

## Draft Executive Summary

### Economic Sustainability Plan for the Sacramento–San Joaquin River Delta

The Sacramento-San Joaquin River Delta is a unique place of economic, environmental, historic and cultural significance. The land and water resources of the Delta support significant agricultural and recreation economies, and the Delta also has an important role as an infrastructure hub for water, energy and transportation. The region's rich history boasts of bustling, river-based commerce before the automobile age, and its cultural uniqueness includes the only rural town in America built by early Chinese immigrants. As the largest estuary on the west coast of the Americas, the Delta also is a place of striking natural beauty and ecological significance that is struggling with serious environmental degradation problems. Although surrounded by growing cities, the Delta remains a highly-productive agricultural area with rural charms, landscapes, and waterscapes not found elsewhere in California.

In recent years, there has been great concern over increasing environmental degradation in the Delta and over court decisions that reduced the quantity of water delivered to southern California through the state and federal water project intakes in the south Delta to protect endangered fish. Combined with additional concerns about the stability of the Delta's levee system, these concerns led the California legislature to pass the Delta Reform Act of 2009. The Act created the Delta Stewardship Council and charged it with developing a Delta Plan to achieve the coequal goals of "providing a more reliable water supply for California and protecting, restoring, and enhancing the Delta ecosystem."

Recognizing the potential impact of the Delta Plan on the people and economy of the Delta, the Delta Reform Act stated that the coequal goals of water supply reliability and restoring the Delta ecosystem "shall be achieved in a manner that protects and enhances the unique cultural, recreational, natural resource, and agricultural values of the Delta as an evolving place." Among the measures to address this goal, the Delta Protection Commission was tasked with developing this Economic Sustainability Plan to inform the Delta Stewardship Council's development of the Delta Plan.

The concept of economic sustainability and the objective to "protect and enhance the unique cultural, recreational, natural resources, and agricultural values of the California Delta as an evolving place," can be interpreted in different ways. In economic terms, there is near consensus that a minimum requirement is to maintain the economic value of the entire Delta economy in the future. The Fifth Staff Draft of the Delta Stewardship Council's Delta Plan uses a stronger definition of economic sustainability where growth in one sector is not a substitute for deterioration in another area. Specifically, the Fifth Staff Draft Delta Plan defines performance measures for economic sustainability as maintaining or increasing gross revenues in each of three key sectors: agriculture, recreation, and ecotourism/agritourism. In addition, there is broad

agreement that this objective requires the protection of the cultural and historical heritage and the long-term economic viability of the Delta's historical Legacy Communities.

This Economic Sustainability Plan measures the key elements of the Delta economy, considers strategies to enhance the economy, and the impacts of several important proposals for the Delta Plan on the region's economic sustainability. There are a number of proposals and strategies that promote both economic sustainability in the Delta and the coequal goals for the state such as strengthening the Delta's levee and emergency response systems. However, the assessment also finds that some of the current proposals, most notably water conveyance tunnels that could move 15,000 cubic feet per second of fresh water from the Sacramento river around the Delta, would have large economic costs and risks for the Delta and are clearly in conflict with the legislative requirement to "protect and enhance" the value of the Delta.

