generated by routing supplemental flows through existing Project facilities below Keno; additionally, project power might be made available to offset pumping costs in both wells producing supplemental flows and in adjoining agricultural wells in which water levels may fall. In many cases, total lifts when pumping from supplemental water sources might average 30 to 60 feet, based on data in the existing hydrogeologic reports. The total lift includes approximately 25 to 50 feet of lift within the well, and an additional 5 to 10 feet of head loss in conveyance to an existing waterway. Pumped water released to the Klamath River is likely to generate electricity equivalent to at least 300 feet of fall during passage through the various reservoirs. Allowing for generation and transmission losses, it still seems that more power will be generated than will be used for supplemental pumpage, assuming that it can be freely wheeled and made available in diverse locations. Alternatively, project power may be made available by the Bureau of Reclamation and/or its contractors as the tribal reserved water rights are met. It seems reasonable and feasible that nearby irrigators receive some compensation for incremental pumping costs which they might sustain as part of an instream flow supplementation.

The principal effect of pumping for supplemental instream flows is lowering static water levels, principally during the irrigation season. Related impacts are primarily additional pumping costs. A number of adverse local effects can also be induced, some of which can be quite significant if not mitigated. Observations in the Poe, Langell, and Yonna Valleys (Gorman, 1994; Appendix 2) suggest that actual static water level depression will range from zero to ten feet, since that is the amount of water-level decline associated with much heavier pumpage during a drought cycle. In some cases, lowered water levels may reverse the direction of flow, resulting in streams recharging aquifers, which may have both

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9 Within-season water-level declines of five to ten feet are common in many other agricultural areas in the west, due to effects of pumping adjoining wells.

10 Several public small water systems near the town of Bonanza experienced bacterial contamination. Subsequent investigation led to the tentative conclusion that the bacteria were present because water levels in the shallow local aquifer had been lowered below the local stream, from which the pathogens were introduced through high-permeability vesicular basalts. Both the effects of a long-term drought and substantial pumpage for irrigation are thought responsible. A recent OWRD report (Gorman, 1994) documents these issues and presents several reasonable alternatives to protect public health in Bonanza.
beneficial and adverse effects. Beneficial effects include inducing recharge to groundwater storage, especially if done early in the growing season.

6.2.3 Water Quality

Water quality of deep aquifers is likely to prove suitable for direct discharge to the Klamath River, although existing data are sparse. Occasional intensive augmentation could be used to control water temperature or dilute constituents of concern. Information available for trace elements is especially fragmentary, but it is unlikely that these constituents will constrain use of deep zones in most or all of the aquifers discussed. When temperatures of ground water are given, they are frequently reported to be in the mid-50s (°F), probably slightly higher than they actually will be when pumped, and eminently suited for release to local channels. In most cases, these waters will warm appreciably once in the stream, so only limited temperature benefits might be realized.

6.3 Increase Irrigation Efficiency and Other Measures

Any conservation measures continued or initiated by the agricultural community which reduce the late season diversion of water from the Klamath River will assist fishery needs. There is substantial local interest in making on-farm water use more efficient. These efforts, involving irrigators, agricultural extension staff, and agency specialists, are supported in part by private grant funding.

6.4 Artificial Recharge

Recharging ground water with surface water (a) helps maintain water levels, and (b) increases the volume of water in storage within the upper basin. Ideally, recharge will emphasize use of runoff from the first storms of the year or waters remaining in several of the Lost River surface-storage facilities at the end of the irrigation season. In either case, recharge will help reduce the additional Project-related flows during November and December which may adversely affect habitat values.

In most cases, recharge within the upper Klamath basin can best be accomplished at a medium or small scale, through the more permeable soils and sediments beneath most channels and alluvial fans. Recharge may be accomplished through small ponds created by excavation and/or berming or through unlined ditches contoured across some of the more permeable alluvial fans or edge-of-valley areas. Alternatively, planned late-
summer releases of flows from Clear Lake, Gerber Lake, or some of the many smaller facilities within the Project boundaries might increase percolation through the beds of the channels. Some larger recharge efforts may also be feasible, including a number of sites previously rejected for surface storage because of 'excessive leakage rates'; however, it is likely that smaller-scale, more localized projects will prove most successful. One reason for this assessment is that water quality is integrally linked to both the value and feasibility of recharge programs, and the waters recharged through the smaller projects will be of essentially natural quality.
7. CONCLUSIONS

