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Decision 82 06 051 JUN 4 1982

ORIGINAL

BEFORE THE PUBLIC UTILITIES COMMISSION OF THE STATE OF CALIFORNIA

In the Matter of the Application of SOUTHERN CALIFORNIA EDISON COMPANY for a certificate that the present and future public convenience and necessity require or will require that applicant construct and operate the Balsam Meadow hydroelectric powerhouse and related facilities located in Fresno County, California.	Application 60175 (Filed January 8, 1981)

Gregory C. O'Brien Jr., Attorney at Law, for Southern California Edison Company, applicant.
J. V. Henry, Attorney at Law, for Sierra Association for Environment, protestant.
Francis E. Francis, Attorney at Law, for Cities of Anaheim and Riverside, interested party.
James E. Scarff, Attorney at Law, Higino Paula, and Richard Tom, for the Commission staff.

INTERIM OPINION

By this application Southern California Edison Company (Edison) requests a certificate of public convenience and necessity to construct and operate a hydroelectric powerhouse together with related facilities at Balsam Meadow in Fresno County.

A prehearing conference was held March 5, 1982 at San Francisco. Hearing on the certification was held March 29 and 30, 1982 at San Francisco. Environmental hearings were held April 9 and 23, 1982 at San Francisco.

Evidence and testimony were presented by Edison and the Commission staff. Cities of Anaheim and Riverside (Cities) and Sierra Association for Environment (SAFE) cross-examined some witnesses and filed briefs.

Testifying for Edison on the construction, operation, and need was William Emrich, project manager for hydro- and generation-related improvement projects; Terry E. Lutwen, transmission engineer; Vikram S. Budhraja, supervising planning engineer in system development; and Robert P. Haub, supervising regulatory cost specialist in revenue requirements. Environmental witnesses were Thomas T. Taylor, archeologist assigned to Environmental and Regulatory Affairs; David W. Stevens, senior terrestial biologist in Environmental and Regulatory Affairs; Warren S. Morse, supervisor of Hydrogeneration Operation and Maintenance; Norman E. Alstot, Fish and Game biologist; and Timothy B. Stell, environmental specialist responsible for coordinating the preparation of the various environmental documents.

Testifying for the Commission staff were Milton J. DeBarr, principal financial examiner, Revenue Requirements Division; and Higino G. Paula, head of the Electric Branch Service and Certification Unit. The staff's environmental witness was Joseph D. McMahon, associate utilities engineer.

Description of the Project

By this project Edison plans to add 200 megawatt (MW) of capacity and 206 gigawatt hours (gWh) of electricity per year to its system. The project is located between Huntington and Shaver Lakes approximately 45 miles northeast of Fresno. It will consist of an underground hydroelectric powerhouse and related facilities designed to accommodate future conversion to pump storage and approximately 4.5 miles of 220-kilovolt (kV) overhead transmission line. Flows of

water not presently used for electric generation from Huntington Lake and Pitman Creek would be diverted through a tunnel from the existing Huntington-Pitman-Shaver conduit (Tunnel No. 7) to a forebay to be located in Balsam Meadow. Flow from the forebay is to be routed through a tunnel to the underground powerhouse and discharged into the eastern end of Shaver Lake. The overhead transmission line would connect the Balsam Meadow Powerhouse switchyard to existing Big Creek No. 1 powerhouse located on Big Creek approximately 4.5 miles north of the proposed project.

Forebay and Dam

A principal feature of the proposed project is the Balsam Meadow regulating reservoir to be located one mile west of Tunnel No. 7. The reservoir will be formed by the Balsam Meadow dam. The reservoir is to act as a forebay for the power project to regulate the periods of operation to coincide with Edison's system peak demand. The project requires the forebay in order to function as a peaking plant during dry periods of the year and during the winter lowflow periods when Huntington Lake is drawn down. The forebay will also permit local inflow from Pitman Creek to Tunnel No. 7 to be collected for peaking release. The forebay, which allows loose rock from Tunnel No. 7 to settle out, eliminates the necessity to concrete-line it for the entire five-mile length.

The dam is to be a rock-filled embankment located on the west fork of Balsam Creek near its point of origin where a small mountain meadow forms a natural basin. It will have a concrete-faced upstream surface to prevent seepage. It will be about 1,400 feet in length overall and provided with a spillway channel excavated in native rock through the west abutment. The spillway will be constructed only for safety requirements and will not be operational under normal use of the reservoir, as the inflow will be 100% controlled from the diversion tunnel and natural runoff will be negligible.

The dam will be constructed to elevation 6,675 feet, rising about 100 feet above the west fork of Balsam Creek at the maximum section. Normal maximum water surface will be at elevation 6,668 feet, which allows four feet freeboard. One small dike about five feet high would be constructed in the northeast area of Balsam Meadow to contain the reservoir at a saddle between the east main abutment and the rim of the basin. The dike will have a total length of 250 feet. The material for the dam will be blasted and hauled from a quarry site near the west abutment including the spillway excavation. Additional random fill from the diversion tunnel and upper power tunnel excavation will be placed in the dam. The total volume of rock-fill is estimated to be 400,000 cubic yards for the dam and dike structures. The reservoir will have a gross storage volume of 1,890 acre feet at spillway level, of which 1,470 acre feet will be active storage. The reservoir surface area will be approximately 55 acres at normal full reservoir storage. During a nine-hour peaking period of full operation of the 200 MW unit, the reservoir will be drawn down about 30 feet if there is no inflow into the forebay from Tunnel No. 7. With a release of 1,200 cubic feet per second from Huntington Lake, the drawdown will be about 16 feet in a 10-hour period of generation and the forebay will refill in eight hours if Tunnel No. 7 inflow remained constant.

WATERWAYS

Diversion Tunnel

The diversion tunnel to supply Balsam Meadow forebay will extend about 6,000 feet due west from the existing Tunnel No. 7. The diversion tunnel will be a 16-1/2-foot horseshoe-shaped section drilled through native rock with a slope of about nine feet per 1,000 feet. A suitable gate will be installed at the end of the existing Tunnel No. 7 to divert Tunnel No. 7 flow through the new diversion tunnel. The gate will also be used for dewatering or bypassing flows during maintenance periods at Balsam Meadow forebay as well as

permitting fish-water releases to north fork Stevenson Creek as required. Another gate will be installed in the Balsam Meadow diversion tunnel to permit work in the Balsam forebay without impairing Tunnel No. 7 releases to Shaver Lake.

Power Tunnel

The flow-line section from the forebay to the underground powerhouse will consist of about 5,260 feet of invert-lined tunnel with a 20-foot horseshoe-shaped cross-section. At 2,890 feet from the forebay intake, the power tunnel will drop in a 13-1/2-foot diameter vertical shaft. Included in the 1,330 feet of power tunnel will be 380 feet of fully steel-lined penstock 20 feet in diameter, capable of withstanding the full hydrodynamic head.

Surge Chamber

A downstream surge chamber would be required for the long tailrace. A 40-foot diameter shaft, 260 feet high, including a four-foot diameter vent will be open to the ground surface.

Tailrace Tunnel

The tailrace tunnel approximately 7,500 feet in length would be 20 feet in diameter having a horseshoe shape with concrete-lined invert. It would discharge into Shaver Lake about 30 feet below the normal maximum water surface of 5,370 feet. It would be located at elevation 5,315 feet at the tunnel exit portal. A suitable energy dissipation structure would be constructed to release the flow when the storage level at Shaver Lake is at minimum stage.

Spillway Operation

The spillway channel would discharge into the west fork of Balsam Creek. This creek flows steeply down to the north to join Balsam Creek and discharges into Big Creek near Camp Sierra below Dam No. 4. The spillway channel is not expected to be used however except under extreme emergency conditions, since all of the inflow to Balsam Meadow Reservoir comes by releases from Huntington Lake Dam No. 2 and Pitman Creek through Tunnel No. 7 and the Balsam Diversion

Tunnel. There are existing gate controls at Huntington Lake to Tunnel No. 7, a future gate control into Balsam Diversion Tunnel and a future gated outlet at the end of Tunnel No. 7. All of these facilities will be available to prevent water entering the forebay in excess of the power tunnel releases during an emergency load rejection. The natural local inflow into the forebay reservoir is negligible, consisting of precipitation on the lake surface and a few acres of additional contribution.

POWER PLANT

Powerhouse Cavern

The underground powerhouse will contain a single pump-turbine rated at 200,000 kilowatt (kW). The powerhouse structure is to be excavated in the native rock at a distance of 7,000 feet north of the northeast arm of Shaver Lake. The powerhouse would provide for about 110 feet submergence of the unit below maximum Shaver Lake water level to obtain optimum head benefits when Shaver Lake is drawn down during the late winter and spring months prior to snow melt. The unit would operate at 400 rpm under a rated net head of 1,250 feet, producing 268,000 horsepower (hp). A spherical turbine shut-off valve is to be installed and provide for shutoff of water to the turbine.

Transformer

A three-phase step-up transformer would be located within the powerhouse cavern and connected to a 230-kV power circuit breaker. The 230 kV leads would be carried vertically to the above ground switchyard containing the dead-end for connection to the transmission line. A 220-kV disconnecting switch is to be installed either in the switchyard or in the powerhouse.

COMMUNICATIONS

The facility will be automated to operate from Big Creek No. 1. Communication facilities are to be installed using the Big Creek microwave system. Gates at the end of Tunnel No. 7 and at

Huntington Lake Dam No. 2 outlet will be remotely controlled by the microwave system. The gate at the end of the diversion tunnel into the forebay will be remote-controlled if necessary. Automatic closure of this gate in the event of emergency load-shedding by the unit may suffice. The turbine shutoff valve (TSO) at the powerhouse is to be controlled through the power plant facilities for starting up or closing down the unit. A service gate on the power tunnel at the outlet of Balsam forebay will be manually operated for infrequent closures during tunnel inspections. The TSO valve at the power plant will be the normal operating valve.