### **The Economy and Infrastructure of the Delta: Baseline, Trends, and Strategies for Improvement**

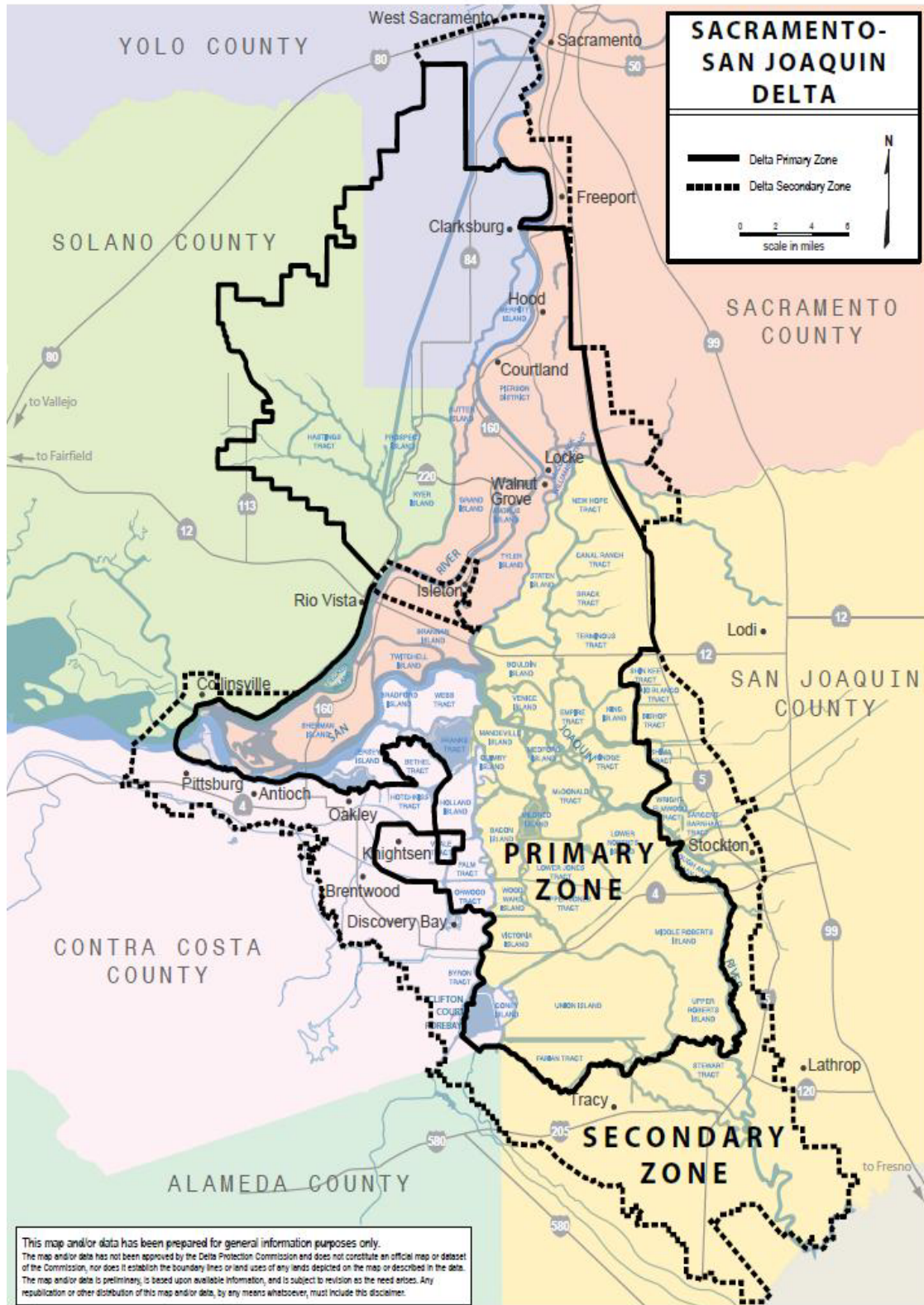
The boundaries of the Legal Delta are shown in Figure 1. The Delta Protection Act of 1992 defined the Delta boundaries including the Primary and Secondary Zone and created the Delta Protection Commission, charging it with developing a Land Use and Resource Management Plan for the Primary Zone. The majority of the Delta's 738,000 acres of land is in the rural and agricultural Primary Zone. The population of the Primary Zone is approximately 12,000 and has remained steady in the nearly 20 years since the passage of the Delta Protection Act.

The Legal Delta including both the Primary Zone and Secondary Zone, contains significant portions of five counties, Contra Costa, Sacramento, San Joaquin, Solano and Yolo, and a small rural corner of Alameda County. The Delta includes parts of several large cities including Antioch, Pittsburg, Stockton, Sacramento, Tracy, and West Sacramento. The legal Delta has a population of 571,000, according to the 2010 Census, which has increased by about 200,000 people—more than 50 percent—in the 20 years since the 1990 Census. All of the population growth, and virtually all of the Delta's urbanized land, is located within the Delta's Secondary Zone.

The Delta's economy, like its population, is primarily urban and service oriented. However, the Delta Reform Act of 2009 and the Delta Protection Act of 1992 are primarily concerned with the natural resources of the Delta and the economic activity sustained by those resources such as agriculture and outdoor recreation. In addition, the resources of the Delta support significant water, energy and transportation infrastructure that serve the Delta, regional and state economies, and an important commercial and recreational salmon fishery throughout the state.

