ALJ/LEM/pc

Decision 90 05 033 MAY 4 1990

BEFORE THE PUBLIC UTILITIES COMMISSION OF THE STATE OF CALIFORNIA

| | |
|---|---|
| In the Matter of the Application of SOUTHERN CALIFORNIA EDISON COMPANY (U 338-E) for: (1) Authority to increase the safe annual yield of the Santa Catalina Water System to 600 acre-feet per year; and (2) to modify certain non-rate terms of the Santa Catalina Water Tariff. | Application 89-12-019 (Filed December 12, 1989; amended December 28, 1989) |

Florence Pinigis, Attorney at Law, for Southern California Edison Company, applicant.
Daniel R. Paige, for Water Utilities Branch of the Commission Advisory and Compliance Branch.

## O P I N I O N

By this application Southern California Edison Company (SCE) seeks Commission authority to increase the volume of water it can produce and sell on Santa Catalina Island (the island).

Water availability from the island's integrated system is determined by what is termed the safe annual yield. The present value is 499 acre feet. This includes 372 acre feet from a mountain reservoir, plus the contribution of eight wells. SCE proposes to increase the safe annual yield to 600 acre feet. This will be accomplished principally through construction and operation of a desalination plant, which will contribute 85 acre feet annually. The remaining 16 acre feet will be furnished by an additional well, the Toyon Canyon Well.

The desalination plant will operate using the reverse osmosis (RO) principle. This process continuously places seawater, from wells near the shore of the San Pedro Channel, under pressure

along one side of a minutely porous membrane. Gradually, fresh water works its way through the membrane and collects on the other side, leaving salt and other impurities in solution. After about 25 percent of the original saltwater solution is converted into fresh water, the balance is returned to the ocean.

A duly noticed public participation hearing (PPH) was conducted in Avalon on April 4, 1990. Between 40 and 50 customers attended the PPH. Sixteen customers addressed the record, all urging expedited Commission approval of the application. Statements were offered by the Mayor and Vice Mayor of Avalon, by City Council members, a Chamber of Commerce representative, and by business entrepreneurs and other members of the island community residing principally in Avalon. The correspondence portion of the formal file contains ten letters from customers urging our granting of SCE's application. All of those who spoke emphasized the seemingly perennial drought conditions besetting the island. Attention was called to the almost 100 percent tourism-oriented economy of the island. An evidentiary hearing was held before Administrative Law Judge (ALJ) John Lemke in Avalon on April 5. At the conclusion of evidentiary hearing, SCE and the Water Utilities Branch of the Commission Advisory and Compliance Division (Branch) jointly waived the 30-day comment period on the ALJ's proposed decision, as provided in Public Utilities Code § 311(d).

Background

This application is the culmination of a decade of continuing conversations, negotiations, studies, proposals, and counterproposals between SCE and the developer of the Hamilton Cove condominium development just north of Avalon, since the original allocation of 26 acre feet annually for 165 units authorized by Commission Decision (D.) 89190, dated August 8, 1978.

The developer, Hamilton Cove Associates (HCA), is seeking allocation of additional fresh water to complete its buildout of 425 residential units. Because the island water system, owned and

operated by SCE, does not have sufficient fresh water resources available at this time to serve additional customers, the developer has contracted with SCE to contribute a RO desalination plant with a fresh water production capacity considerably in excess of the needs of the development. The excess will be available for allocation to other applicants for service.

Interim D.90265, dated May 8, 1978 in Application (A.) 58485, ordered that (1) SCE could provide service on a "first-come-first-served basis", and (2) authorized SCE to file by advice letter for further removal of customer restrictions as shifts from fresh water to salt water sanitation occur, or for other good cause, that would result in additional fresh water becoming available.

By letter dated June 1, 1989, SCE proposed an advice letter filing to obtain Commission approval of an increase in the safe annual yield that would result from operation of the proposed desalination plant on the island.

By letter dated June 9, 1989, SCE's proposed advice letter was denied on the basis that Ordering Paragraph 9 of D.90265 required that the long-range water supply resources and potential system demands on the island "shall be further explored in public hearings to be held on this application". The letter also pointed out that the existing "first-come-first-served" procedure would have to be reconsidered by the Commission in order to allow an allocation to a developer in return for his having provided an additional fresh water resource. SCE then prepared the present application, requesting both an increase in the safe annual yield of the system and revision of the allocation rules to accommodate developers or other entities that provide additional fresh water resources.

Evidence

SCE

Keith LeFever, District Manager of SCE's water, gas, and electric utility operations on the island, testified in support of applicant's request to (1) increase the safe annual yield from 499 acre-feet per year (AF/yr) to 600 AF/yr; (2) allocate the safe annual yield as follows: HCA 78.59 AF, California Coastal Commission (CCC) 12.41 AF, and SCE customers 10.00 AF; and (3) to incorporate in its water tariff the "first-come-first-served" procedure approved by the Commission in D.90265, and to modify that procedure with respect to developers of fresh water resources on the island.