ACCESS ROADS AND ACCESS TUNNEL

There are existing road systems to nearly all locations except the surge tank. Approximately 2,000 feet of construction road from State Highway 168 will be required to reach the construction site for the surge tank construction. Approximately 3,700 feet of new road will be required to reach the vertical power conduit shaft location and switchyard area.

A 4,430 feet long access tunnel approximately 23 feet in diameter will be constructed from the vicinity of the lower Shaver Lake shoreline road to the underground powerhouse. About 50 feet of new road will connect to the access tunnel portal in Northeast 1/4 of Section 20, T9S, R25E, MDB&M. This tunnel will have a reverse grade of 8% into the underground power plant.

An adit is planned to be constructed near the exit portal of the tailrace tunnel to provide a suitable heading during the construction phase of the tunneling operations. After the tailrace tunnel is completed, the adit will be sealed off and left available for emergency use only. The power tunnel emergency control gate would be reached by about 1,000 feet of construction-type road from the edge of Balsam forebay water surface. The Forest Service road near the toe of the dam will continue from the easterly rim of the Balsam forebay and be carried across the downstream slope of the dam on a berm to provide access to areas downstream of the spillway and into lower Balsam Creek.

WATER SUPPLY AND RESERVOIR OPERATION

Source of Supply

During an average water year approximately 213,420 acre-feet of water would flow through the project. The water supply for the Balsam Meadow powerplant comes from two sources:

1. Diversions from Huntington Lake into Tunnel No. 7 consisting of surplus water (80%) and water diverted from Big Creek No. 1 and No. 2 plants.
2. Diversion from Pitman Creek Shaft into Tunnel No. 7.

The diversions from Huntington Lake to Shaver Lake via Tunnel No. 7 have historically been limited to surplus water that could not be used in the Big Creek No. 1 and No. 2 system. These controlled releases are seasonal with the preponderance of the diverted flow occurring in the April-July runoff period. Less than 1,000 acre feet per month are transferred during the remainder of the year.

The Pitman Creek diversion averages about 28,000 acre feet annually which enters Tunnel No. 7 and flows into Shaver Lake. The preponderance of this flow occurs during spring months.

Transmission

Edison proposes to construct a 220-kV transmission line from the switchyard at the proposed project for approximately 4.5 miles to the switchyard at the existing Big Creek Powerhouse Number 1. Alternative routes would provide for a 220-kV transmission line from the switchyard at the proposed project for approximately five miles to the switchrack at existing Big Creek Powerhouse Number 2 or for a 220-kV transmission line from the switchyard at the proposed project for approximately nine miles to the switchrack at existing Big Creek Powerhouse Number 3.

The transmission line would be constructed on single circuit, standard, dull-finished, and lattice-steel-type towers. The

average height of the towers would be 80 feet, and spans using a single 605,000 circular mil aluminum conductor-steel reinforced per phase would average 1,000 feet. The line would be operated at a nominal voltage of 220 kV with a rated capacity of 328 million volt-amperes. At the switchyard for Big Creek Powerhouse Number 1, one-220-kV double breaker position and transfer trip equipment would be added.

The application states that power from the proposed project can be delivered with generally similar electrical performance and reliability to either Big Creek Powerhouse Numbers 1 or 2. A connection to Big Creek Powerhouse Number 3 would provide slightly improved electrical performance and reliability over the other connections. However, the nine-mile route to Big Creek Powerhouse Number 3 could impact unique ethnologically sensitive areas, cross a more diversified and sensitive biological environment and have higher potential visual and land use impact than the proposed route.

The five-mile alternative route to Big Creek Powerhouse Number 2 has higher potential visual impact than the proposed route. The switchyard would also provide a less desirable line terminal because the transmission getaway structure would require special footings since it would be located in the tailrace pond.

The proposed 4.5-mile route is preferred because it provides the lowest potential environmental impact and technical difficulty and is also the least expensive route.

Edison

Edison states that the Balsam Meadow project is needed (1) to meet system requirements; (2) to reduce dependence on oil by diversifying its system to include renewable resources; (3) to reduce air emissions in the south coast air basin; and (4) to follow load and provide greater operational flexibility.

As to need, Edison states that it forecasts an annual 2.6% increase in gross peak demand for the 1980-1990 time period. Notwithstanding, it has adopted a managed peak demand growth target of 2% with the balance to be supplied by load management.

Edison's most recent resource plan (December 16, 1981) indicates a need for 5,856 MW of additional capacity by 1990. The California Energy Commission (CEC) recently estimated Edison's needs at 3,531 MW over the same time period.[1] However, the CEC states that "in order to meet its total energy needs (including growth and fuel displacement) Edison would need considerably more capacity. At 65% capacity factor, over 7,000 MW would be needed to supply the needed 39,878 gigawatt hours."

Edison's resource plan calls for 2,339 MW of nuclear capacity, 1,421 MW of noncapital or purchased power resources, and 2,096 MW of renewable and alternate resources. Hydro is to provide 744 MW of the total planned 2,096 MW of renewable and alternative resources. Edison's Budhraja stated that nuclear resources under construction and other planned purchases and renewable resources (i.e. coal, geothermal, wind, and solar) are not designed and/or capable of load-following operation and that these resources account for approximately 75% or 4,300 MW of the total planned additions in the 1980s. With the addition of these resources, it needs peaking resources that have quick-start and load-following capabilities for effective system operation. Balsam Meadow would serve a portion of this need for peaking capacity.

Budhraja testified load management alone would not be sufficient to meet Edison's needs for additional peaking capacity. He stated:

> "Load management is a program designed to shift electric use from on-peak periods to off-peak periods in order to improve and optimize the effective utilization of generating capacity. For load management, Edison has established a goal of 1400 MW by 1990. This goal is based on an assessment of the maximum level of cost-effective load management programs in this time frame. Hence additional load management programs are not considered a viable alternative to the Balsam Meadow Project."

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[1] See CEC report "Southern California Edison Energy and Capacity Needs, 1979-1982", Table 1-29, pp. 92-93.

For reducing its dependency on oil, Edison contends it is the State's policy to preferentially develop renewable resources. Budhraja stated that:

> "Last year 55% of SCE energy production came from expensive low sulfur oil and natural gas, the equivalent of 62 million barrels of oil. Balsam Meadow with its lower operating costs (no fuel costs) than system oil and gas resources will be preferentially operated and therefore (will) assure the displacement of an average of 340,000 bbls of equivalent oil and gas annually. This will reduce Edison's dependence on oil and gas."

For reduction of air emissions, Budhraja stated that the Balsam Meadow project will cause air emissions to be reduced by over 500 tons per year due to the reduced oil consumption. Edison's goal for 1990 is to reduce NOx emissions in the south coast air basin from approximately 26,000 tons in 1981 to 16,000 tons/year. The Balsam Meadow project would reduce NOx emissions by approximately 225 tons/year, SOx by 275 tons/year, and particulates by 30 tons/year for a total of 500 tons/year.

For operational flexibility, witness Budhraja stated that hydro units are more reliable than combustion turbines. An example would be that on a hydro unit, an outage rate on the order of 1% could be expected while on a combustion turbine you could expect 10%. Translated into capability of hydro to serve system load as compared to a combustion turbine it implies that hydro unit will carry approximately 10% higher loads than a combustion turbine, which translates into a 1.8 cents per kilowatt.

Edison asserts that the Balsam Meadow as a peaking plant is cost-effective when compared to the only comparable alternative, i.e. a combustion turbine. It made an economic analysis of the two alternatives considering:

1. Project economic life: 60 years for hydro or 30 years for combustion turbines.

2. Availability/reliability: hydro units have a higher availability/ reliability.
3. Ability to increase off-peak economy energy purchases: Balsam Meadow will increase the ability to purchase low-cost economy energy from neighboring systems.
4. Operational impacts: hydro offers greater operational flexibility and would ease start up and maintenance requirements for other oil- and gas-fired units.
5. Environmental impacts: hydro will result in reduced air emissions.

The comparison was made by Budhraja on a levelized, delivered cost basis assuming a 15¢/kWh value to various unique features associated with a long-life (60-year) hydroelectric project that are not associated with a standard-life (30-year) combustion turbine. Using this he determined that Balsam Meadow's true cost is 27.1¢/kWh compared to 45.1¢/kWh for a combustion turbine. Even without these considerations, he concluded that Balsam Meadow at 42.1¢/kWh compared favorably with a combustion turbine at 45.1¢/kWh.

Cost of the Project

Edison states it is making a concerted effort to control costs of the project. Its project manager Emrich testified that the estimated cost is $290 million in 1987 in-service date dollars, $56 million more than in the January 1981 application. He stated that the revised estimate partially reflects a $22 million increase due to an enlargement of the powerhouse cavern size, increased diameter for the access tunnel and elevator shaft, addition of the saddle dam, and "more pessimistic unit rates" for the underground portion of the work. The remaining increase for the generation element from the original application is due to allowance for funds used during construction (AFUDC) resulting from a change in the planned cash flow for the project and the increase in direct cost.

Emrich stated he did not expect an upward trend to continue because when the application was filed, only conceptual engineering had been performed on the project. At this time, preliminary engineering has been completed on most of the project and final engineering on the major components of the project has commenced. As a result, a very good understanding of the scope and quantities associated with the project exists. With the contingency amount included in the current estimate, it is not anticipated there will be further increases in the total cost unless there would be major scope changes due to unforeseen outside forces.

On cross-examination Emrich explained that the $290 million figure is generally recognized by Edison's management, but has not been officially approved by its board. He noted that the company's budget control process involves a three-tier review system, beginning with a budget expenditure review committee, then a corporate budget committee, and finally a Board of Directors budget committee which makes the recommendation that must be approved by the company's full Board of Directors. To date, Balsam Meadow has been examined by the company's financial analysts, but no authorization has been given to spend corporate funds other than $12 million for preliminary expenditures.