The Primary Zone economy is export-oriented and creates jobs and income far in excess of the population and workforce that resides in the Primary Zone. The Secondary Zone and the counties surrounding the Delta supply the Primary Zone economy with a workforce, services, manufacturing, and transportation that add value to the agricultural, energy and other resource-based output of the Delta. This section looks more closely at the baseline, trends, and strategies for enhancing the agriculture, recreation, tourism, and infrastructure services of the Delta economy.

Figure 1 Map of Primary and Secondary Zones of the Sacramento–San Joaquin Delta



## *Delta Agriculture*

Agriculture is the dominant land use in the Delta. Farmland makes up about two-thirds of the area of the Delta, and nearly 80 percent of all Delta farmland is classified as Prime Farmland, the highest quality designation given by the California Farmland Mapping and Monitoring Program. In contrast, less than 20 percent of all farmland in California is Prime Farmland.

Corn and alfalfa occupy the greatest acreage in the Delta, whereas processing tomatoes and wine grapes generate the most crop revenue. Tomatoes and wine grapes have even greater importance to the regional economy because these two crops are tightly linked to high value-added manufacturing in the region. Asparagus and pears are historically high-value crops in the Delta and continue to be significant contributors although acreage of both has decreased. The majority of pumpkins and blueberries grown in California come from the Delta and reflect the variety of products. Total agricultural revenues in the Delta were estimated at \$755 million in 2009, including \$662 million in crop revenue and \$93 million from animals and animal products.

Nearly 80 percent of Delta farmland is used for lower-value field and grain crops, pasture, and grazing lands. These lands are important to supporting animal agriculture in the Delta and the larger region, most notably the dairy industry. Animal agriculture is less prevalent in the Delta than in other areas of the San Joaquin Valley, but milk is still the fifth most valuable agricultural commodity produced in the Delta, and animal production generates about 12 percent of Delta farm revenue. In contrast, milk is the most valuable agricultural product in San Joaquin County and many nearby areas, and the Delta is an important source of local feed.

High-value vineyards, truck, and deciduous crops generate close to 70 percent of crop revenue in the Delta on about 20 percent of the Delta's farmland, and account for 80 percent of the economic impact of Delta agriculture when value-added manufacturing such as canneries and wineries are included. Like other areas in the Central Valley, Delta agriculture is expected to continue to trend towards higher-value crops over time, increasing the contribution of Delta agriculture to the regional economy.

The economic impact analysis estimates that Delta crop and animal production has an economic impact of roughly 9,000 jobs, \$635 million in value added, and \$1.3 billion in output in the five Delta counties. Across all of California, the economic impact of Delta agriculture is approximately 12,000 jobs, \$761 million in value added, and \$1.5 billion in output.<sup>1</sup>

Including canneries and wineries dependent on Delta crops, the total economic impact of Delta agriculture increases to roughly 14,000 jobs, \$1.1 billion in value added, and nearly \$2.8 billion in economic output in the five Delta counties. In addition, Delta agriculture has an economic impact of nearly 23,000 jobs, over \$1.9 billion in value added, and over \$4.6 billion in economic

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<sup>1</sup> The economic impact analysis of agriculture, recreation and tourism utilizes the IMPLAN model to calculate what are commonly known as the "ripple" effects on other industries such as the purchase of inputs in the local economy and local consumer spending supported by the income. Jobs are reported as annual monthly averages and will vary by season. Value added measures total regional income generated by the activity and is comparable to gross domestic product. Output sums the total revenue of enterprise which is higher than the value added or income created by the enterprise.

output in California. Additional details and analysis of Delta agriculture can be found in Chapter 6 of the Economic Sustainability Plan.

### *Delta Recreation and Tourism*

Recreation is an integral part of the Delta economy, generating roughly 12 million visitor days of use annually and approximately \$250 million dollars visitor spending in the Delta each year. Of the roughly 12 million visitor days spent in the Delta each year, approximately 8 million days are for resource-related activities (e.g., boating and fishing), 2 million days are for right-of-way-related and tourism activities (e.g., bicycling and driving for pleasure), and 2 million days are for urban parks-related activities (e.g., picnicking and organized sports).

Boating and fishing have the biggest economic impact, and are estimated to generate nearly 80 percent of the recreation and tourism spending in the Delta, including significant expenditures on lodging, meals, supplies, marina services, and fuel. Spending by visitors to the Delta generates roughly 2,700 jobs, \$152 million in value added, and \$284 million in economic output in the five Delta counties. Across all of California, the economic impact of Delta recreation is approximately 5,000 jobs, \$324 million in value added, and \$600 million in output.