LeFever's testimony, contained principally in Exhibit 1, is essentially as follows:

1. SCE supplies water on the island as follows:

| End of Year 1988 Customers | | Sales (In Gallons) |
|---|---|---|
| Residential | 1,485 | 119,603,600 |
| Commercial | 127 | 27,122,400 |
| Public authorities | 3 | 1,650,200 |
| Total | 1,615 | 148,376,200 |

2. All water is collected through a series of canyons, reservoirs, and wells. Fresh water availability is a direct consequence of rainfall. On occasion, SCE has attempted cloud seeding to assist in the production of rainfall.

3. As a result of prolonged below normal rainfall, a severe drought occurred during 1976-1977. SCE declared a water shortage, and the Commission approved a Rationing Plan in Resolution No. W-2122, effective May 17, 1977.

4. During periods of normal rainfall, SCE's water system can achieve the Commission authorized annual delivery of 499 AF. Without additional sources of water, rationing will likely be imposed in the

future in direct correlation with below average rainfall.

5. The Commission authorized 499 AF/yr as the amount of water that can be withdrawn without depleting system water. This annual yield was established by Commission Resolution No. W-2741, dated November 18, 1980. The sources of this current authorized level are:

| | AF/yr |
|---|---|
| Middle Ranch Reservoir | 372 |
| Cottonwood Canyon Well | 52 |
| Howland's Landing Well | 32 |
| Poultry Farm Tunnel | 7 |
| Golflinks Tunnels (2) | 3 |
| Bullrush (3) | 24 |
| Eagle's Nest Well | 32 |
| Sweetwater Well | 13 |
| St. Catherine's Well | 16 |
| Total Production | 551 |
| Leakage | (52) |
| Safe Annual Yield | 499 |

5. Pursuant to D.90265, SCE established a procedure to provide water service on a "first-come-first-served" basis. Water is allocated to new developments from the SCE-maintained "Proposed Developments - Estimated Water Requirements and Net Water Available" list, also known as the "Intent to File" list. Pursuant to City of Avalon Ordinance No. 651, adopted October 16, 1978, customers seeking a new or increased allocation are entered on the "Intent to File" list. Section 1 of the Ordinance requires that applicants for building projects creating addition transient or living units must obtain from SCE a statement of water availability prior to obtaining approval for a project.

6. This allocation procedure has been in effect for over ten years. SCE urges incorporation of the procedure into SCE's tariff, along with provisions permitting allocation of water outside the "first-come-first-served" to developers of additional fresh water supplies or to

governmental entities where there is a public need or necessity requiring water allocation. This would permit SCE to allocate water to HCA to insure construction of its proposed desalination project.

7. SCE has recognized the need for new sources of fresh water for some time. New wells and desalination plants have been considered, but the capital expenditures required are great in relation to the system depreciable plant value of approximately $4 million at the end of 1988. Nearly all cost-effective island resources have been developed. Remaining undeveloped resources could cost from $150,000 to about $1 million. The development of additional wells would be accompanied by major changes in the cost of water.

8. In view of the island's dependence on precipitation from fluctuating weather cycles, customers would be better served from an integrated water system, supported by both natural and mechanical water resources.

9. Customers will benefit from the proposed construction and operation of the desalination plant because (1) a fresh water/desalination system can partially eliminate future droughts and postpone the need for rationing, (2) the proposed desalination facility will provide for a degree of water system redundancy, reliability, and integrity since it produces water by mechanical means, and (3) the development of the desalination facility, with subsequent delivery to SCE through contribution-in-aid-of-construction, will provide island customers with a new source of water without a capital outlay on the part of SCE.

10. HCA desires to complete its total buildout of Hamilton Cove to 425 condominiums. HCA has completed 138 of those units and has previously received a water allocation

therefor. As an alternative to waiting for an allocation via the first-come-first-served procedure, HCA decided to construct a RO desalination facility. HCA has no interest in the operation of such a plant, but must be assured that the water requirements of purchasers of the condominium units will be met.

LeFever states that while at the time of the filing of his prepared testimony the contract between HCA and SCE was unsigned, major contract terms had been established. Some of the more significant features of the contract are as follows:

1. HCA to fund all capital costs associated with the engineering, construction, licensing, and installation of the plant, including all equipment necessary for interconnection with SCE's system. Costs are estimated at $2.0 to $2.5 million.

2. SCE will conduct reliability tests and, upon acceptance, HCA will transfer all rights, title, and interest to SCE as contributions-in-aid-of-construction.

3. HCA will reimburse SCE for all income taxes associated with the contributions at a rate of 28 percent of the actual installed plant cost.

