Economic costs

The derivation of costs can logically be divided between the cost of producing desalted water and pumping power at the dual-purpose desalting complex and the cost of conveying product water to the river.

Dual-purpose nuclear desalting plant.—The financial criteria, the method of allocating joint heat costs of the nuclear reactors between water and electricity, and the plant-loading characteristics play crucial roles in determining the cost of production. The ability to stage the plants to meet future needs as they develop also has an important bearing on overall costs by minimizing the economic costs of unused capacity.

The determination of capital cost for use in the economic studies includes construction cost and interest during construction computed at 3¼ percent. A 30-year service life is assumed for the reactor, thermal powerplant, and water plant. Consistent with Reclamation financing criteria, components for taxes and insurance were not included.

The method adopted for allocating joint nuclear reactor costs follows the use-of-facility concept with use measured in terms of available heat energy consumed in each of the water and power production processes. This approach permits both purposes to share in the advantages of dual-purpose production. Other joint costs resulting from the use of a common site were proportionally distributed on the basis of use. Inasmuch as the reactors, turbine-generators, and the water plant require internal auxiliary electric power, suballocations of electric power costs were made to each plant account in accordance with the capacities required.

It is expected that the dual-purpose installation would operate at full capacity as each stage is placed in service. It is assumed that the plants would operate at an average annual plant capacity factor of 90 percent.

A final division of costs was made between power needed for project pumping and the residual available for commercial sale by non-Federal entities participating in the cooperative venture. Costs were prorated between commercial and pumping power after adjusting for hydroelectric power produced by power drops in the aqueduct system.

The average product costs for the three stages at the plant boundary, before conveyance and transmission losses, are estimated to be 9.8 cents per 1,000 gallons, or $32 per acre-foot, and 0.9 mill per kilowatt-hour for project pumping power. One of the most important factors influencing these costs is the low cost of heat provided by the fast breeder reactors. Prime steam is estimated at 5.1 cents per million BTU and exhaust steam from the turbines for use in the water plant at 1.6 cents per million BTU.

Conveyance costs.—Conventional procedures were followed in deriving the economic costs of the aqueduct system. These facilities are assumed to have a 100-year service life, and a 3¼ percent interest rate is used for purpose of amortization.

Total project costs

Total investment costs for the augmentation plan consist of the estimated construction costs discussed earlier plus interest during the period of construction and are summarized as follows:

FEDERAL INVESTMENT COST

[In millions of dollars]

Feature	Construction cost	Interest during construction	Total
Nuclear desalting facilities (including project pumping power)	921	53	974
Conveyance system	1,863	200	2,063
Total	2,784	253	3,037

Total annual operating costs include operation, maintenance, interim replacements, nuclear fuel, and a sinking fund component to permit rebuilding the