Despite significant population growth in the market area, the available data suggests that boating and fishing activity in the Delta has grown little in the past 20 years. Boat registrations, employment at marinas and boating-related industries, and the number of marinas are about the same as a decade ago, and the comments of focus group participants in the industry corroborate the observation. This trend could reflect concerns about water and fishing quality and the poor economy, but also reflect broader trends in boating and fishing participation across the nation.

While boating and water recreation will remain the largest piece of the Delta recreation industry, land-based activities such as agritourism, wine tasting, wildlife watching, historic and cultural tourism, bicycling and driving for pleasure are likely to drive future growth in Delta recreation. The majority of visitors to the Delta are from Northern California, an area with great population growth potential but also with nearby locations with successful land-based recreation and tourism economies that compete with the Delta. The residents of a dozen counties around the Delta represent the principal market for future growth in Delta visitation. This market area has a population of approximately 11.9 million people, and projections indicate this figure could grow by about 50 percent or 5.7 million people by 2050.

Because of slow expected growth in boating recreation and the relatively small base of land-based tourism in the Delta, we project Delta recreation and tourism will grow more slowly than the regional population. If resource quality and recreational facilities are maintained so that the Delta retains its current level of competitiveness as a recreation destination, visitation could increase by 3.4 million visitor days and in-Delta spending could increase by nearly \$80 million, roughly 35 percent, over 40 years.

It is important to recognize that even this level of growth requires improvement and reinvestment in the quality of the resource, recreation facilities, and expansion of tourism-related enterprises in the Delta to serve increased levels of visitation. Some changes proposed for the Delta's physical and regulatory environment could negatively affect this growth, whereas other changes and an effective recreation enhancement strategy could boost visitation.

A potential plan for the enhancement of recreation in the Delta centers on five location-based strategies: specific waterways, points of interest, focal point complexes, natural habitat areas, and urban edge areas that surround the Delta. Recreation development in the Delta should be coordinated, consistent, branded, and marketed. A National Heritage Area could be an effective means to brand and coordinate strategies to enhance resource-based recreation, agritourism, and historical and cultural tourism. Additional details on recreation and tourism enhancement strategies are in Chapters 8 and 11 of the Economic Sustainability Plan.

### *Delta Infrastructure Services*

The Delta is a critical infrastructure hub for the regional and state economy. While the Delta's importance to the state water system is well-known, its importance to energy, transportation, and in-Delta municipal and industrial water supplies is less appreciated. As discussed in Chapter 4 and mapped in Appendix C, all of these infrastructure services are vulnerable to floods, earthquakes, and sea-level rise, and require the continued maintenance and enhancement of the Delta's levee system.

The Delta is an important energy resource for California. The Delta contains the largest natural gas production field in California, as well as its largest natural gas storage facility below McDonald Island in the Central Delta. In addition to heating and cooking, natural gas fuels the majority of California's electricity supply, and natural gas power plants in the five Delta counties, many within the legal Delta, produce 20 percent of California's natural gas-powered electricity. Major electricity transmission lines, gasoline and jet fuel pipelines cross the Delta, and wind and solar resources are being studied for further development. Taken together, the Delta's contribution to the state's energy network is comparable to its contribution to the state water system.

The Delta also contains increasingly important parts of the inter-regional transportation network that supports the regional and in-Delta economy. As east-west transportation corridors to the north and south of the Delta become increasingly congested and constrained, the demand for through-Delta transportation is growing rapidly. The ports of Stockton and Sacramento are focal points of regional economic development and rely on through-Delta shipping channels. The Ports' marine highway project will increase and diversify the water freight that moves through the Delta, and relieve air pollution and traffic in the region. Traffic data shows large increases on highways in the secondary zone, as well as through the middle of the Primary Zone on Highway 12, and smaller but significant increases on state highways 4 and 160 in the Primary Zone. Through-Delta railways are also an important link in the transportation system.

The Secondary Zone of the Delta and the surrounding counties also draw a significant portion of their municipal and industrial water supplies from the Delta. Changes to Delta water quality—whether an increase in salts or organic carbon—have important effects on urban water supplies in and around the Delta. Significant deterioration of in-Delta water quality could increase water treatment costs by tens of millions of dollars each year and require hundreds of millions of dollars in capital investment in advanced treatment facilities for utilities serving Delta urban areas.