Emrich explained that Edison plans to act as the general contractor, managing the subcontractors, supervising schedules, and maintaining cost control. It will retain a qualified "board of consultants," who are recognized experts in the fields of geology, fluid mechanics, hydrology, and tunneling who will meet at least quarterly, and make site inspections, and provide independent advice on the construction of the project.

Staff

Determination of Edison's future peaking capacity requirements involves three major inputs: forecasts of gross peak demand, forecast reductions in demand from load management programs,

and company policy on the size of its reserve margin. Other factors include changes in the load factor, changes in time-of-use patterns resulting from load management programs, and the capacity of current and planned plant to track hourly changes in demand.

The legal staff states that Edison's projected growth rate in net peak demand is significantly higher than the growth rate forecast by the CEC in its 1981 Biennial Report. The staff also noted that Edison reduced its projected growth rate of peak demand in the two years since Edison gave its earlier forecasts to the CEC.

The legal staff argues that if the capacity needed to meet the CEC's oil displacement goals is deleted, the CEC's Report states that Edison would need only 3,531 MW of new plant capacity over its 1979 plant to meet its 1992 peaking demand with an adequate reserve margin. (ENERGY TOMORROW, at p. 93.) Edison is planning the addition of 5,656 MW of new plant capacity by 1990 not including Balsam Meadow. The legal staff suggested that Edison will not need Balsam Meadow to meet its overall capacity needs if the CEC's forecasts and analyses are correct.

Regarding Edison's resource plan, the legal staff commented that a considerable amount of new additions and old plant retirements are planned. The resource plan shows that Edison is planning to lose through plant retirement or contract termination 2,568 MW of capacity between 1982-1990. In contrast, the CEC forecast projects a reduction of only 1,231 MW capacity between 1979-92 for these reasons.

With respect to planned new plant, it should be noted that over 2,300 MW or almost 40% of the new capacity will come from Edison's San Onofre Nuclear Plants 2 and 3 and its share of the three Palo Verde nuclear plants. Any delays in bringing these plants on line may significantly reduce Edison's reserve capacity margin, but this could be offset by delay of planned retirement for older plants.

The legal staff takes exception to Edison's capacity reserve margin policy that firm capacity should equal 118% plus or minus 2% of forecast maximum peak demand. Staff argues that this policy may be too conservative creating unnecessary ratepayer expense. It states that in its 1981 Biennial Report, the CEC recommended for Edison a reserve margin of 16%, an increase over the CEC staff's recommendation of 12%. (ENERGY TOMORROW at p. 89.) The difference between the CEC's 16% and Edison's 18% is 288 MW in 1987 and grows to 377 MW by 2000.

On rapid changes in demand, the legal staff states that on the Edison system those frequently occur on hot summer afternoons and require generating facilities capable of following rapidly changing load. Hydroelectric facilities such as the proposed Balsam Meadow project clearly have this capability. However, as Edison implements more load management programs over the next few decades, load will be switched from periods of peak demand to periods of lesser demand. Not only will this reduce maximum net demand as noted in Edison's resource plan, but also it will change the shape of the hourly demand curve. The result of this change in time of use will be a reduction in the amount and rate of change between moderate and peak load during the day. Because of this change more of the load will be able to be handled by baseload facilities and intermediate oil- and gas-fired facilities rather than peaking plants.

The Commission's Utilities Division concluded that Edison needs additional capacity to replace existing oil-fired facilities and that Edison can reasonably use the 200 MW of peaking capacity provided by the proposed Balsam Meadow project.

This conclusion was based upon staff witness Paula's analysis of Edison's demand curves for 1980 and 1981 and his analysis of Edison's capacity to track rapidly increasing hourly changes in its peak demand using its current facilities.

On cross-examination, Paula stated that the primary basis for his recommendation that the Commission grant Edison a certificate for this project was not Edison's need for additional peaking capacity but rather the economic and policy advantages associated with oil displacement aspects of Balsam Meadow.

The Commission's Legal Division states it does not concur with the Utilities Division in the conclusion that the record demonstrates that Edison needs an additional 200 MW of peaking capacity. It believes the record leaves unanswered substantial questions regarding the accuracy of Edison's demand forecasts, the appropriate timing of plant retirements, the desirability of an 18% reserve margin, and Edison's current or future capability of meeting rapid changes in demand with plant other than Balsam Meadow.

The legal staff states that the issue is not simply Edison's proposed 200 MW project or no project. The Balsam Meadow project might still be needed, but in a different configuration. Testimony was presented that Balsam Meadow could be built at configurations of 100 MW or 140 MW instead of the proposed 200 MW. The legal staff contends that either of these configurations might satisfy Edison's need for additional peaking capacity at a lower cost but that the record does not present enough information to support a choice among these alternatives.

As to oil displacement, the legal staff agrees with Edison that the project will reduce its dependency on oil. Because the proposed hydroelectric facility will have high reliability, relatively low operation and maintenance costs, and virtually free fuel, Balsam Meadow would be operated to the maximum extent feasible given the available water supply. Assuming in an average hydro year that the project generates a net of 206 GWh of energy, this will displace approximately 340,000 barrels of equivalent oil and gas. This oil displacement would also reduce Edison's dependence on oil, diversify the firm's resource base, offer greater operational

flexibility, and decrease nitrous oxide and sulfur dioxide emissions in the south coast air basin by 500 tons per year.

The Utilities Division staff recommends that a certificate for the 200-MW configuration proposed in the application be granted. Paula's report states that if the project costs $235 million it would pay for itself purely from savings associated with oil displacement if the annual escalation rate of fuel oil prices is greater than 8.9%. (To put these figures in perspective, Paula cited a CEC Report which predicted that the annual fuel oil escalation rate for the period 1980-2000 would be 10.3% for distillate and 9.67% for residual oil.)

If the primary objective of the Balsam Meadow project is oil displacement, the Legal Division suggests that a 140-MW configuration should be more fully considered. Staff witness Paula sets forth approximate construction cost estimates for 100-MW, 140-MW, and 200-MW configurations for Balsam Meadow in his report. It is argued that these estimates suggest that a 140-MW configuration would generate 98.7% of the total energy produced by a 200-MW facility and thereby displace nearly as much oil. It states Paula's report suggests that a 140-MW facility would cost 74% as much as the 200-MW facility, and thus achieve greater savings, if any, from oil displacement. The incremental 60 MW associated with the 200-MW facility would therefore have to be justified on other grounds.

Economics of the Project

Staff witness DeBarr stated that he believed Edison's cost estimation practices to be reasonable considering the nature of the project.

The staff concurs with Edison that electricity from Balsam Meadow would be less expensive than from a combustion turbine.

Staff witness Paula concluded that, assuming a construction cost of $235 million, the levelized cost of electricity from Balsam Meadow would be 23.96¢/kWh. If the cost of the project was $290 million, he stated the levelized cost would be 29.69¢/kWh. A comparison of the cost per kWh from various sources is contained on the following Table I.

Table I

Cost per Installed kW Capacity and Levelized Cost per kWh for Balsam Meadow and Other Selected Projects

Project	Construction Cost ($ million)	$/Installed kW	¢/kWh	Source
Balsam Meadow (200 MW, .11 C.F.)	235	1,175	24.0	PUC staff (Exhibit 20, p.5-7)
	290	1,450	27.1	Edison adjusted (Exhibit 12, Att. 4)[a/]
	290	"	29.7	PUC staff (Tr. at p.261)
	290	"	42.1	Edison unadjusted (Exhibit 17, Att. 4)
	363	1,813	37	Edison adjusted[a/] (Exhibit 17, Att. 4)
	363	"	37.1	PUC staff (Tr. at p.262)
	363	"	52.8	Edison (Exhibit 17, Att. 4) unadjusted
Helms	700?		38.9	PUC staff (Exhibit 20 at p.5-7)
Combustion Turbine (200 MW, .05 C.F.)[b/]	-		45.1	Edison (Exhibit 17, Att. 4)
Combustion Turbine (? MW, ? C.F.)	-		63.4	PUC staff (Exhibit 20 at p.5-7)
Lucerne Valley Combustion Turbine	-		62.1	PUC staff (Exhibit 20 at p.5-7)
Combustion Turbine (? MW, ? C.F.)	-		58.9	CEC cited by PUC staff (Exhibit 20 at p.5-9)
Dinkey Creek Hydro (120 MW, .34 C.F.)	-		25	Edison (Tr. at p.182) (1986 dollars)

a/ These figures contain adjustments Edison made to reflect its projected savings from building Balsam Meadow rather than a combustion turbine. They include a longer project life, increased reliability, increased economy energy purchases, and reduced operational costs.

b/ Includes oil backup for total capacity factor of .118.

The staff points out that Edison did not use a strict comparison between the cost of per kWh of Balsam Meadow and a peaking plant operating at 11% capacity factor. In Edison's analysis, the 11% net capacity factor of the Balsam Meadow project is comparable to a combustion turbine at a 5% capacity factor and oil-fired intermediate plants providing the approximately 6% remainder capacity. The use of a mix of alternative sources is necessary because of the different operating characteristics of Balsam and a combustion turbine. During the high runoff season in late spring and early summer, Balsam Meadow would be run up to 10 hours a day, more comparable to an intermediate plant than a combustion turbine peaker. The average cost of electricity from Edison's mix of combustion turbine and oil-fired plants is only 45.1¢/kWh, approximately 15¢/kWh lower than a straight combustion turbine alternative.

The economics of the project assumes Edison's need for 200 MW of peaking capacity. The Legal Division staff questions this additional need.

Alternatives to the Proposed Project

Several alternatives to Edison's proposal were mentioned during the course of the proceeding. The three alternate sites for the powerhouse contained in the Final Environmental Impact Report (EIR) were determined by the staff to have no significant environmental advantages but had greater environmental costs.