We have characterized pre-Project flows on the upper Klamath River using USGS stream gaging records from Keno, Oregon for the period 1905-1912, supplemented by records from several other gages further downstream on the Klamath River and its main tributaries. A long-term rainfall record for Yreka, California suggests that 1905 through 1912 period was one of above-normal precipitation, averaging 121 percent of mean for the period of 1874 through 1994. The long-term rainfall record for Klamath Falls, Oregon suggests this was a period of normal precipitation, averaging 104 percent of the mean for the period of 1905 through 1994. Estimates of mean pre-Project flows at Iron Gate Dam were computed by normalizing the Keno stream flow record using the Klamath Falls precipitation record and adding the natural accretions between Iron Gate and Keno dams. The pre-Project flow estimate for Iron Gate, 1.8 million acre feet per year, was then used by Trihey & Associates to develop instream flow recommendations for anadromous fisheries using the Tennant (or "Montana") method.

We also used the long-term precipitation record at these two stations to describe several long-term (multi-year) wet and dry cycles which seem to have affected most or all of the Klamath basin, beginning in the late 1840’s with a severe drought. This drought was followed by alternating long-term wet and dry cycles including periods of above-normal precipitation throughout the 1860’s, from approximately 1905 through 1917, and 1951 through 1984; and periods of below-normal precipitation from approximately 1872 through the early 1890’s, and from 1918 through 1950. The most-recent decade (1985 through 1995) has been one of generally normal conditions interspersed with short-term intense dry spells. Long-term wet and dry cycles need to be considered when understanding extreme conditions in the Klamath basin and their effect on fish and wildlife.

We found that the persistence and reliability of flows emanating from the upper Klamath basin prior to the project sustained much of the instream anadromous fishery during summers and dry years.

Based on analyses completed during this investigation, the Project has affected flow on the Klamath River in the following ways:
• A significant proportion of the reduction in flows at the mouth of the Klamath River from pre-Project conditions is attributable to the development and operation of the Klamath Project. Water-development projects on the Trinity River and other tributaries have also contributed substantially to the reductions in flow.

• The Project has also changed the seasonal distribution of flows, sometimes increasing fall and early-winter storm runoff, and usually decreasing summer flows.

• The increased fall and early-winter peak flows associated with the Project probably result from reduced areas of natural wetlands, the extensive network of drains (which speeds flows formerly detained in lowlying areas to the river), increased runoff from lands retaining soil moisture from late-summer and fall irrigations, and diversions of storm runoff from the Lost River system. Other processes, as well as areas beyond the Project boundaries, may also contribute. The increased early-winter storm crests are of concern because they can prematurely scour the gravel incubating chinook and other salmonid eggs.

• Under pre-Project conditions, during droughts, the upper Klamath basin was a vital source of sustained summer flow, probably contributing 35 to 40 percent (or more) of the flow at the mouth of the river. During the past 35 years, the proportion of flow originating from the upper basin has progressively decreased during the summers of droughts and dry years, such that it now often provides 5 to 10 percent of the flow at the mouth.

• Project development has contributed to diminished water quality in (and emanating from) the upper Klamath basin. Direct effects include an increase in nutrients and elevated water temperatures. Indirect effects include diminished dissolved oxygen and elevated pH values. All of these impacts probably have adverse effects on salmonids, especially during early life stages. Little or no data exist for certain other constituents which might reasonably affect instream flow needs.

Physical solutions which may help reduce the adverse effects of the Project on fish and wildlife while also helping irrigators and wildlife-refuge managers include:
• Increasing storage in Upper Klamath Lake, perhaps by restoring diked wetlands which ring major segments of the lake. Restoration may also increase the extent and reliable availability of habitat for both suckers and salmonids in the lake, and may also provide water-quality benefits during the fall months.

• Artificially recharging runoff to ground water, especially during the early-winter months. Small- to mid-scale local projects merit close evaluation. Reservoir sites previously investigated, and found to be "too leaky", might feasibly serve as retention or infiltration basins. Other valleys or lowlying areas of permeable volcanics rocks also should be considered.

