Water delivery impacts are the changes in water volumes available to different users and depend on seniority of water rights and priority systems within affected water delivery systems, such as the SWP and the CVP.

Costs

The State's implementation plan will substantially affect the magnitude and distribution of the costs of regulatory actions. In the agricultural sector, economic welfare costs would consist primarily of changes in producers' surplus (net operating revenues accruing to farmers). In the urban sector, economic welfare costs would take the form of consumers' surplus losses to the residential sector resulting from developing higher cost replacement supplies and consumer costs of water supply shortages. The following are key results of the cost analysis:

• Water transfers can greatly reduce impacts on affected agricultural and urban areas. Water transfers to urban areas through waterbank programs are common and considered likely in the short-run. Although, increased agriculture-to-agriculture water transfers are not expected in the short-run, they can theoretically decrease impacts

considerably.

• Urban project contractors water supplies would not be affected in most years, even without sharing.

—MWD's supplies are affected in 11% of years, SCVWD supplies are

affected in 25% of years.

- With water transfers available in dry years, the cost associated with the regulations is estimated to be \$4.3 million on average and \$15.8 million during dry water years for the Project-Exporters Only scenario. Without water transfers or waterbanks, costs increase significantly; the combined cost of water shortages and replacement water supplies to project users is estimated to be \$28.3 million on average years and \$165.3 million during dry years.
- Agricultural impacts would be small relative to agricultural value in the Central Valley but would be concentrated in agricultural areas with low-seniority water rights in portions of Fresno and Kern counties.
- —Under the Project-Exporters Only scenario and assuming no increase in water transfers, economic welfare losses to agriculture are estimated to average \$27 million annually, weighted over all hydrological conditions. However, impacts in the driest 10% of years account for economic costs of \$43 million.
- —If the State's implementation plan is based solely on seniority of water rights and existing contractual arrangements,

impacts will be concentrated in geographic subareas of Fresno and Kern counties. Cumulative impacts are an important consideration in these areas—the impacts of environmental requirements associated with the ESA and the CVPIA are already concentrated in these subareas. However, the State's implementation plan may be based on many criteria, including economics.

- The Sharing Approach would have an important cost-reducing effect, especially in dry years if transfers are limited, in comparison with the Project Exporters-Only Approach.
- —Economic welfare costs to agriculture would be reduced by sharing the responsibility of environmental requirements with all diverters. Overall, economic welfare losses would be reduced by approximately \$0.5 million for average years and more than \$5.5 million in dry years.
- —A net gain in economic welfare to urban areas would also result from sharing. Overall economic losses would be reduced by approximately \$10.5 million in average years and \$54.0 million in dry years when transfers are limited.
- Over the long term, costs are not estimated to substantially increase, even with increasing demand resulting from population growth and decreased groundwater availability.

A summary of these costs is shown below in RIA Table 2.

RIA TABLE 2.—SUMMARY OF ECONOMIC WELFARE COSTS
[In millions of dollars]

	Aver- age ex- pected value	Dry Years
Agriculture: 1		
 No increase in water 		
transfers	28	43
 Sharing/no increase in 		
transfers	27	37
 Increased transfers 	10–18	NA
Urban: 2		
 Dry year transfer 	4	16
 No dry year transfer 	28	165
Sharing/no dry year		
transfer	18	111

Note: Total impacts are less than the sum of agricultural and urban impacts in the case of agricultural-to-urban transfers. In cases in which there are no agricultural-to-urban transfer, total impacts equal the sum of agricultural and urban impacts.

Benefits

Important benefits of the water quality regulations include the following:

- Biological productivity and health for many estuarine species are expected to increase.
- The decline of species is expected to be reversed and the existence of species unique to the Bay/Delta, such as Delta smelt, winter-run chinook salmon, longfin smelt, and Sacramento splittail, will be protected.
- Populations of a variety of estuarine species are expected to increase; although the extent of the population increases has not been determined for all species, the increases are anticipated to benefit the recreational and commercial fisheries.
- Costs associated with further declines in the estuary will be avoided. The most important avoided cost is associated with further declines in the recreational and commercial fisheries industry including further closures affecting the 200 million dollar industry, with possible future actions needed to protect species from extinction. Other avoided costs include government costs associated with crop deficiency payments; agricultural drainage costs; and costs associated with potential reductions in property values.

The ecological benefits of improved Bay/Delta estuary conditions are expected to generate approximately \$2–21 million annually in net economic benefits to commercial and recreational fisheries and have associated employment gains of an estimated 145–1,585 full-time equivalent jobs annually. The federal package of actions to protect the estuary, of which EPA's criteria are a part, will also produce the benefit of increased certainty regarding water supplies from the delta; this allows for more informed water management planning and investments.

Conclusions

The following general conclusions can be drawn regarding the results of the RIA:

- Although urban water supplies are are not affected in most years, however, minimizing urban costs largely depend on the availability of water through transfers and a drought water bank.
- Under the Project-Exporters Only approach to implementation (i.e., statusquo), agricultural impacts are concentrated only in certain areas of Fresno and Kern Counties. This concentration of impacts is magnified by these areas bearing the responsibility for Endangered Species requirements. This concentration of impacts is the

¹ Transfers are from agriculture to agriculture.

²Transfers are from agriculture to urban users.