Though Edison presented no evidence on the possible 110-MW and 140-MW configuration for Balsam Meadow, staff witness Paula determined that a 140-MW facility would produce 98.7% of the energy gain of the 200-MW design at an estimated 74% of the capital cost. A 100-MW facility would produce 84% of the energy at an estimated 59% of the capital cost. Paula recommended the 200 MW to maximize the installed capacity and energy gain while keeping the cost per kWh reasonable.

Both staff witnesses analyzed the alternative of building the Balsam Meadow project without provision for future conversion to pump-storage. Both stated that forgoing this option would result in almost negligible savings and remove a valuable option for Edison. The environmental effects associated with this alternative are virtually identical with those for the proposed project.

An alternative that was considered at some length by Edison and the staff is the pressurization of Tunnel No. 7. Tunnel No. 7 runs from Huntington Lake south part way to Shaver Lake. It empties into the north fork of Stevenson Creek which in turn empties into Shaver Lake (see maps at pp. 4-6, 4-7 in the FEIR). Currently, Edison diverts excess water from Huntington Lake into Tunnel No. 7 during the high runoff season. Tunnel No. 7 also receives natural runoff from Pitman Creek. The proposed Balsam Meadow project would use Tunnel No. 7 to transport water from Huntington Lake and Pitman Creek. A new diversion tunnel would be built from near the southern end of Tunnel No. 7 to the Balsam Meadow forebay where it would be stored until needed for power generation.

The Tunnel No. 7 alternative would consist of building a continuous power tunnel from Huntington Lake all the way to Shaver Lake. An underground or above ground powerhouse would be built near Shaver Lake. The upper portion of the power tunnel would use the existing Tunnel No. 7 which would have to be pressurized. Extensive lining of this tunnel would be required resulting in a reduced flow. A new underground tunnel would have to be built from the end of Tunnel No. 7 to the powerhouse.

The advantages of this alternative are the capture of part of the additional 250 feet of head between Huntington Lake and the planned diversion tunnel to Balsam Meadow forebay (this head would not be used in the proposed project), and reduced environmental impact since Balsam Meadow would not be flooded for use as a forebay. The disadvantages of this alternative are the reduced flow of water and thus the reduced capacity of the proposed alternative,

the decreased feasibility of a pump-storage option with this alternative, and the expected increased cost.

In comments on the Draft EIR, SAFE suggested that Edison's powerplants at Big Creek Number 1 and Number 2 could be modified to add a net 200 MW of increased peaking capacity at a significantly lower cost of construction than the proposed project. SAFE presented no witnesses or evidence regarding this alternative.

Nonstructural alternatives to the project include increased load management, increases in current conservation programs, and several conservation proposals put forward by SAFE in its comments on the Draft EIR. It is the position of both Edison and the Commission staff witnesses that the utility's current load management program is about as extensive as feasible with current technology and equipment. With respect to Edison's other conservation programs such as the OII 42 demonstration solar water heating financing program and zero interest loan home insulation program, the staff witnesses believe that these programs probably cannot be increased substantially in scope at this time in a cost-effective manner. With respect to SAFE's proposed conservation alternatives, staff notes that SAFE put forward no witnesses or evidence as to the feasibility or cost-effectiveness of any of these programs. Based upon the record in this proceeding, the staff witnesses believe that these suggested programs have not been shown to be practical alternatives to the Balsam Meadow project.

A final alternative would be the rejection of Edison's proposal. This alternative would obviously avoid the short-term environmental and economic costs associated with construction of the proposed project.

Cost Control and Cost-Monitoring

Staff witness DeBarr testified on several aspects of Edison's cost control procedures. He stated that he had reviewed the firm's cost estimation and cost control practices and policies with several key Edison personnel at the company's headquarters. Based

upon his review and his work on the Commission's special task force on Pacific Gas & Electric Company's (PG&E) Helms project, he stated that Edison's policies and practices appeared substantially more likely than those used by PG&E to yield accurate cost estimates and to track cost increases in a manner which would allow rapid management response.

Both staff witnesses recommended that if the Commission issues a certificate to Edison for the Balsam Meadow project that the Commission establish its own internal cost-monitoring program for the project (Exhibit 20, at p. 1-4; Tr. at pp. 148-54, 263). DeBarr recommended that if the project is approved, the Commission require Edison to provide the Commission with the following:

A. The final base price for the project to be used for cost-tracking purposes.

B. A quarterly report until the roll date for the project which contains:

   1. A periodic cost report, at least quarterly, reflecting:

      a. Monthly budgeted expenses.

      b. Actual monthly expenses.

      c. Budgeted total cost to date.

      d. Actual total cost to date.

      e. Total committed costs to date.

      f. Total budgeted costs for the project at completion.

      g. Forecast total costs for the project at completion.

   2. S-curve graphs showing budgeted and actual project costs by month, and year-to-date.

   3. An exhibit (similar to page 32-A of Exhibit 1) showing the major milestones of scheduling for major phases of the project.

4. A narrative explanation of the major accomplishments and problems occurring since the last report with special emphasis on any variance from budgeted expenses or construction schedules, and a description of Edison's progress towards the major milestones including an estimate of whether those milestones will be achieved within budgeted costs and on schedule.

C. A copy of the project management plan for Balsam Meadow.

D. A list of the major contracts executed for work on this project including a description of the work to be performed under each contract.

DeBarr also recommended that Edison and the staff meet on a periodic basis to discuss the status of the project.

It is the recommendation of the Utilities Division staff that the Commission issue a certificate of public convenience and necessity for the Balsam Meadow project as proposed in the application as amended. It concluded that the Balsam Meadow project is likely to be a cost-effective means of displacing oil. It also concluded that Edison needs additional capacity to replace existing oil-fired facilities and can reasonably use an additional 200 MW of peaking capacity. Finally it believes that the price of electricity from Balsam Meadow would be less expensive than from a combustion turbine.

The Legal Division staff does not believe that Edison has convincingly demonstrated that by 1987 it will have a need for the entire 200 MW of additional peaking capacity. It believes that even assuming Balsam is preferable to the alternatives presented, the Commission must address the questions of whether this is the right time to build such a project and whether 200 MW is the right size for such a project.

The staff is unanimous in the recommendations which would require Edison to provide to the Commission the reports related to cost-monitoring specified in De Barr's testimony. The adoption of such a cost-monitoring program is necessary to protect Edison's ratepayers from avoidable cost overruns.

The staff also recommends that if the Commission issues a certificate for this project the following mitigation measures be made conditions of the certificate. First, that Edison provides mitigation for adverse biological impacts of the project as set forth in the firm's application as amended. In particular, Edison should be required to enter into an agreement with the Department of Fish and Game substantially similar to the draft memorandum of understanding introduced in this proceeding as Exhibit 23. Second, Edison should be required to work with local Native Americans in the project area in implementing the proposed cultural mitigation plan described by Edison in its application and testimony.

SAFE

SAFE is opposed to the granting of a certificate. In its brief SAFE states that the project conceals hidden costs to the ratepayers. It states that:

> "1. Applicant claims that the project will produce cheaper electricity than a new oil-fired combustion turbine burning oil at a fuel cost escalation rate of about 9% annually. Thus, Balsam would be cheaper in about 1995.
>
> "2. During the eight years 1987-1995, accrued excess costs of Balsam amount to $264.17 million (1995 dollars) ($86.36 million-1987 dollars.)
>
> "3. If SCE were precluded from passing these costs on to the ratepayer (excess of avoided cost) the 1995 rate base would be $502.839 million. At a 15% return, this would be $75.426 million or a COE of $117.629 million for 206.7 GWH or 57¢/kwh.

"4. Thus, even the combustion turbine is cost competitive if the rate payer does not pay Edison the hidden capital contribution during the 1987-95 period. See PUC Decision No. 92115. (1980)

"5. The pressurized Tunnel 7 alternative would increase energy output by 10-15 GWH at an additional cost of $7 million (1.05 annually at 15%). Thus the incremental cost of this option is 8.4¢/kwh. Far from being infeasible, this alternative is economically superior. Since this alternative would avoid the loss of Balsam Meadow and thus be environmentally superior, it is the preferred alternative."

SAFE also alleges that the Draft EIR is deficient. It states that using the FERC statement as a Draft EIR has resulted in numerous CEQA violations. SAFE asserts that the Draft EIR must be in plain English and in a clear format, and should mention briefly nonsignificant issues; it should omit unnecessary descriptions and emphasize feasible mitigation alternatives, it should prevent environmental damage, and it should explain why the alternative is chosen.

SAFE states that the staff did not obtain comments as required by law from either the State Historic Preservation Officer or the Native American Heritage Commission.

It also alleges that the following significant impacts will result from the proposed project: "(1) destruction of archaeological sites and endangering others; (2) wildlife and plant habitat destruction; (3) energy waste; (4) noise during construction, blasting, and machines; (5) spoil disposal; (6) traffic, Sec. 150203 App. G, (c), (j), (l), (n), (o), (p), (t), and (r). Mitigation has not been maximized as required by Sec. 15088." It is alleged that the staff delegated its environmental responsibilities to Edison. It is alleged that staff responses to the Draft EIR were evasive and shallow non sequiturs.

SAFE recommends that the application be denied and that the Commission approve only a minimum impact alternative.

Cities

Cities agree that the public interest requires that the Balsam Meadow project be developed jointly by Edison and by other southern California power entities, including tax-exempt entities such as the Cities. They state that joint development will reduce the annual cost of the project by millions of dollars by reducing financing costs and will ensure that the benefits of developing a scarce and valuable resource like hydroelectric power are distributed to various segments of the power industry in southern California. Further, they state joint ownership will favor competition in the electric industry while issuing the certificate as requested for sole ownership by Edison will only strengthen Edison's control of generation resources, especially hydro resources, in the State. They recommend that the Commission provide for a jointly owned Balsam Meadow project by requiring Edison to offer Cities and other entities located in its service territory the opportunity to participate in up to 50% of the project.