## Four Key Issues for Economic Sustainability in the Delta

### *The Delta Levee System*

Since the early 20th century, the current-day Delta levee system provides flood control that allows productive agricultural and urban uses of land, channels water for urban and agricultural uses, protects critical infrastructure, and creates a desirable setting for boating and water-based recreation in an environment unique in California. The levee system is the foundation on which the entire Delta economy is built. Therefore, a sustainable Delta economy requires a sustainable levee system.

To support the Economic Sustainability Plan, an up-to-date map of Delta levees was created. This map serves as the basis for an updated tabulation of levee lengths, which shows that in the Legal Delta, there are just under 1,000 miles of levees, of which 380 miles are project levees constructed by the U.S. Army Corps of Engineers (USACE), and an additional 63 miles are urban non-project levees, as defined by recent State legislation. Subtracting from the total the urban levees and levees in the north and south Delta that are primarily flood-control levees leaves around 650 miles of core levees, which protect lands below sea level in the Primary Zone of the Delta. Of these core levees, 193 miles are project levees that are primarily located along the Sacramento River. The remaining approximately 460 miles of core levees need to be maintained and enhanced by the State and the local reclamation districts.

Of this 460 miles of levees, only about 50 miles clearly fall below FEMA's Hazard Mitigation Plan (HMP) "standard" and 100 miles or more are already at or about the Corps of Engineers Delta-specific PL 84-99 standard. It has been the goal of the State and federal governments, working through the Department of Water Resources (DWR), the U.S. Army Corps of Engineers (USACE), and the local reclamation districts, to meet the PL 84-99 standard since 1982 when DWR and USACE produced a joint report on the Delta levees which recommended the basis for this standard. If effectively used, funds currently in the pipeline should bring the Delta levees close to achieving this goal. When these funds have been expended, more than \$698 million will have been invested in improvements to the Delta levees since 1973. These improvements have created significantly improved Delta levees through modern engineering and construction, making obsolete the historic data that is still sometimes used for planning or predicting rates of levee failure.

Three approaches can help all jurisdictions and planners further reduce the risks resulting from the failure of the Delta levees. These approaches are: (1) build even more robust levees, (2) improve both regular maintenance and monitoring and flood-fighting and emergency response following earthquakes, and (3) improve preparedness for dealing with failures after they occur. With regard to the first approach, the big question with respect to the core Delta levees is not whether they should be improved to the Delta-specific PL 84-99 standard. Instead, the key question is whether in order to support and enhance various in-Delta, regional, State and federal interests they should be improved to a higher standard in order to address hazards posed by not only floods, but also earthquakes and sea-level rise. Our conclusion is that these improvements would be advantageous not only for flood control and protection against earthquakes and sea-level rise, but because they also would allow for planting vegetation on the

water side of the levees—an essential component of Delta ecosystem repair. These further-improved levees would have wider crowns to provide for two-way traffic and could easily be further widened at selected locations to allow the construction of new tourist and recreational facilities out of the statutory floodplain. Improvement of core levees to this higher standard would cost in the order of \$1 to 2 billion, a significant sum but much less costly than other estimates. Chapter 4 contains further detail regarding funding sources, the assessment of Delta levees, and evaluation of strategies.

### *Delta Water Quality and Supply*

Water quality and quantity is essential to the three key components of the Delta economy: agriculture, recreation, and infrastructure services. As discussed in Chapter 6, the impact of increased salinity on Delta agriculture is already apparent in many areas, and further deterioration would have very large costs. Surveys of Delta boaters have identified water quality as being the most important area of improvement to increase the quality of Delta recreation. Similarly, lower water quality increases costs for municipal and industrial water supplies in the Delta, and creates a financial burden for Delta households and businesses. Much like levees, adequate water quality and quantity is a necessary foundation for a sustainable Delta economy.

Water quality and quantity is the largest impact of many of the proposed changes to the Delta. Proposed changes in conveyance that might lower water quality, particularly in the South Delta, could have adverse impacts on all parts of the Delta economy. Conversely, there would be positive effects if state agencies were to require greater “environmental flows” in the San Joaquin River, Sacramento River, and through the Delta as a whole. Likewise, tighter controls on both urban and agricultural waste water will have positive effects.