4. HCA will advance to SCE the present value of a one-time future plant replacement cost for all mechanical/electrical systems.

5. HCA will provide a full maintenance and service agreement for two years, plus a one-year agreement, whereby the manufacturer of the actual RO units will provide for training of SCE personnel in the proper operation of the plant.

6. Average annual capability of the desalination plant is warranted to be no less than 132,000 gallons of fresh water per day on annual average, which is equivalent to 145 AF/yr.

7. SCE will operate the plant in any manner it deems fit, subject to manufacturer's specifications.

8. HCA shall receive an allocation of 75 AF/yr to be assigned to users designated by HCA and consistent with Commission water tariffs approved for SCE.

9. After five years, if any of the 75 AF/yr which HCA has been allocated has not been assigned to users, it may be allocated by SCE to other SCE customers.

10. HCA, assisted by SCE, shall obtain necessary permits for the plant.

11. HCA warrants that the plant will reliably operate at a rate which allows the production of potable water, in the amount of 132,000 gallons per day (GPD), for a period of two years after SCE accepts the plant as a contribution-in-aid-of-construction. SCE has the right to operate the plant at any level to supplement the natural water supply to meet the needs of island customers.

12. Prior to acceptance, SCE will conduct detailed tests to insure that the production level is achievable. After one year of operation, an Operational Test will be conducted to determine if the system meets all technical objectives, including the rated production of 132,000 GPD.

13. HCA warrants that it will provide sufficient saltwater input to the plant to meet the warranted output level, even if this requires the development of additional seawater wells whose capacity will equal three times the input requirements of the desalination plant for 132,000 GPD operation levels.

LeFever stated that in order to complete the next phase of condominium units at Hamilton Cove, HCA sought CCC approval of

the project. On May 20, 1981, CCC issued Order A-55-80, stating as follows:

> "9) Freshwater Resources Prior to issuance of the permit, the applicant shall submit a program for the review and approval of the Executive Director outlining a specific means to augment the existing freshwater supply on Santa Catalina Island by a minimum of 12.41 acre-feet. ('Existing freshwater supply' shall be interpreted to include that amount certified by the State Public Utilities Commission (PUC) as part of the existing water supply as a result of the Southern California Edison report filed with the PUC dated June 2, 1980). Best efforts shall be made by the applicants to restrict use of water resulting from this program for the development of low and moderate income visitor-serving facilities on the island. In any event, water resulting from the program shall be available for use prior to the close of escrow for sale of the final 90 condominium units."

LeFever noted that HCA filed CCC A.5-88-278 on June 1, 1988, seeking a permit for construction of the Toyon Canyon Well and facilities connecting the output of the well to the SCE system. This well is intended to satisfy the CCC order to provide 12.41 AF/yr to the CCC. The Toyon Canyon Well received a permit from the California Division of Health Services (DHS) and is now operational.

LeFever further testified that in setting the current safe annual yield at 499 AF/yr, the Commission took into consideration four additional wells, two of which are operational, two to become operational in 1990. The desalination project, he asserts, has the nameplate capability to produce 145 AF/yr, and such an average annual production level is warranted by HCA for the first two years of operation. He notes, however, that SCE is seeking approval of an increase in the annual yield of only 85 AF/yr based on the production from the desalination project. The allocation of 75 AF/yr from the project, plus 3.59 from the Toyon

Canyon well, plus a residual water allocation from the HCA Phase I construction of 3.743 provides HCA with 82.333 AF/yr. This allocation is necessary to assure construction of the desalination plant. Based upon LeFever's calculations, these allocations are necessary to supply HCA with the required water to complete the Hamilton Cove project. This allocation to HCA, LeFever emphasizes, will still provide (potentially) 70 AF/yr of additional fresh water to SCE as a result of the desalination project.

LeFever notes that while there is a clear demonstrable need for additional fresh water resources on the island, SCE is only requesting a change in the safe annual yield of 10 AF for allocations to new water customers waiting on the "Intent to File" list due to the desalination project. There are three specific reasons for this limited request:

1. Ten AF/yr will satisfy the requirements of the next ten projects on the SCE Fresh Water Allocation List.

2. The next project requires five to seven AF/yr--a large allocation. SCE now proposes that a very conservative allocation be approved. After experience is gained with the desalination facility, additional allocations can be considered.

3. No project will then remain on the list whose initial request date was earlier than 1986. Thus, the longest waiting time will be no longer than four years.