Cities state that the Commission should consider the lower costs of joint ownership in determining whether a certificate should be issued. They state that joint ownership distributes a scarce resource to the public, and that the advantages are clear: lower cost, wider distribution of the resource, and promotion of competition. Quoting Northern California Power Agency v Public Utilities Commission (1971) 486 P 2d 1281, Cities state the Commission must factor into its determination of the public interest in issuing a certificate of public convenience and necessity the potential anticompetitive effect of foreclosing Cities from participation.

Finally, Cities allege that Edison has refused to entertain Cities proposal that the project be shared on a 50-50 basis. Cities state that the scarcity of hydro sites of the magnitude of the Balsam Meadow project and the inherent quality of those sites from the environmental viewpoint as well as the attractiveness of its peaking capability require special attention to the effects of granting a certificate exclusively to Edison where it is a dominant hydro licensee.

Discussion

Critical in this proceeding is a determination of whether the project is needed. Edison states that the unit will be used as a peaking resource. Its resource plan calls for 2,339 MW of nuclear capacity, 1,421 MW of noncapital or purchased power resources, and 2,096 MW of renewable and alternative resources. It plans for 744 MW of hydro power of the total planned 2,096 MW of renewable and alternative resources. Because approximately 75% of the planned capacity additions for the 1980s are to be from resources that are not designed for and/or capable of load-following operations, Edison will need units such as Balsam Meadow for quick-start and load-following capabilities for effective system operation.

In addition to aiding Edison in meeting its demand requirements, the Balsam Meadow project will reduce dependence on oil by substituting a renewable resource. As explained by Edison's witness, in 1980, 55% of its energy production came from expensive low-sulfur oil and natural gas, the equivalent of 62 million barrels of oil. With the lower operating costs (no fuel costs) of Balsam Meadow, system oil and gas resources can be preferentially operated, assuring displacement of approximately 340,000 barrels of oil.

Correlating to the displacement of oil are the environmental benefits associated with the project. The Balsam Meadow project will reduce NOx emissions by 225 tons/year, SOx by 275 tons/year, and particulates by 30 tons/year for a total of more than 500 tons.

Important, too, is the estimated cost of the proposed project. Edison's revised estimated cost of $290 million is approximately 23% over the $235 million in the application. Edison explains that this change is the result of revised engineering plans, more specific cost estimation, increase in AFUDC resulting from change in the planned cash flow, and inclusion in the cost estimate of upgrading some transmission lines to carry Balsam Meadow's power. This explanation is reasonable. Moreover the staff witness testified he had reviewed Edison's cost estimation practices and found them to be reasonable considering the nature of the project.

Looking at the Balsam Meadow project at the proposed 200 MW size, we believe the revised estimated cost is reasonable when compared with combustion turbines.

We believe that the cost and need estimates of the project were given and analyzed in good faith. Yet changing energy supply prospects coupled with our year-long approval process can lead to questions about data developed in the proceeding. We can and do grant a certificate of public convenience and necessity for a hydroelectric power plant at Balsam Meadow based on the record before us. To assure that the ratepayers receive the maximum possible benefit of a project at Balsam Meadow, we shall grant this certificate for a facility not to exceed 200 MW capacity and shall direct the company and our staff to more fully explore the optimal sizing of the facility which would provide for the most cost-effective system operation.

As noted earlier, Edison bases the need for the Balsam Meadow project on four grounds. Two of those are clearly met: reduced dependence on oil by use of a renewable resource and reduced air emissions in the south coast air basin. However, a smaller plant may meet these two important objectives to nearly the same extent but at a substantially lower cost.

The record is unclear on the other two grounds stated by Edison as supporting the need for the plant: meeting system

requirements and developing load following capacity. These two objectives tend to overlap in this application. The system requirements Edison refers to appear to include a combination of oil displacement and peaking capacity. Insufficient evidence was developed in the record regarding the cost-effectiveness of the incremental capacity beyond that needed to displace oil and gas. The record is not clear on the importance of this incremental capacity for load following purposes. Further, to use the incremental capacity at Balsam to meet system peaks is one form of load following. At issue is whether accomplishing this would reduce the capacity of Balsam to follow "shoulder" or intermediate loads. A smaller plant could follow shoulder loads by extending the duration of flow of daily water supplies. The record provides no guidance as to which loads Edison intends to meet with Balsam nor which loads Balsam is most economically suited to meet. Equally important is the absence from the record of projected hourly load curves for 1987 and beyond. Our staff found need for Balsam at the peak by analyzing 1980 and 1981 load curves. If Edison's aggressive load management programs are even moderately successful, Edison's hourly load curve is likely to be somewhat flatter during the years in which Balsam will operate. A better understanding of these load questions is critical to a prudent decision on the size of the facility.

While we recognize the importance of this project in reducing Edison's reliance on oil and gas for generation, we must be diligent to displace oil and gas in the most economical way possible. We see no benefit to the ratepayers in denying this application. This would only delay pursuit of the important public policy to reduce use of oil and natural gas for electric generation. A hydroelectric facility at Balsam Meadow can be a cost-effective means to reduce Edison's use of oil and gas. All that is needed is supplementary information to resolve doubts as to what size of facility would optimize the benefits to ratepayers.

Therefore, we shall grant the certificate and hold supplementary hearings to resolve questions that have been raised about optimal sizing of the Balsam Meadow project. This will permit Edison to provide more detailed information on the load issues that have been noted and more precise project cost estimates that have been approved by the company. This will also permit our staff to evaluate the relevance of expanding conservation and load management programs to the sizing of the facility.

While subsequent hearings may well be necessary to consider revised information from Edison, we intend to limit these hearings to issues on the size of the project. Simple downsizing of the project that might result would have the effect of reducing any environmental impacts from levels that we have already found reasonable. Therefore, we conclude that further consideration of environmental issues would be superfluous unless Edison or staff proposes a significant reconfiguration of the project.

It is not our role to manage utility construction programs and we do not seek that end here. It is our role to protect ratepayers and ensure that rates reflect reasonable costs. By obtaining fuller need and cost information which will enhance our ability to evaluate the prudency of project costs, and by enhancing utility cost control incentives through new cost-monitoring mechanisms, we are taking steps aimed at fulfilling this regulatory responsibility.

As recommended by the Commission staff, approval of the project requires that a cost control program be implemented. This program would include cost tracking and quarterly reports to this Commission. Quarterly reports should include such items as monthly budgeted expenses, actual monthly expenses, budgeted total cost-to-date, actual total cost-to-date, committed total cost-to-date, total budgeted costs for the project at completion, and total forecast costs for the project at completion. The report should also contain budgeted and actual project costs by month and year-to-date, an exhibit showing major milestones of scheduling for major phases of the project, and a narrative of the accomplishments and problems occurring since the last report.

Edison should also provide the Commission with a copy of the project management plan and a list of the major contracts executed for work including a description of the work to be performed under each contract.

There is a possibility that substantial cost overruns may affect the project's cost-effectiveness. If a 200-MW plant is built, we will limit the rate base treatment to the adopted cost estimates since these are the figures used to justify the project cost, absent a strong showing by Edison that higher costs were reasonable. However, we view the adopted cost estimate as reasonable only for a 200-MW facility. If, after hearing, it is determined that a smaller facility should be built, we would expect that the cost estimates adopted for a smaller facility would be lower.

We are unable to accommodate Cities' request that any certificate issued be conditioned on Edison's making 50% of the project's power available to other public and private entities. We recognize that participation by any entity or group would reduce the overall investment of Edison. However, despite Cities' participation in the proceeding Cities failed to raise this issue in hearings and no direct testimony relative to this issue was presented for our consideration. Further, the issue of who ultimately gets a license to develop the hydroelectric resource is within the jurisdiction of the Federal Energy Regulatory Commission (FERC). A license from FERC is all Cities need; no certificate from this Commission is necessary. Nor can this Commission grant a certificate to Cities, over whom we have no jurisdiction. As FERC will be the ultimate forum to decide Cities' request, and given the state of our evidentiary record on Cities' proposal, it is appropriate to deny their request.

Environmental Considerations

The environmental consequences of constructing the project include the permanent use of approximately 97 acres of land for the forebay, access roads, parking areas, transmission towers, and related facilities that otherwise would remain in a natural state. In addition, operation of the project will require diversion of existing flows to the forebay reducing the level of flows in the two-mile reach of Stevenson Creek below Tunnel No. 7's outlet.

A comprehensive record on environmental matters was developed in this proceeding through issuance of a Draft EIR, consultation with public agencies and others, and public hearings. All are elements in the environmental process which culminated in the issuance of the Final EIR.

In compliance with Rule 17.1 of the Commission's Rules of Practice and Procedure, Edison prepared the Proponent's Environmental Assessment (PEA), submitted as part of the pending application, describing its study and environmental rationale for supporting the project. Regulatory decision-making at the state level must comply with environmental review laws. The environmental impact document on the proposed project has been designed to meet the state requirements of CEQA. A staff engineer sponsored the Draft EIR on the Balsam Meadow project at our hearing.

We have carefully considered the evidence on environmental matters contained in the Final EIR and make findings under § 21081 of the Public Resources Code. We further find that granting the application, subject to the mitigation measures contained in the EIR, will not produce an unreasonable burden on natural resources or esthetics in the area in which the proposed facilities are to be located, public health or safety, air or water quality in the vicinity, recreational or scenic areas, or historic sites or buildings, or archeological sites.

We believe two subjects regarding environmental considerations deserve further comment.