In addition to water quality, the Delta economy depends on the availability and right to use sufficient quantities of water. In-Delta use of water is small compared to upstream diversions and water exports from the state and federal projects in the south Delta, and unlike these other diversions, in-Delta water use has not increased in recent decades. Thus, protection of adequate fresh water flows and in-Delta water rights is critically important to economic sustainability.

### *The Present and Future Contribution of Agriculture, Recreation, and Tourism*

Agriculture is the main economic driver in the Delta, generating five to six times the regional economic impact of recreation and tourism. However, recreation and tourism has the most growth potential. Research for this plan found that a dollar of crop production in the Delta has nearly double the regional employment and income impacts of a dollar of recreation and tourism spending in the Delta. This result is important for economic sustainability since many proposals to change the Delta would reduce agricultural production while potentially increasing recreation and tourism. Even using the weakest definitions of economic sustainability that would allow growth in one sector to offset decline another, the projected growth in Delta recreation spending over the next 40 years would only be equivalent of 5 percent of the current economic impact of Delta agriculture on the five Delta counties. Thus, economic sustainability requires the value of Delta agriculture to be sustained and enhanced in the future.



The lower economic impact of recreation and tourism spending is because fuel and retail purchases dominate expenditures for the types of recreation and tourism that are currently available in the Delta. Although these are local expenditures, the goods are typically produced elsewhere have relatively low multiplier effects on the regional economy. While recreation trips to the Delta are a significant contributor to the Delta economy and are expected to increase, increasing the economic impact of tourism spending requires increasing spending per trip to the Delta and the local economic impact of spending that does occur. This requires diversification through new investment in high value-added, land-based tourist services that generate more local income and jobs than retail and fuel expenditures. A successful strategy would require significant new investment in hospitality enterprises within the Delta, and also stimulate investments needed to sustain and enhance the large existing economy associated with Delta boating. This is a difficult challenge given the market and regulatory constraints of operating in the Delta.

This plan offers some tactics to support this strategy, but it is important to have realistic expectations of the growth potential. In the baseline scenario, recreation and tourism spending is projected to grow about \$80 million, 30 percent over the next 40 years. Successful efforts to expand and enhance tourism and recreation experiences could consequently increase this by another \$30 million. However, increasing day trips for wildlife viewing and other ecologically-based activities is unlikely to generate significant increases to in-Delta economic activity, especially without new investment in services that encourage longer visits and overnight stays.

On the agricultural side, supporting the high-value processing tomato and wine grape crops is critically important to the regional economy because of the local value-added manufacturing industries associated with these crops, and the potential for significant growth in local winery capacity and direct sale of product. The baseline projection developed for this plan predicts that an additional 10 percent of Delta agricultural land will shift towards these higher-value crops over the next few decades, creating a significant boost to the regional economy. However, these crops are generally considered to be less wildlife friendly, and significant expansion could conflict with ecological restoration goals in the Delta.

### *Sustainable Legacy Communities: Where the Challenges and Strategies Come Together*

Economic opportunities and constraints facing the Delta's Legacy Communities mirror those in the broader Primary Zone. The current economies of the Legacy Communities are agriculturally based providing support services and limited workforce housing for the Primary Zone's largest industry as well as some housing for retirees and service and professional workers who commute into nearby urban areas such as Sacramento. Despite the current base in agriculture and rural bedroom and retirement communities, much of the revitalization strategies for Legacy Communities are based on growing their appeal as destinations for recreation and tourism. This includes promoting the emerging agritourism sector—including wine and local foods—as an economic development theme.

However, a strict and multi-layered regulatory framework places limits on economic development opportunities within the Delta's Legacy Communities. The aging and occasionally sub-standard building stock needs improvement, potentially utilizing redevelopment of existing

buildings and/or a limited amount of new development in order to accommodate visitor- and local-serving enterprises. New investment is especially important because the existing base of hospitality- and tourism-related enterprises is very limited and insufficient to attract and capture significant tourist activity. The most developed recreation and tourism enterprises in the Delta are campgrounds and marinas that serve water-based recreation; these are mostly located outside the Legacy Communities and often outside the Primary Zone.