• Conjunctively using ground water to supplement irrigation or instream flows during very dry summers or droughts.

• Enhancing on-farm and near-farm efficiency of water use.
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**Downstream of Upper Klamath Lake: CA (Lost River Hydrologic Unit)**

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**Downstream of Upper Klamath Lake: CA**

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<td>30 to 1,000</td>
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<td>40,000 ac-ft subsurface outflow</td>
<td>3 irrigation wells installed 1954</td>
</tr>
<tr>
<td>Red Rock Valley</td>
<td>negligible til '54</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Landscape limited by high GW table</td>
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<tr>
<td>Oklahoma Area</td>
<td>avg=1.5</td>
<td>10 to 7,300</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Upper Gw zone poor quality</td>
</tr>
<tr>
<td>Tule Lake Area</td>
<td>0 to 15</td>
<td></td>
<td></td>
<td></td>
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</table>

**Downstream of Klamath Project: CA**

<table>
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<tbody>
<tr>
<td></td>
<td>1952-54 (ac-ft/yr)</td>
<td>1970-75 (ac-ft/yr)</td>
<td></td>
<td></td>
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<tr>
<td></td>
<td>(ac-ft/yr)</td>
<td>(ac-ft/yr)</td>
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<tr>
<td>Shasta Valley</td>
<td>5,500</td>
<td>26 to 280</td>
<td>avg=1,300</td>
<td></td>
<td></td>
<td></td>
<td>Shasta Valley adjudicated (12/30/32)</td>
</tr>
<tr>
<td>Scott Valley</td>
<td>1,500</td>
<td>88 to 100</td>
<td>avg=1,300</td>
<td></td>
<td></td>
<td></td>
<td>No overdraft, but pumping for irrigation depletes summer and fall flows. Adjudicated.</td>
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</tbody>
</table>

**Notes:**
1. Sources of data included: Leonard and Harris, 1974; Department of the Interior, 1981; German, 1994; California DWR, Bulletin 83, 1964; California DWR, Bulletin 58, 1957; and Bartholomew et al., 1973.
3. 1952-54 includes three wet years; 1970-75 was slightly wetter than normal; 1962 was a very dry year within a longer multi-year drought.
4. TDS is an abbreviation for total dissolved solids, a measure of salinity. Values below 300 mg/l are suitable for virtually all uses.
5. Specific capacity is a measure of relative well effectiveness, or of the propensity of an aquifer to yield water to a well being pumped. Values on this table are generally high to extremely high.
6. bgs is an abbreviation for below ground surface.
7. The California DWR has recently identified several additional ground-water basins with significant resources, principally beneath the volcanic edifices between the valleys: Modoc Plateau Recent Volcanic Area, Modoc Plateau Pliocene Volcanic Area, and Fairchild Swamp Basin (Regional Board, 1983).
FIGURE 1: Map of Klamath River Watershed

Key: Primary USGS Stream Gaging Stations referenced in this report:

1. Klamath River at Kero
2. Klamath River below Iron Gate Dam
3. Klamath River near Seiad Valley
4. Trinity River at Hoopa
5. Klamath River at Klamath

Shaded area indicates extent of upper Klamath River basin underlain by basalt bedrock.
Note lateral extent of basalts extends well beyond drainage area boundaries.
Mean Monthly Flow as a Percentage of Mean Annual Flow:
Trinity, Eel, and upper Klamath Rivers
(prior to construction of large storage projects)

- Trinity River at Lewiston, 1911-1954
- Eel River at Scolia, 1916-1954
- Klamath River at Keno, 1905-1913

Note: Eel River slightly regulated since 1921 by Van Arsdale Dam and Lake Pillsbury.
Figure 4


Source: USGS via Hydroshere CD-ROM
Annual Precipitation at Yreka by Rainfall Year:
1872 through 1994

Mean annual precipitation = 18.1 in.