First, as pointed out by the staff, the draft memorandum between Edison and the Department of Fish and Game has several noteworthy features. The mitigation plan itself has four salient components. First, Edison has agreed to take measures to minimize the short-term impacts associated with the construction of the project and the presence of relatively large numbers of people in this rural area. Second, Edison has proposed to develop jointly with the Department of Fish and Game a meadow enhancement program for Stevenson, East Balsam, and several other meadows to compensate for the loss of wildlife habitat in Balsam meadow and other developed areas of the project. Mitigation for Stevenson Meadow would involve temporarily removing the topsoil, filling in the meadow with the tunnel tailings, then restoring the topsoil. The resulting change in gradient of the meadow should improve its value as wildlife habitat. Third, Edison has agreed to a schedule of releases of water into Balsam Creek and the north fork of Stevenson Creek. These scheduled releases, the reduction in extreme high releases into Stevenson Creek, and the improvement of fish habitat in Shaver Lake, will all serve to compensate for any adverse impacts on fisheries. Fourth, Edison has agreed to establish a habitat maintenance fund to which it will contribute $10,000 per year adjusted for changes in the consumer price index for the life of the FERC license until 2009. This fund can be used to modify or increase proposed mitigation measures in the event that experience reveals better mitigation methods or the goals of the mitigation plan are not achieved.

Second, with regard to cultural resources impacted by the proposed project, Edison's mitigation plan has two main components. First, specified efforts will be taken to avoid locating project components where they might damage Native American archeological sites, and specific efforts will be made to keep construction workers and members of the public away from these sites by road closures and other means. Second, for those sites where impact cannot be avoided, Edison proposes to conduct archeological studies in consultation with the local Native American communities. These studies will collect artifacts from the sites to be curated in a local museum.

We agree with the Commission staff that the draft memorandum of understanding between Edison and the Department of Fish and Game and Edison's proposed cultural mitigation plan adequately mitigate any adverse impacts on biological and cultural resources to the extent feasible. We also agree that the certificate should be conditioned upon Edison's implementing both a biological mitigation plan and a cultural resources mitigation plan substantially in conformance with the most recent plans described in the application.

Findings of Fact

1. Edison requests a certificate of public convenience and necessity to construct and operate a 200-MW hydroelectric power plant with related facilities at Balsam Meadow in Fresno County.

2. The proposed facility will provide greater operational flexibility for its system.

3. The estimated cost of $290,000,000 for the 200-MW power plant and related facilities including transmission line is reasonable.

4. The facility is to be constructed with the potential for conversion to a pump-storage operation.

5. Alternatives suggested to the construction of the 200-MW facility include the option to build either a 100-MW or a 140-MW plant, pressurization of Tunnel No. 7, the facility without the pump-storage option, modification of Edison's Big Creek hydro system, combustion turbines, increased load management and conservation programs, and no project at all.

6. The alternatives considered, except the combustion turbines, while environmentally acceptable, would not provide Edison with a fast start-up peaking unit.

7. The proposed project is cost-effective when compared to combustion turbines.

8. The project will increase Edison's hydro capacity (a renewable resource) and reduce its dependency on oil and natural gas (nonrenewable resources).

9. In an average hydro year in which the 200-MW project will generate 206 gWh of energy, approximately 340,000 barrels of oil and gas will be displaced.

10. The added hydro generation will reduce hydrocarbon emissions in the south coast air basin by approximately 500 tons annually.

11. The added capacity from the project will provide Edison with flexibility to track rapidly changing daily load curves.

12. A 200-MW facility will enable Edison to take full advantage of the peaking potential of this resource.

13. A 200-MW facility will maximize the installed capacity and energy gain.

14. There is a question as to whether a 200-MW size for this facility is optimal.

15. Supplementary information regarding the proper size of the project is needed.

16. Further hearings should be held to provide Edison with the opportunity to supply more detailed information on the optimal size facility needed to meet system requirements.

17. Mitigation measures required to minimize the project impacts as contained in the Final EIR and in this opinion are reasonable and will be adopted.

18. The certificate granted should be conditioned on Edison's implementing the biological mitigation plan and cultural resources plan contained in the application and outlined by testimony at the public hearing.

19. Any effect on the environment is outweighed by the beneficial effects of the project to society.

20. The proposed project is essential to meet the future public convenience and necessity.

21. There is no evidence in the record and, therefore, no basis to grant the request of Cities that any certificate be conditioned on Edison's offering 50% participation in the project to other parties.

22. Effective monitoring of project costs requires implementation of a detailed cost control program, including the requirement that Edison submit to the Commission periodic reports on ongoing construction costs and projections, milestones of project scheduling, and other relevant information.

Conclusions of Law

1. A certificate of public convenience and necessity should be issued to Edison to build and operate a hydroelectric plant of up to 200-MW capacity at Balsam Meadow in Fresno County subject to the conditions in the following order.

2. Further hearings are required to determine what size facility is most cost-effective to enable Edison to meet its system requirements for peaking and load following.

3. Edison should be required to file projected load curves, and detailed estimates of capital and operating costs and operating characteristics for various project sizes up to 200 MW.

4. The Commission certifies that the Final EIR has been completed in compliance with the CEQA and the Guidelines. We have reviewed and considered the information contained in the EIR in reaching this decision. The Notice of Determination for the project is attached as Appendix A to this decision.

5. Potential environmental impacts have been or will be adequately mitigated by project design, proposed construction, and operation methods, modifications of the project during this proceeding, and by conditions imposed in the Final EIR and this opinion.

6. During construction, Edison should make and staff should evaluate periodic filings of Edison's construction costs.

7. The proposed project will have a significant effect upon the environment; however, such effect is outweighed by the beneficial effects of the project.

8. We have reviewed the record, the Final EIR, received on May 4, 1982, and the comments filed, and find that the project, subject to the mitigation measures set forth, will not produce an unreasonable burden on natural resources, esthetics of the area in

which the proposed facilities are to be located, public health and safety, air and water quality in the vicinity of park, recreational, and scenic areas, historic sites and buildings, or archeological sites.

INTERIM ORDER

IT IS ORDERED that:

1. A certificate of public convenience and necessity is granted to Southern California Edison Company (Edison) to construct and operate a hydroelectric powerhouse of up to 200-MW capacity with related facilities, including 4.5 miles of new transmission lines, at Balsam Meadow in Fresno County, as contained in the application as amended.

2. Further hearings will be held to determine the optimal facility size.

3. Edison shall provide the Commission within 45 days with a filing of projected load curves, and detailed estimates of capital and operating costs and operating characteristics for various project sizes up to 200 MW.

4. Subsequent to the final Commission order determining optimal facility size, Edison shall provide the Commission with the following:

   A. A quarterly report until the roll date for the project which contains:

      1. A periodic cost report at least quarterly reflecting:

         a. Monthly budgeted expenses.

         b. Actual monthly expenses.

         c. Budgeted total cost to date.

         d. Actual total cost to date.

         e. Total committed costs to date.

         f. Total budgeted costs for the project at completion.

         g. Forecast total costs for the project at completion.

2. S-curve graphs showing budgeted and actual project costs by month, and year-to-date.

3. An exhibit (similar to page 32-A of Exhibit 1) showing the major milestones of scheduling for major phases of the project.

4. A narrative explanation of the major accomplishments and problems occurring since the last report with special emphasis on any variance from budgeted expenses or construction schedules, and a description of Edison's progress towards the major milestones including an estimate of whether those milestones will be achieved within budgeted costs and on schedule.

B. A copy of the project management plan for Balsam Meadow.

C. A list of the major contracts executed for work on this project including a description of the work to be performed under each contract.

5. Edison shall make all filings ordered above as compliance filings with the Commission's Docket Office, filing an original and 12 conformed copies, and serve all parties of record with either the filing or a notice that the filing has been made and when a copy can be obtained from Edison. The compliance filings shall be part of the public record for this proceeding.

6. The Executive Director of the Commission shall file a Notice of Determination for the project, as set forth in Appendix A to this decision, with the Secretary of Resources.

7. Edison shall implement the biological mitigation plan and cultural resource plan contained in the application and updated at the public hearing.

This order shall become effective 30 days from today.

Dated JUN 4 1982, at San Francisco, California.

JOHN E. BRYSON
President
RICHARD D. GRAVELLE
LEONARD M. GRIMES, JR.
VICTOR CALVO
Commissioners

Commissioner Priscilla C. Grew, being necessarily absent, did not participate

I CERTIFY THAT THIS DECISION WAS APPROVED BY THE ABOVE COMMISSIONERS TODAY.

Joseph E. Bodovitz, Executive Director

Evidence and testimony were presented by Edison and the Commission staff. Cities of Anaheim and Riverside (Cities) and Sierra Association for Environment (SAFE) cross-examined some witnesses and filed briefs.

Testifying for Edison on the construction, operation, and need was William Emrich, project manager for hydro- and generation-related improvement projects; Terry E. Lutwen, transmission engineer; Vikram S. Budhraja, supervising planning engineer in system development; and Robert P. Haub, supervising regulatory cost specialist in revenue requirements. Environmental witnesses were Thomas T. Taylor, archeologist assigned to Environmental and Regulatory Affairs; David W. Stevens, senior terrestial biologist in Environmental and Regulatory Affairs; Warren S. Morse, supervisor of Hydrogeneration Operation and Maintenance; Norman E. Alstot, Fish and Game biologist; and Timothy B. Stell, environmental specialist responsible for coordinating the preparation of the various environmental documents.

Testifying for the Commission staff were Milton J. DeBarr, principal financial examiner, Revenue Requirements Division; and Higino G. Paula, head of the Electric Branch Service and Certification Unit. The staff's environmental witness was Joseph D. McMahon, associate utilities engineer.

Description of the Project

By this project Edison plans to add 200 megawatt (MW) of capacity and 200 gigawatt hours (gWh) of electricity per year to its system. The project is located between Huntington and Shaver Lakes approximately 45 miles northeast of Fresno. It will consist of an underground hydroelectric powerhouse and related facilities designed to accommodate future conversion to pump storage and approximately 4.5 miles of 220-kilovolt (kV) overhead transmission line. Flows of

flexibility, and decrease nitrous oxide and sulfur dioxide emissions in the south coast air basin by 500 tons per year.