An already burdensome regulatory environment has been made significantly worse by the recent remapping of FEMA flood zones. All of the Legacy Communities along the Sacramento River have either been or are in the final process of being remapped into the 100-year floodplain. This designation requires elevation of new and substantially remodeled existing structures 10 feet or more above ground level, making most new construction, additions and major renovations financially infeasible. Many stakeholders are concerned that the flood zone designation will cause the Legacy Communities to slowly wither away. It is clear that the economic sustainability of the Legacy Communities is dependent on levee and flood-control investments as well as other strategies to address the constraints of flood zone designation.

Despite these challenges, the Legacy Communities have significant historical, cultural, and economic values and the potential to become attractive destinations for visitors and more prosperous, higher quality of life for residents. Chapter 11 includes more detailed visions and strategies for Legacy Communities, including case studies of Walnut Grove, Locke, and Clarksburg.

### **Impact of Water Supply and Ecosystem Restoration Proposals on the Delta Economy**

Current proposals for new water supply and ecosystem restoration projects have serious implications for economic sustainability in the Delta. The isolated conveyance and habitat proposals are mostly being developed in the Bay Delta Conservation Plan (BDCP), and the Economic Sustainability Plan relies on the November 2010 draft of the BDCP to describe the proposals. In addition, new proposals regarding Delta levees, land-use regulation, and economic development have been made by the Delta Stewardship Council, Department of Water Resources, the Public Policy Institute of California, and the Delta Vision Strategic Plan.

#### *Isolated Conveyance*

The BDCP proposes a pair of water conveyance tunnels to divert water from the Sacramento River in the North Delta and convey it around the Delta to the state and federal export pump in the South Delta. The current proposal would have a diversion capacity of 15,000 cubic feet per second, and five water intakes and associated pumping facilities along the Sacramento River. Of all the current proposals, the isolated conveyance imposes the largest cost and the most risk for the Delta economy. The largest impacts are due to the water quality effects of reducing freshwater flows, but the new conveyance facility would also eliminate high-value farmland and disrupt the rural character of the North Delta with large industrial development.

The reduction in through-Delta conveyance of fresh water is expected to increase salinity in the South Delta. The extent of salinity increases is unknown at this time, and it depends on the

operation of the facility, among other factors. Under currently proposed operating criteria, the water-quality impacts of isolated conveyance could result in an annual loss of between \$20 million and \$65 million in agricultural production in the South Delta. In addition, the land footprint of the conveyance is estimated to generate an additional \$10 million to \$15 million in annual agricultural losses, mostly in the North Delta. The risk of even higher losses is great, because the immense \$12 billion to \$15 billion capital cost is to be entirely paid by the sale of water conveyed through the facility, and will undoubtedly generate extreme pressure to change operations and increase the amount of fresh water conveyed through the canal. In this case, agricultural losses in the Delta would rise significantly, possibly as high as \$200 million per year.

Isolated conveyance is also expected to negatively affect recreation and tourism in the Delta. By reducing reverse river flows in the south Delta, the conveyance is expected to benefit some fish species, and this could potentially benefit fishing and its associated economy. However, the negative effects of conveyance on recreation are expected to be larger as the reduction in water quality in the south and central Delta will have negative effects on boating. In addition, the noise and visual impacts of pumping facilities on the Sacramento River is anticipated to have large negative impacts on efforts to enhance recreation and tourism along a strategic stretch of the Sacramento River between in the heart of its historic Legacy Communities. Overall, the conveyance could generate as much as a 10 percent reduction in recreation and tourism.

Finally, the isolated conveyance is expected to also negatively affect infrastructure services in the Delta. Water quality declines would increase treatment costs for in-Delta municipal and industrial supplies. In addition, isolated conveyance could reduce the State's commitment to restoring Delta levees, putting energy, transportation, and other key infrastructure at greater risk.

### *Habitat Proposals*

The November 2010 draft BDCP includes 19 habitat enhancement proposals. The Economic Sustainability Plan assesses the impact of the four proposals that would affect large amounts of Delta land, and therefore have the largest potential impacts on the Delta economy: Yolo Bypass Fisheries Enhancements, Lower San Joaquin River Floodplain Restoration, Tidal Habitat Restoration, and Natural Communities Protection. All of these four proposals have negative impacts on Delta agriculture, although the magnitude and range of effects vary widely. Impacts on recreation and infrastructure services are a mix of positive and negative.