With respect to the Toyon Canyon Well, LeFever emphasizes that CCC Order A-55-80 directs that 12.41 AF/yr of the well output be assigned to the Director of CCC, who will allocate the water to recreational and/or visitor-serving facilities. The witness professes that HCA developed the Toyon Canyon Well at its sole expense, and provided for well output to be entered into the SCE system. Thus, he notes, the remaining 3.59 AF/yr of the 16 AF/yr output will be allocated to HCA. The 3.59 AF is not intended to be

a temporary allocation to HCA, but will be added to the allocation of 75 AF of the desalination plant after it is completed.

In sum, LeFever states that the effect of increasing the safe annual yield based on the desalination plant and the Toyon Canyon Well is:

| | AF/yr |
|---|---|
| Current Safe Annual Yield | 499 |
| Desalination Project | |
| HCA | 75 |
| SCE first-come-first-served list | 10 |
| Toyon Well Canyon Well | |
| CCC | 12.41 |
| HCA | 3.59 |
| | 600 |

LeFever maintains that all water, natural and that mechanically produced, will be integrated into the SCE system, treated, distributed, metered, and billed. Thus, even though a portion of the total production is dedicated, it does contribute to the safe annual yield for the fully integrated island system.

LeFever also urges that the Commission approve proposed tariff modifications that will enable allocations to be made to HCA and the CCC as described above. These tariff revisions are needed, the witness alleges, to (1) reflect SCE's experience in administering a first-come-first-served procedure that has been in effect for over ten years, (2) to provide developers of new fresh water supplies with some or all of the water developed, (3) to meet public needs and necessities, and (4) to incorporate allocation procedures for use during periods of rationing.

Finally, in Exhibit 1 LeFever urges that an increase in the safe annual yield to 515 AF be made effective as of the date of the Commission's decision on this application, since the Toyon Canyon Well, with 16 additional AF, is now operational.

Exhibit 2, also sponsored by LeFever, contains the agreement between HCA and SCE for the construction and installation of the desalination plant.

A second SCE witness, C. L. W. Overduin, a senior engineer with SCE's Engineering, Planning, and Research Department, sponsored Exhibit 3, containing a description and projected costs of the desalination plant.

Overduin testified essentially as follows with respect to the technical validation of the project:

The Pebbly Beach water plant is to be an RO seawater desalination facility capable of producing 132,000 GPD of potable water from seawater. The plant will be built on the current SCE Pebbly Beach Generating Station site and consists of the following major systems and facilities:

- Two full capacity seawater wells and well pumps.
- Seawater filters complete with backwash system.
- Four RO units.
- Product water conditioning systems.
- Product water booster pump station.
- Building for RO units, filters, and water treatment systems.

Overduin's description of the plant is set forth below for the readers of this decision who may not be aware of this very interesting and increasingly popular method of rendering non-potable water suitable for use in water-scarce areas of the world.

"B. Plant Description

"1. Seawater Wells

Two 100 feet deep seawater wells will be installed near the shore to provide seawater feed to the RO units. Each well will be sized to provide three

times the required full load seawater needs of the plant. The oversizing of the wells is a precaution against possible well capacity declining over time. Each will be equipped with a 380 gallons per minute (GPM) well pump capable of supporting full plant load operation. The well pumps discharge the seawater into the seawater media filters.

"2. Seawater Media Filters

"The seawater received from the wells is treated in three single media filters sized to reduce the seawater silt density index to 5 or less. The filter system is equipped with a backwash pump and piping to facilitate cleaning of the filters.

"3. RO Units

"From the filters, the seawater is directed to four skid-mounted RO units. Each unit is equipped with cartridge filters and high-pressure pumps which raise the seawater pressure to approximately 900 pounds per square inch gauge (psig). The high-pressure seawater is piped through spiral wound thin filament membranes which are contained within fiberglass pressure vessels. The fresh water diffused through the membrane is collected and forwarded to the product water treatment system. About 75 percent of the seawater flow is rejected and is returned to the ocean.

"Three of the four RO units have a capacity of 40,000 GPD. The fourth unit is capable of producing 12,000 GPD.

"All units are equipped with a membrane cleaning system.

"4. Water Conditioning Facilities

"The RO product water is potentially corrosive to steel because of its low hardness, alkalinity, and pH. Therefore, lime will be added to the RO water to raise the hardness and alkalinity. In addition, $CO_2$ will be added to balance the pH which will rise as a result of the lime addition. The lime injection system consists of a lime mixing tank and injection pumps. The liquid $CO_2$ is stored in a refrigerated $CO_2$ tank. It is vaporized and then injected via a flow regulator and injection nozzle.

"The product water is further treated with a disinfectant, chlorine gas, which is stored in cylinders and metered into the product water.

"The treated water flows to the product water tank and booster pump station.

"5. Booster Pump Station

"The treated product water flows to a 4,000 gallon product water tank which serves as surge and suction tank for the booster pumps. The booster pumps serve to raise the product water pressure to approximately 145 psig, permitting the RO water to be discharged into the existing 10-inch water main located just outside of the Pebbly Beach Generating Station. Each pump is sized to forward the total output of the water plant to the water main.