The Utilities Division staff recommends that a certificate for the 200-MW configuration proposed in the application be granted. Paula's report states that if the project costs $235 million it would pay for itself purely from savings associated with oil displacement if the annual escalation rate of fuel oil prices is greater than 8.9%. (To put these figures in perspective, Paula cited a CEC Report which predicted that the annual fuel oil escalation rate for the period 1980-2000 would be 10.3% for distillate and 9.67% for residual oil.)

If the primary objective of the Balsam Meadow project is oil displacement, the Legal Division suggests that a 140-MW configuration should be more fully considered. Staff witness Paula sets forth approximate construction cost estimates for 100-MW, 140-MW, and 200-MW configurations for Balsam Meadow in his report. It is argued that these estimates suggest that a 140-MW configuration would generate 98.7% of the total energy produced by a 200-MW facility and thereby displace nearly as much oil. It states Paula's report suggests that a 140-MW facility would cost 74% as much as the 200-MW facility, and thus achieve greater savings, if any, from oil displacement. The incremental 60-MW associated with the 200-mw facility would therefore have to be justified on other grounds. SS In his report, Paula specifically addressed the issue of proper sizing of the Balsam Meadow facility.

Economics of the Project

Staff witness DeBarr stated that he believed Edison's cost estimation practices to be reasonable considering the nature of the project.

The staff concurs with Edison that electricity from Balsam Meadow would be less expensive than from a combustion turbine.

Staff witness Paula concluded that, assuming a construction cost of $235 million, the levelized cost of electricity from Balsam Meadow would be 23.96¢/kWh. If the cost of the project was $290 million, he stated the levelized cost would be 29.69¢/kWh. A comparison of the cost per kWh from various sources is contained on the following Table I.

4. A narrative explanation of the major accomplishments and problems occurring since the last report with special emphasis on any variance from budgeted expenses or construction schedules, and a description of Edison's progress towards the major milestones including an estimate of whether those milestones will be achieved within budgeted costs and on schedule.

C. A copy of the project management plan for Balsam Meadow.

D. A list of the major contracts executed for work on this project including a description of the work to be performed under each contract.

DeBarr also recommended that Edison and the staff meet on a periodic basis to discuss the status of the project.

It is the recommendation of the Utilities Division staff that the Commission issue a certificate of public convenience and necessity for the Balsam Meadow project as proposed in the application as amended. It concluded that the Balsam Meadow project is likely to be a cost-effective means of displacing oil. It also concluded that Edison needs additional capacity to replace existing oil-fired facilities and can reasonably use an additional 200 MW of peaking capacity. Finally it believes that the price of electricity from Balsam Meadow would be less expensive than from a combustion turbine.

The Legal Division staff does not believe that Edison has convincingly demonstrated that by 1987 it will have a need for the entire 200 MW of additional peaking capacity. It believes that even assuming Balsam is preferable to the alternatives presented, the Commission must address the questions of whether this is the right time to build such a project and whether 200 MW is the right size for such a project.

SAFE recommends that the application be denied and that the Commission approve only a minimum impact alternative.

Cities

Cities agree, that the public interest requires that the Balsam Meadow project be developed jointly by Edison and by other southern California power entities, including tax-exempt entities such as the Cities. They state that joint development will reduce the annual cost of the project by millions of dollars by reducing financing costs and will ensure that the benefits of developing a scarce and valuable resource like hydroelectric power are distributed to various segments of the power industry in southern California. Further, they state joint ownership will favor competition in the electric industry while issuing the certificate as requested for sole ownership by Edison will only strengthen Edison's control of generation resources, especially hydro resources, in the State. They recommend that the Commission provide for a jointly owned Balsam Meadow project by requiring Edison to offer Cities and other entities located in its service territory the opportunity to participate in up to 50% of the project.

Cities state that the Commission should consider the lower costs of joint ownership in determining whether a certificate should be issued. They state that joint ownership distributes a scarce resource to the public, and that the advantages are clear: lower cost, wider distribution of the resource, and promotion of competition. Quoting Northern California Power Agency v Public Utilities Commission (1971) 486 P 2d 1281, Cities state the Commission must factor into its determination of the public interest in issuing a certificate of public convenience and necessity the potential anticompetitive effect of foreclosing Cities from participation.

Finally, Cities allege that Edison has refused to entertain Cities proposal that the project be shared on a 50-50 basis. Cities state that the scarcity of hydro sites of the magnitude of the Balsam Meadow project and the inherent quality of those sites from the environmental viewpoint as well as the attractiveness of its peaking capability require special attention to the effects of granting a certificate exclusively to Edison where it is a dominant hydro licensee.

Discussion

Critical in this proceeding is a determination of whether the project is needed. Edison states that the unit will be used as a peaking resource. Its resource plan calls for 2,339 MW of nuclear capacity, 1,421 MW of noncapital or purchased power resources, and 2,096 MW of renewable and alternative resources. It plans for 744 MW of hydro power of the total planned 2,096 MW of renewable and alternative resources. Because approximately 75% of the planned capacity additions for the 1980s are to be from resources that are not designed for and/or capable of load-following operations, Edison will need units such as Balsam Meadow for quick-start and load-following capabilities for effective system operation.

In addition to aiding Edison in meeting its demand requirements, the Balsam Meadow project will reduce the dependence on oil for substitution with a renewable resource. As explained by Edison's witness, in 1980, 55% of its energy production came from expensive low-sulfur oil and natural gas, the equivalent of 62 million barrels of oil. With the lower operating costs (no fuel costs) of Balsam Meadow, system oil and gas resources can be preferentially operated, assuring displacement of approximately 340,000 barrels of oil.

Correlating to the displacement of oil are the environmental benefits associated with the project. The Balsam Meadow project will reduce NOx emissions by 225 tons/year, SOx by 275 tons/year, and particulates by 30 tons/year for a total of more than 500 tons.

Important, too, is the estimated cost of the proposed project. Edison's revised estimated cost of $290 million is approximately 23% over the $235 million in the application. Edison's explanation that this change is the result of revised engineering plans, more specific cost estimation, increase in AFUDC resulting from change in the planned cash flow, and inclusion in the cost estimate of upgrading some transmission lines to carry Balsam Meadow's power, is reasonable. Moreover the staff witness testified he had reviewed Edison's cost estimation practices and found them to be reasonable considering the nature of the project.

Looking at the Balsam Meadow project at the proposed 200 MW size, we believe the revised estimated cost is reasonable when compared with combustion turbines.

We believe that the cost and need estimates of the project were given and analyzed in good faith. Yet ~~the combination of rapidly~~ changing energy ~~realities~~ coupled with our year-long approval process can lead to questions about data developed in the proceeding. We can and do grant a certificate of public convenience and necessity for a hydroelectric power plant at Balsam Meadow based on the record before us. To assure that the ratepayers receive the maximum possible benefit of a project at Balsam Meadow, we shall grant this certificate for a facility not to exceed 200 MW capacity and shall direct the company and our staff to more fully explore the optimal sizing of the facility which would provide for the most cost-effective system operation.

As noted earlier, Edison bases the need for the Balsam Meadow project on four grounds. Two of those are clearly met: reduced dependence on oil by use of a renewable resource and reduced air emissions in the south coast air basin. However, a smaller plant may meet these two important objectives to nearly the same extent but at a substantially lower cost.

The record is unclear on the other two grounds stated by Edison as supporting the need for the plant: meeting system

requirements and developing load following capacity. These two objectives tend to overlap in this application. The system requirements Edison refers to appear to include a combination of oil displacement and peaking capacity. Insufficient evidence was developed in the record regarding the cost-effectiveness of the incremental capacity beyond that needed to displace oil and gas. The record is not clear on the importance of this incremental capacity for load following purposes. Further, to use the incremental capacity at Balsam to meet system peaks is one form of load following. The record shows, however, that to accomplish this will reduce the capacity of Balsam to follow "shoulder" or intermediate loads. A smaller plant could follow shoulder loads by extending the duration of flow of daily water supplies. The record provides no guidance as to which loads Edison intends to meet with Balsam nor which loads Balsam is most economically suited to meet. Equally important is the absence from the record of projected hourly load curves for 1987 and beyond. Our staff found need for Balsam at the peak by analyzing 1980 and 1981 load curves. If Edison's aggressive load management programs are even moderately successful, Edison's hourly load curve is likely to be somewhat flatter during the years in which Balsam will operate. A better understanding of these load questions is critical to a prudent decision on the size of the facility.

While we recognize the importance of this project in reducing Edison's reliance on oil and gas for generation, we must be diligent to displace oil and gas in the most economical way possible. We see no benefit to the ratepayers in denying this application. This would only delay pursuit of the important public policy to reduce use of oil and natural gas for electric generation. A hydroelectric facility at Balsam Meadow can be a cost-effective means to reduce Edison's use of oil and gas. All that is needed is supplementary information to resolve doubts as to what size of facility would optimize the benefits to ratepayers.

Therefore, we shall grant the certificate and hold supplementary hearings to resolve questions that have been raised about optimal sizing of the Balsam Meadow project. This will permit Edison to provide more detailed information on the load issues that have been noted and more precise project cost estimates that have been approved by the company. This will also permit our staff to evaluate the ~~role~~ of expanding conservation and load management programs ~~on~~ the sizing of the facility.

While subsequent hearings may well be necessary to consider revised information from Edison, we intend to limit these hearings to issues on the size of the project. Simple downsizing of the project that might result would have the effect of reducing any environmental impacts from levels that we have already found reasonable. Therefore, we conclude that further consideration of environmental issues would be superfluous ~~unless~~ Edison or staff proposes a significant reconfiguration of the project.

It is not our role to manage utility construction programs and we do not seek that end here. It is our role to protect ratepayers and ensure that rates reflect reasonable costs. By obtaining fuller need and cost information which will enhance our ability to evaluate the prudency of project costs, and by enhancing utility cost control incentives through new cost-monitoring mechanisms, we are taking steps aimed at fulfilling this regulatory responsibility.