Precipitation (in)
Annual Precipitation at Klamath Falls by Rainfall Year:
1905 through 1994

Mean Annual Precipitation = 13.3 inches

Source: USGS via Hydrosphere CD-ROM
FIGURE 7

Bureau of Reclamation Estimates of Annual inflow to Upper Klamath Lake:
Water Years 1906 through 1995
Cumulative Deviation from Mean Annual Precipitation at Yreka:
Rainfall Years through 1994

Source: 1871-1948 DWR Bulletin #58 and others
1948-1994 EarthInfo "NCDC Summary of the Day" CD-ROM

Balance Hydrologics
YREKA.XLS, deviate
Cumulative Deviation from Mean Annual Inflow to Upper Klamath Lake: Water Years 1906 through 1995
Minimum, Mean, and Maximum Monthly Flows in Klamath River at Keno Gage as Percentage of Total Annual Flow: Water Years 1906 through 1912

Source: USGS via HydroSphere CD-ROM
FIGURE 12

Monthly Flow in Klamath River at Keno Gage

Discharge (cfs)

Pre-project  Post Lost River/Link River Dam  Post Iron Gate Dam

break in record (1915-1930)

Source: USGS via Hydrosphere CD-ROM

Kenommean.xls, Chart2
Minimum, Mean, and Maximum Monthly Flow in Klamath River near Seiad Valley: Water Years 1913 through 1926

Source: USGS via Hydroshare CD-ROM
FIGURE 14

Mean Monthly Flow for Selected Periods:
Klamath River at Keno/Spencer Bridge Gage
As Percentage of Annual Flow

Source: USGS via Hydrosphere CD-ROM
Pre- and Post-Project Monthly Flows:
Klamath River at Keno Gage
(above normal runoff year)

1908

1985

Source: USGS via Hydrosphere CD-ROM
Pre- and Post-Project Monthly Flows:
Klamath River at Seiad Valley Gage
(above normal non-fall year)

1916

Flow (cfs)

16000
14000
12000
10000
8000
6000
4000
2000
0

Oct Nov Dec Jan Feb Mar Apr May Jun Jul Aug Sep

maximum mean minimum daily flow during month

1985

Flow (cfs)

15000
14000
13000
12000
11000
10000
9000
8000
7000
6000
5000
4000
3000
2000
0

Oct Nov Dec Jan Feb Mar Apr May Jun Jul Aug Sep

maximum mean minimum daily flow during month

Source: USGS via Hydrosphere CD-ROM
Pre- and Post-Project Monthly Flows:
Klamath River at Selad Valley Gage
(below normal runoff year)

1918

1987

Source: USGS via Hydrographs CD-ROM
Pre- and Post-Project Monthly Flows
Klamath River at Klamath
(above normal runoff years)

1916

1985

Source: USGS via Hydrosphere CD-ROM
Balance Hydrologics, Inc.
ATAP-02.3185, Klamath AN
Pre- and Post-Project Monthly Flows
Klamath River at Klamath
(below normal runoff year)

1918

1987

Source: USGS via Hydrosphere CD-RGM
Pre- and Post-Project Monthly Flows
Trinity River at Hoopa
(below normal runoff year)

1918

1987

Flow (cfs)

Oct Nov Dec Jan Feb Mar Apr May Jun Jul Aug Sep

maximum mean minimum daily flow during month

Source: USGS via Hydrosphere CD-ROM
Mean Monthly Flows: Klamath River Basin
WY1973
(above normal runoff year)

highlighting low flows

Source: USGS via Hydrosphere CD-ROM
Mean Monthly Flows: Klamath River Basin
WY1985

(above normal runoff year)
Mean Monthly Flows: Klamath River Basin

WY1918

(below normal runoff year)

Highlighting low flows

Source: USGS via HydrospHERE CD-ROM
Mean Monthly Flows: Klamath River Basin
WY1987
(below normal runoff year)

highlighting low flows

Source: USGS via Hydrosphere CD-ROM
Mean Monthly Flow as Percent of Mean Annual Flow:
Klamath River near Klamath
(above normal runoff year)

Source: USGS via Hydrospere CD-ROM
Mean Monthly Flow as a Percent of Mean Annual Flow:
Klamath River near Klamath
(below normal runoff year)

Source: USGS via Hydrosphere CD-ROM
FIGURE 28: Temperature and dissolved oxygen measurements from the Klamath River at Iron Gate Dam, the confluence with the Scott River, and Ishi Pishi Falls (June 8-22, 1994)

(information courtesy of Karuk Tribe)
FIGURE 29:  Ground water basins in the upper Klamath River basin
(source: US Dept. of Interior, 1981; Figure 1)
FIGURE 30: Changes in extent of lakes and perennial wetlands, upper Klamath basin