"6. RO Building

"The seawater filters, RO units, lime and chlorine systems, as well as the electrical motor control center, are enclosed by a prefabricated metal frame building. The building provides weather protection for sensitive equipment and operators." (Exhibit 3, Attachment A.)

Overduin states that the RO water will flow through the existing 10-inch water main to the present system. He testified that based on his review of RO technology, plant design specifications, and on-site inspection of similar units, he is confident that the proposed facility can produce a maximum annual water supply of 145 AF/yr. The witness emphasized that each RO unit needs to be operated near or at full capacity. Since the plant has one 12,000 GPD unit and three 40,000 GPD units, the facility can be operated effectively at seven production rates. Considering the holding capacity of the current reservoirs and tanks and the favorable economics of full-capacity water production, he maintains, operation at maximum or near maximum production capacity for months at a time is the anticipated plant operating mode. The frequency and length of each operating run will be determined on the basis of historical consumption patterns and long-term weather forecasts.

Concerning the projected costs of desalination plant water, Overduin states that the four separate units within the facility may be operated independently. He has assumed six different operating scenarios with each requiring that all four units be operated concurrently over a range of several months. Since the requested increase is for 85 AF/yr attributable to the proposed desalination facility, one boundary condition of the cost study is the continuous operation of all units for seven months. This scenario provides an annual output of 85 AF/yr. However, Overduin has also calculated costs for conditions ranging from 8 through 12 months.

The witness states that the RO plant operating costs consist of variable costs including electrical power, membrane, and filter replacement and chemical costs. In addition, the plant operation will incur certain fixed costs, such as equipment replacement (assumed to be fixed so as to present a conservative cost showing), operating personnel, taxes, and insurance. Overduin

has used the current costs for detergent, filters, membranes, chlorine, lime, and carbon dioxide. Power costs are about 60 percent of total operating costs for the 7 likely operating scenarios. The power costs have been computed based on the current SCE Electric Rate, PA-2 (February 1, 1989). Overduin's calculations show that total production costs for the desalination plant will vary from $5.57/1,000 gallons to $6.76/1,000 gallons as the operational period varies from 12 to 7 months of operation, assuming all 4 units operate concurrently. The operating cost analysis presented by Overduin is reproduced in the following table:

PEBBLY BEACH RO PLANT OPERATING COST ANALYSIS

WATER PRODUCTION PER YEAR IN ACF/YEAR

| RO UNIT RATING GALS/DAY | STATUS 1=ON 0=OFF | MONTHS OF OPERATION PER YEAR 12 | 11 | 10 | 9 | 8 | 7 |
|---|---|---|---|---|---|---|---|
| 12000 | 1 | 13 | 12 | 11 | 10 | 9 | 8 |
| 40000 | 1 | 44 | 41 | 37 | 33 | 29 | 26 |
| 40000 | 1 | 44 | 41 | 37 | 33 | 29 | 26 |
| 40000 | 1 | 44 | 41 | 37 | 33 | 29 | 26 |
| TOTAL PRODUCTION | | 146 | 134 | 122 | 109 | 97 | 85 |

POWER CONSUMPTION, KWH/YR

| RO UNIT | STATUS | KW | MONTHS OF OPERATION PER YEAR 12 | 11 | 10 | 9 | 8 | 7 |
|---|---|---|---|---|---|---|---|---|
| 12000 | 1 | 18.65 | 161136 | 147708 | 134280 | 120852 | 107424 | 93996 |
| 40000 | 1 | 59.68 | 515635 | 472666 | 429696 | 386726 | 343757 | 300787 |
| 40000 | 1 | 59.68 | 515635 | 472666 | 429696 | 386726 | 343757 | 300787 |
| 40000 | 1 | 59.68 | 515635 | 472666 | 429696 | 386726 | 343757 | 300787 |
| BSTR PUMP | | 14.92 | 128909 | 118166 | 107424 | 96682 | 85939 | 75197 |
| WELL PUMP | | 22.38 | 193363 | 177250 | 161136 | 145022 | 128909 | 112795 |
| MISCELLANEOUS | | 18.50 | | | | | | |
| TOTALS | | 253 | 2030314 | 1861121 | 1691928 | 1522735 | 1353542 | 1184350 |