As recommended by the Commission staff, approval of the project requires that a cost control program be implemented. This program would include cost tracking and quarterly reports to this Commission. Quarterly reports should include such items as monthly budgeted expenses, actual monthly expenses, budgeted total cost-to-date, actual total cost-to-date, ~~total~~ committed cost-to-date, total budgeted costs for the project at completion, and forecast total costs for the project at completion. The report should also contain budgeted and actual project costs by month and year-to-date, an exhibit showing major milestones of scheduling for major phases of the project, and a narrative of the accomplishments and problems occurring since the last report.

Edison should also provide the Commission with a copy of the project management plan and a list of the major contracts executed for work including a description of the work to be performed under each contract.

There is a possibility that substantial cost overruns may affect the project's cost-effectiveness. If a 200-MW plant is built, we will limit the rate base treatment to the adopted cost estimates since these are the figures used to justify the project cost, absent a strong showing by Edison that higher costs were reasonable. However, we view the adopted cost estimate as reasonable only for a 200-MW facility. If, after hearing, it is determined that a smaller facility should be built, we would expect that the cost estimates adopted for a smaller facility would be lower.

We are unable to accommodate Cities' request that any certificate issued be conditioned on Edison's making 50% of the project's power available to other public and private entities. We recognize that participation by any entity or group would reduce the overall investment of Edison. However, despite Cities' participation in the proceeding Cities failed to raise this issue in hearings and no direct testimony relative to this issue was presented for our consideration. Further, the issue of who ultimately gets a license to develop the hydroelectric resource is within the jurisdiction of the Federal Energy Regulatory Commission (FERC). ~~Cities should pursue their request for participation in that forum.~~ A license from FERC is all Cities need; no certificate from this Commission is necessary. Nor can this Commission grant a certificate to Cities over whom we have no jurisdiction. As FERC will be the ultimate forum to decide Cities' request, and given the state of our evidentiary record on Cities' proposal, ~~we have no choice but~~ it is appropriate to deny their request.

Environmental Considerations

The environmental consequences of constructing the project include the permanent use of approximately 97 acres of land for the forebay, access roads, parking areas, transmission towers, and related facilities that otherwise would remain in a natural state. In addition, operation of the project will require diversion of existing flows to the forebay reducing the level of flows in the two-mile reach of Stevenson Creek below Tunnel No. 7's outlet.

A comprehensive record on environmental matters was developed in this proceeding through issuance of a Draft EIR, consultation with public agencies and others, and public hearings. All are elements in the environmental process which culminated in the issuance of the Final EIR.

In compliance with Rule 17.1 of the Commission's Rules of Practice and Procedure, Edison prepared the Proponent's Environmental Assessment (PEA), submitted as part of the pending application, describing its study and environmental rationale for supporting the project. Regulatory decision-making at the state level must comply with environmental review laws. The environmental impact document on the proposed project has been designed to meet the state requirements of CEQA. A staff engineer sponsored the Draft EIR on the Balsam Meadow project at our hearing.

We have carefully considered the evidence on environmental matters contained in the Final EIR and make findings under § 21081 of the Public Resources Code. We further find that granting the application, subject to the mitigation measures contained in the EIR, will not produce an unreasonable burden on natural resources, esthetics in the area in which the proposed facilities are to be located, public health ~~and~~ safety, air ~~and~~ water quality in the vicinity, recreational ~~and~~ scenic areas, or historic sites ~~and~~ buildings, or archeological sites.

We believe two subjects regarding environmental considerations deserve further comment.

We agree with the Commission staff that the draft memorandum of understanding between Edison and the Department of Fish and Game and Edison's proposed cultural mitigation plan adequately mitigate any adverse impacts on biological and cultural resources to the extent feasible. We also agree that the certificate should be conditioned upon Edison's implementing both a biological mitigation plan and a cultural resources mitigation plan substantially in conformance with the most recent plans described in the application.

Findings of Fact

1. Edison requests a certificate of public convenience and necessity to construct and operate a 200-MW hydroelectric power plant with related facilities at Balsam Meadow in Fresno County.

2. The proposed facility will provide greater operational flexibility for its system.

3. The estimated cost of $290,000,000 for the 200-MW power plant and related facilities including transmission line is reasonable.

4. The facility is to be constructed with the potential for conversion to a pump-storage operation.

5. Alternatives suggested to the construction of the 200-MW facility include the option to build either a 100-MW or a 140-MW plant, pressurization of Tunnel No. 7, the facility without the pump-storage option, modification of Edison's Big Creek hydro system, combustion turbines, increased load management and conservation programs, and no project at all.

6. The alternatives considered, except the combustion turbines, while environmentally acceptable, would not provide Edison with a fast start-up peaking unit.

7. The proposed project is cost-effective when compared to combustion turbines.

8. The project will increase Edison's hydro capacity (a renewable resource) and reduce its dependency on oil and natural gas (nonrenewable resources).

9. In an average hydro year in which the 200-MW project will generate ~~200~~ 6 GWh of energy, approximately 340,000 barrels of oil and gas will be displaced.

10. The added hydro generation will reduce hydrocarbon emissions in the south coast air basin by approximately 500 tons annually.

11. The added capacity from the project will provide Edison with flexibility to track rapidly changing daily load curves.

12. A 200-MW facility will enable Edison to take full advantage of the peaking potential of this resource.

13. A 200-MW facility will maximize the installed capacity and energy gain.

14. There is a question as to whether a 200 MW-size for this facility is optimal. ~~The objectives of meeting system requirements and developing load following capacity tend to overlap in this proceeding.~~

15. Supplementary information regarding the proper size of the project is needed.

16. Further hearings should be held to provide Edison with the opportunity to supply more detailed information on the optimal size facility needed to meet system requirements.

17. Mitigation measures required to minimize the project impacts as contained in the Final EIR and in this opinion are reasonable and will be adopted.

18. The certificate granted should be conditioned on Edison's implementing the biological mitigation plan and cultural resources plan contained in the application and outlined by testimony at the public hearing.

19. Any effect on the environment is outweighed by the beneficial effects of the project to society.

20. The proposed project is essential to meet the future public convenience and necessity.

21. There is no evidence in the record and, therefore, no basis to grant the request of Cities that any certificate be conditioned on Edison's offering 50% participation in the project to other parties.

22. Effective monitoring of project costs requires implementation of a detailed cost control program, including the requirement that Edison submit to the Commission periodic reports on ongoing construction costs and projections, milestones of project scheduling, and other relevant information.

Conclusions of Law

1. A certificate of public convenience and necessity should be issued to Edison to build and operate a hydroelectric plant of up to 200-MW capacity at Balsam Meadow in Fresno County subject to the conditions in the following order.

2. Further hearings are required to determine what size facility is most cost-effective to enable Edison to meet its system requirements for peaking and load following.

3. Edison should be required to file projected load curves, and detailed estimates of capital and operating costs and operating characteristics for various project sizes up to 200 MW.

4. The Commission certifies that the Final EIR has been completed in compliance with the CEQA and the Guidelines. We have reviewed and considered the information contained in the EIR in reaching this decision. The Notice of Determination for the project is attached as Appendix A to this decision.

5. Potential environmental impacts have been or will be adequately mitigated by project design, proposed construction, and operation methods, modifications of the project during this proceeding, and by conditions imposed in the Final EIR and this opinion.

6. During construction, Edison should make and staff should evaluate periodic filings of Edison's construction costs.

7. The proposed project will have a significant effect upon the environment; however, such effect is outweighed by the beneficial effects of the project.

8. We have reviewed the record, the Final EIR, received on May 4, 1982, and the comments filed, and find that the project, subject to the mitigation measures set forth, will not produce an unreasonable burden on natural resources, esthetics of the area in which the proposed facilities are to be located, public health and safety, air and water quality in the vicinity of park, recreational, and scenic areas, ~~or~~ historic sites and buildings, or archeological sites. SS

INTERIM ORDER

IT IS ORDERED that:

1. A certificate of public convenience and necessity is granted to Southern California Edison Company (Edison) to construct and operate a hydroelectric powerhouse of up to 200-MW capacity with related facilities, including 4.5 miles of new transmission lines, at Balsam Meadow in Fresno County, as contained in the application as amended. Further hearings will be held to determine

2. ~~The certificate granted is conditioned on refinement of~~ the optimal facility size ~~in further hearings.~~

3. Edison shall provide the Commission within 45 days with a filing of projected load curves, and detailed estimates of capital and operating costs and operating characteristics for various project sizes up to 200 MW.

4. Subsequent to the Commission order ~~finalizing~~ facility size, Edison shall provide the Commission with the following:

   A. A quarterly report until the roll date for the project which contains:

      1. A periodic cost report at least quarterly reflecting:

         a. Monthly budgeted expenses.

         b. Actual monthly expenses.

         c. Budgeted total cost to date.

         d. Actual total cost to date.

         e. Total committed costs to date.

         f. Total budgeted costs for the project at completion.

         g. Forecast total costs for the project at completion.

      2. S-curve graphs showing budgeted and actual project costs by month, and year-to-date.

3. An exhibit (similar to page 32-A of Exhibit 1) showing the major milestones of scheduling for major phases of the project.

4. A narrative explanation of the major accomplishments and problems occurring since the last report with special emphasis on any variance from budgeted expenses or construction schedules, and a description of Edison's progress towards the major milestones including an estimate of whether those milestones will be achieved within budgeted costs and on schedule.

B. A copy of the project management plan for Balsam Meadow.

C. A list of the major contracts executed for work on this project including a description of the work to be performed under each contract.

5. Edison shall make all ~~ordered~~ ordered above filings as compliance filings with the Commission's Docket Office, filing an original and 12 conformed copies, and serve all parties of record with either the filing or a notice that the filing has been made and when a copy can be obtained from Edison. The compliance filings shall be part of the public record for this proceeding.

6. The Executive Director of the Commission shall file a Notice of Determination for the project, as set forth in Appendix A to this decision, with the Secretary of Resources.