(source: US Army Corp of Engineers, 1979; Figure 4)
FIGURE 31: Comparison of dry-year pumpage, applied irrigation and representative estimate of ground-water safe yield, upper Klamath basin
APPENDIX A - RAINFALL/RUNOFF CORRELATIONS

Our analyses and investigations into the hydrology of the upper Klamath River basin led us to believe that runoff in the area which drains Upper Klamath Lake is dependent on rainfall and snowmelt from the preceding four to five years. We theorized that this carry-over effect should be prominent because of the extensive basalt bedrock geology in this region.

To test this theory, we compared the Bureau of Reclamation's inflow to Upper Klamath Lake record to precipitation records at Klamath Falls and Yreka. We compared these records in two important ways:

1. Direct correlation of annual (in water years) inflow to Upper Klamath Lake to annual (in rainfall years) precipitation.

2. Correlation of inflow to Upper Klamath Lake (by water year) to a weighted average of the four previous rainfall years. Weighting of previous-year rainfall was performed by assigning four scaling factors (a, b, c, and d) where a is the scaling factor for the current year, b is the factor for the previous year, c is the factor two years ago, and d is the factor for three years ago. In assigning values to these scale factors we specified that more recent years be weighted more heavily (i.e. a>b>c>d.)

We found that the direct correlation using only the current year of precipitation data yielded a lower correlation coefficient ($R^2$) than the correlation using weighted precipitation from four years (see attached example). This means that for precipitation records at both Klamath Falls and Yreka, a weighted average of the current and three previous years is a better predictor of flow into Upper Klamath Lake than is the current year's precipitation alone.
Correlation of Upper Klamath Lake Inflow to Precipitation at Yreka

\[ y = 0.0096x + 5.5406 \]

\[ R^2 = 0.5137 \]

\[ y = 0.0096x + 5.5406 \]

Annual

1906-1994

Precipitation (by Rainfall Year) at Yreka (in)

linear (annual)

linear (weighted)

Precipitation: Balance/Hydrologists Inc. (1986-87)

Source: EMR, Inc. NEDC summary of the day.
APPENDIX B - YUROK ELDER'S ACCOUNT OF
DROUGHT AND FAMINE IN MID-19TH CENTURY

To: File 9506.11
From: Barry Hecht
Subject: Mid 1800's time of starvation, lower Klamath
Date: January 18, 1996

The following narrative was kindly passed on to me by Mary Jackson, a member of the Yurok Tribal Council. This is an account which she obtained from one of the older members of the tribe, "Auntie," whom Mary holds in high esteem. Auntie is currently 88 years old. She heard these accounts from her grandmother, and her grandmother was told by her grandmother. There was no mention of non-Indians during this time, so a reasonable window for dating the period of starvation would be in the early 1830s, prior to any non-Indian influence.

There was a great drought that lasted years. It was customary always to have a year's supply of food stored away, but hardly anyone was prepared for years of drought. Auntie was told by her grandmother that they had even resorted to boiling their shoes to make soup. Perhaps this is one reason why the Yurok people never waste any part of an animal or seafood or what they gather.

There was not enough spring salmon, not enough fall chinooks, or eels, or steelhead to feed everyone. The drought was sufficiently severe such that the oak trees did not produce acorns, and there were no berries to gather. Upriver there was little to eat. Many tribes from upriver headed for the mouth of the river, as it was rumored that seafood was available. This drought was so severe that it is still called "Tagah," which I understand means "they were starving." Quite a number of those who walked down the Klamath River did not survive. They were buried along the trail in shallow graves. Sufficient people died en route that the Yuroks make an effort not to excavate or dig along the sides of the old trails, so as not to disturb those who rest in these shallow graves.

Once, when Auntie was a child, erosion during a large storm disinterred a skeleton along the old trail. Her brother, her sister, and her grandmother came upon the skeleton. Her grandmother performed a ceremony and reburied the person properly. Paca said it was a young person from upriver, as the head was buried toward East, as was customary. Auntie asked, "How did you know it was a young person?" Her grandmother explained to Auntie that she could tell it was a young person because all of the teeth were there and they were not ground down.