POWER COST BASED ON SCHEDULE #PA2(2/1/89), $/YEAR

| | RATE | | | | | | |
|---|---|---|---|---|---|---|---|
| NTR CHARGE | $21.80 | $262 | $262 | $262 | $262 | $262 | $262 |
| SUMM DEMAND CHRG | $7.80 | $23,727 | $23,727 | $23,727 | $23,727 | $23,727 | $23,727 |
| WNTR DEMAND CHARGE | $1.25 | $2,535 | $2,218 | $1,901 | $1,584 | $1,267 | $951 |
| EN CHRG,1ST 300KWH | 0.09549 | $87,141 | $79,879 | $72,617 | $65,356 | $58,094 | $50,832 |
| EN CHRG,ADD KWH | 0.05012 | $56,022 | $51,353 | $46,685 | $42,016 | $37,348 | $32,679 |
| TOTAL PWR COST/YR | | $169,686 | $157,438 | $145,191 | $132,944 | $120,697 | $108,450 |

RO MAINTENANCE COSTS, $/YR

| | $/1000GAL | | | | | | |
|---|---|---|---|---|---|---|---|
| DETERGENT | 0.1125 | $5,346 | $4,901 | $4,455 | $4,009 | $3,564 | $3,119 |
| FILTERS | 0.1125 | $5,346 | $4,901 | $4,455 | $4,009 | $3,564 | $3,119 |
| MEMBRANE | 0.6125 | $19,602 | $17,969 | $16,335 | $14,701 | $13,068 | $11,435 |
| CHLORINATION | 0.0047 | $225 | $206 | $188 | $169 | $150 | $131 |
| LIME | 0.1034 | $4,914 | $4,505 | $4,095 | $3,686 | $3,276 | $2,867 |
| CO2 | 0.0756 | $3,591 | $3,292 | $2,993 | $2,693 | $2,394 | $2,095 |
| EQUIPMENT MAINTENANCE | | $16,360 | $16,360 | $16,360 | $16,360 | $16,360 | $16,360 |
| PERSONNEL | | $22,000 | $22,000 | $22,000 | $22,000 | $22,000 | $22,000 |
| TAXES | | $17,175 | $17,175 | $17,175 | $17,175 | $17,175 | $17,175 |
| INSURANCE | | $595 | $595 | $595 | $595 | $595 | $595 |
| TOTAL ANNUAL PROD COSTS | | $264,849 | $249,341 | $233,842 | $218,343 | $202,844 | $187,345 |
| TOTAL COST/1000GALLONS | | $5.57 | $5.72 | $5.91 | $6.13 | $6.40 | $6.76 |

Finally, Overduin testified that the proposed plant, when completed, will be enlargeable; seawater wells and RO units may be added as needs arise.

Branch

Branch's evidence was presented principally through the prepared testimony, contained in Exhibit 5, of Branch engineer Robert Mahin. Mahin has concluded, after thorough analysis and consideration of the circumstances surrounding the application, that the application should be granted in accordance with the following specific recommendations. These recommendations were concurred in by SCE during the course of the evidentiary hearing.

- Filing revised tariff sheets increasing the safe annual yield of the island integrated fresh water system from 499 to 600 AF/yr.

- The effective date of a first step increase to 515 AF/yr should be authorized to become effective on the date of the order in this application to recognize the present operation of the Toyon Canyon Well. The increase to the second step of 600 AF/yr should be effective on or after the date of acceptance of an operational desalination plant producing a minimum of 85 AF/yr.

- The proposed tariff sheets shown in Appendix A of Exhibit 5 relating to the safe annual yield, allocation of fresh water, and to water rationing, should become effective upon the date of the Commission's order in this application.

- Allocation of water to applicants who contribute new water sources, including the developer that will contribute the desalination plant, as well as all other applicants, should be made pursuant to the tariff schedules shown in Appendix A.

- The Commission's order herein should state that the California Department of Health Services is not precluded from imposing a moratorium restricting service connections

if in its evaluation it determines that it is necessary to protect existing customers.

- o SCE should be authorized to discontinue quarterly reporting required by D.90265, and be required to continue the comprehensive annual report and augment it to include water consumption and services added. SCE should be authorized to discontinue this annual report after the 1993 filing.

Mahin testified that Branch, in its investigation of RO technology, reliability, and application, obtained a number of documents from personnel connected with the Orange County Water District (OCWD) to establish that RO is indeed an established and reliable state of the art process with wide application for production of potable water. Mahin recently visited the Water Factory 21 facility of the OCWD at Fountain Valley and the OCWD wellhead treatment facility in Tustin, where 5 million GPD of demineralized water is provided by a RO facility. The RO plant is fully operational at least 97.5 percent of the time. The facility has been in service since 1977, and runs reliably and unattended except for routine reading and recording of operational parameters. Mahin maintains that RO is indeed a viable, practicable technology with greatly increasing worldwide usage and a risk commensurate with that of more conventional water supply sources.

Appendix D to Exhibit 5 contains a report from the Handbook of Industrial Membrane Technology published by Noyes Publications, with an insert from the 1988 Worldwide Desalting Inventory to update data from 1984 to 1987. The report notes that by the end of 1976, RO operating capacity had grown to 167,000,000 GPD; by the middle of 1980 the capacity had more than doubled to 390,000,000 GPD, and by the end of 1984 was 524,000,000 GPD. The 1988 International Desalination Association reported that that by the end of 1987 RO capacity was 794,000,000 GPD. 32.7 percent of that capacity is in the United States, 27.7 percent in Saudi

Arabia, 4.1 percent in Iraq, and the remaining 35.5 percent divided among 28 other countries.

Appendix A to Mahin's Exhibit 5 contains proposed tariff revisions which incorporate his recommendations relating to safe annual yield, allocation of fresh water, and water rationing. These tariff provisions are concurred in by SCE.

Discussion

The evidence is convincing that the RO methodology is practicable for adoption and use in meeting the needs of the residents and visitors of Santa Catalina Island. The application is unopposed, and is in fact emphatically supported and urged by all members of the community of Avalon who attended the PPH and have supported the application with letters.

The projected costs of operation calculated by SCE witness Overduin range from $5.57 per 1,000 gallons to $6.76 per 1,000 gallons.

SCE's current tariff rates for Catalina Island service are:

| | First 1,000 gallons | Excess Per 1,000 gallons |
|---|---|---|
| Winter (October thru April) | $2.93 | $6.90 |
| Summer (May thru September) | 3.50 | 9.57 |

In addition, a monthly service charge of $8.10 applies to meters sized at 5/8 inches and 3/4 inches.

In a "worst case" scenario, in which the highest cost of $6.76 would be experienced, that cost, while higher than SCE's current tariff charges of $3.50 (May through September) and $2.93 (October through April) for the first 1,000 gallons, is lower than the heavily used second tier rates of $9.57 (May through September) and $6.90 (October through April).

This favorable comparison of proposed production costs with tail block rates is especially significant when considered in

light of information furnished the staff by SCE with respect to seasonal rate use. This information, partially contained in Exhibit 1, shows that 1,485 residential customers used 119,603,600 gallons of water in 1988, and that 127 commercial customers used 27,122,400 gallons. Further information concerning use is that of the residential customer consumption, about 63,563,000 gallons was supplied during the five-month summer period, and about 52,600,000 gallons of that summer consumption was at the second tier rate of $9.57. During the winter period, 41,560,200 gallons of the total winter consumption of 56,040,000 gallons was consumed at the second tier, or excess rate of $6.90. Furthermore, the preponderance of commercial consumption throughout the year is at the excess rates. This information provides assurance that there will be no customer adverse rate impact for the foreseeable future because of the comparatively high production costs, since they will evidently be at a level much lower than that at which about 44 percent of the present total residential consumption is paid, in addition to being lower than the rate applicable to most of the commercial consumption.

The contractual safeguards contained in the agreement set forth in Exhibit 2 provide further confidence in the expected economic viability of the proposed desalination project, and in the protection afforded SCE's present customers. These safeguards are, in sum:

1. HCA will make written assignment and transfer of any and all rights, title and interest in and to the Desalination Facility to SCE on the acceptance date at the end of the performance and reliability tests. The facility shall be free and clear of all liens and encumbrances.

2. HCA will deliver to SCE on or before the acceptance date a sum of money equal to the present worth of the future cost of a one time, in kind, replacement of the desalination facility. This money may be used, at the sole discretion of SCE, for

funding future desalination facility equipment and system replacement.

3. HCA will be responsible for all engineering, purchasing, construction, and installation costs of the facility and for other reasonably necessary facilities and equipment for operation of the facility and connection to the SCE system.

4. HCA will reimburse SCE, up to an amount of $20,000, for costs incurred in reviewing (1) the engineering and construction plans, (2) the results of the performance and reliability tests, (3) the results of the operation tests, and (4) the terms and conditions of the following permits listed in Exhibit 6 to the contract:

   a. Coastal Development Permit - CCC.

   b. Building Permits - Los Angeles County.

   c. Well Permit - Los Angeles DHS.

   d. NPDES Permit - State of California Regional Water Quality Control Board.

   e. Water Supply Permit - California DHS.

5. HCA will indemnify SCE against any liability for federal income tax if the agreement is deemed to be a contribution in aid of construction.

6. HCA will pay, on or before the acceptance date, to SCE $25,672 as payment for a portion of the annual property taxes for the facility for the first 3 years of operation.

7. If the facility does not meet the objectives of the operation test, to be performed one year after the acceptance date, HCA shall modify or add those facilities, equipment or systems necessary to make the facility meet those objectives.

8. HCA will purchase, at its sole expense, a maintenance and service agreement from the

manufacturer, on behalf of SCE, to provide all necessary maintenance and related services for the facility. That agreement will be effective as of the acceptance date.

9. HCA will purchase a one-year personnel training agreement, for use by SCE, from the manufacturer or approved contractor. This agreement will be effective as of the acceptance date.

The agreement (Exhibit 2) provides that HCA shall deliver, on or before the acceptance date, to SCE a sum of money equal to the present net worth of the future replacement cost of the plant. This feature of the agreement makes the total concept particularly attractive because there are comparatively few "moving parts" in this plant those being mainly the pumps and pump motors, which may require early replacement (8-10 years). In this connection, we believe it appropriate that the contributed replacement money be deposited by SCE in an interest bearing account to be used for replacement of all plant equipment, as well as for any unusual operating and maintenance expenses which may be incurred.

We are satisfied that the proposed desalination project, when operational, will provide SCE's island water customers with an increased supply of potable fresh water at reasonable costs for the foreseeable future. The tariff amendments set forth in Branch Exhibit 5 will appropriately set forth the utility's "first-come-first-served" procedure for obtaining service, and its fresh water allocation and rationing plans. In the circumstances, the application, and the suggested tariff amendments set forth in Branch Exhibit 5, should be authorized.

In accordance with PU Code § 311, the ALJ's proposed decision was mailed to appearances on April 27, 1990. Neither SCE nor Branch filed comments.

Findings of Fact

1. The increase in the safe annual yield of SCE's Santa Catalina Island water system to 600 AF/yr is reasonable, upon

completion of the proposed desalination plant and its acceptance by SCE.

2. The proposed tariff revisions set forth in Branch Exhibit 5, relating to the allocation of fresh water, are consistent with the Commission's prior decisions on "first-come-first-served" allocations.

3. HCA is entitled to a 75 AF/yr allocation of the desalination plant upon its completion and acceptance by SCE.

4. The Toyon Canyon Well is complete and operational. CCC is entitled to a 12.41 AF/yr allocation of the Toyon Canyon Well pursuant to CCC Order A-55-80; HCA is entitled to the remaining 3.59 AF/yr allocation of the well.

5. The safe annual yield of SCE's island water system may be increased immediately to 515 AF/yr, because of the completion of the Toyon Canyon Well.

6. The total projected production costs set forth in Exhibit 3 indicate that the desalination project, when operational, will be able to increase SCE's safe annual yield by at least 85 AF/yr without adversely affecting the rates of the customers who will be receiving water from the system, including those residing in the HCA complex.

7. The contractual safeguards contained in the agreement set forth in Exhibit 2 provide adequately for protection of SCE and its customers against possible construction and operational problems and potential adverse rate impacts.

Conclusions of Law

1. The application should be granted.

2. The safe annual yield of SCE's Santa Catalina Island water system should be increased immediately to 515 AF/yr.

3. SCE's safe annual yield should be increased to 600 AF/yr upon completion of the desalination plant, and its acceptance by SCE, in accordance with the agreement contained in Exhibit 2.

4. The proposed tariff revisions contained in Branch Exhibit 5 should be authorized.

5. The sum of money required to be contributed by HCA to SCE for plant replacement, as specified in Exhibit 2, should be placed by SCE in an interest bearing account to be used for plant replacement and any unusual operating and maintenance expenses.

## O R D E R

IT IS ORDERED that:

1. Southern California Edison Company (SCE), upon completion of the desalination project described in this decision in accordance with the agreement set forth in Exhibit 2, and acceptance of the project by SCE, is authorized to increase the safe annual yield of its Santa Catalina Island water system to 600 AF/yr.

2. SCE is authorized to immediately increase the safe annual yield of its Santa Catalina Island water system to 515 AF/yr.

3. SCE is authorized to publish in its Santa Catalina Island water tariff the tariff provisions set forth in Exhibit 5.

4. Notwithstanding any provision of this decision, the California Department of Health Services is not precluded from imposing a moratorium restricting service connections in SCE's Santa Catalina Island water system if, in its evaluation, it determines that such action is necessary to protect existing customers.

5. SCE is authorized to discontinue the quarterly reports required by D.90265. SCE shall continue furnishing the annual reports required by that decision, and shall include therein information showing current water consumption and the number of new services added to the system. This annual report may be discontinued after filing of the report on operations experienced during 1993.

6. The sum of money required to be contributed by Hamilton Cove Associates with SCE for plant replacement, as set forth in Exhibit 2, shall be deposited by SCE in a reasonable facilities replacement interest bearing account, and shall be used by SCE for plant replacement and any unusual and/or unforeseen operating and maintenance expenses incurred in connection with this plant.

This decision is effective 10 days from today.

Dated MAY 4 1990, at San Francisco, California.

G. MITCHELL WILK
President
FREDERICK R. DUDA
STANLEY W. HULETT
JOHN B. OHANIAN
PATRICIA M. ECKERT
Commissioners

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

NEAL J. SHULMAN, Executive Director