Yolo bypass fishery enhancements proposed in the draft BDCP would require flood easements or fee simple acquisition of between 24,000 and 48,000 acres of farm and rangeland in Yolo County. More frequent flooding could reduce agricultural output by \$1 to \$5 million annually and increase costs of controlling undesirable vegetation. Improved fisheries would benefit recreation, but there could be negative impacts on hunting clubs in the area. The project would provide flood control benefits to the Sacramento area, but could negatively affect downstream urban water supply intakes. Yolo County is working with the state and BDCP on options that could reduce the negative impacts on local agriculture.

As proposed in the BDCP, lower San Joaquin River Floodplain Restoration would affect approximately 10,000 acres of high-value farmland in the South Delta, resulting in up to \$20 million in lost agricultural revenue. The project would provide valuable flood protection, and has the potential to benefit recreation if designed to accommodate recreational uses. Local landowners have worked with environmental groups to develop an alternative flood bypass proposal that would substantially expand the capacity of the existing flood bypass at Paradise Cut. This alternative proposal would reduce the impacted farmland to 2,000 acres while still providing significant flood control and habitat enhancements.

The proposal to create 65,000 acres of tidal marsh in the Delta and the Suisun Marsh has the largest potential impact on the Delta economy. Agricultural revenue losses are estimated to be between \$18 and \$77 million annually with the majority of impacts in the south Delta. The low range of agricultural costs occurs if restoration efforts are more concentrated in Suisun Marsh and the west Delta. Tidal marsh in the south Delta was evaluated as having the largest negative effects with recreation and municipal water supplies incurring significant negative impacts in addition to agriculture. Similar concerns surround tidal marsh restoration in the Cache Slough area although the negative impacts are lower than creating a south Delta tidal marsh. In contrast, tidal marsh restoration in Suisun Marsh and the west Delta is thought to have positive impacts on Delta water quality and therefore Delta economic sustainability.

The BDCP's Natural Communities proposal involves the acquisition of "wildlife friendly" agricultural easements on 32,000 acres and converting 8,000 acres of rangeland to native grasslands. Even though it would presumably involve easement purchases from willing sellers, this strategy could have large negative economic impacts on the Delta if it is used to reduce higher-value and permanent crops such as vineyards in favor of lower-valued "wildlife friendly" crops. Thus, a preliminary estimate of the potential loss to agricultural revenue is \$5 to \$43 million with the wide range resulting from uncertainty regarding the implementation strategy. Increasing wildlife viewing opportunities should be positive for recreation and tourism, although it is unlikely to generate significant new spending. The impacts on infrastructure services would be minimal.

### *Open Water Proposals*

The PPIC, Department of Fish and Game, and others have proposed creating larger areas of open water in the Delta through intentional breaching of levees or not repairing levees in the event of a failure. The Economic Sustainability Plan considers a flooded six-island area of open water in the Central Delta that has been proposed by UC-Davis researchers as a starting place for discussion of open water in the Delta that is less extensive than other proposals they have made to flood 20 or more islands. It is argued that the deeply subsided islands in the Central Delta are not worth protecting with levees because they grow low-value crops and do not contain major roads and other significant physical infrastructure.

In contrast to conveyance and habitat proposals in the BDCP, lost agricultural revenue from flooding these six islands is among the smallest concerns, amounting to a roughly \$12 million annual loss in crops. Larger concerns have been raised around the impact of open water in the Central Delta on infrastructure services and recreation. Submerged islands increase organic

carbon in Delta water, increasing costs for municipal and industrial water supplies, especially the City of Stockton's new intake on Empire Tract. Increased waves and seepage on levees surrounding water will increase the cost of maintaining and improving adjacent levees, and, as discussed in Chapter 4, these costs are comparable to the cost of improving and maintaining the existing levees. This proposal would also eliminate levees that protect the Stockton Deepwater Ship Channel that serves the growing Port of Stockton. An open water area would increase silting and dredging costs, and it would affect navigation of ships through the narrow deepwater channel. Finally, the open water scenario is in the most popular area for Delta boating, and it is expected to have major negative impacts by eliminating the wind-protected channels that attract boaters to the Delta. Forty percent of Delta marinas, including some of the largest, surround the proposed open-water area and will be exposed to a variety of negative impacts.

### *Regulation Proposals*

There is widespread agreement that the resources of the Delta need to be protected, and that it should remain a rural and predominantly agricultural area. Regulation plays a role in this protection, and the Delta Protection Commission's Land Use and Resource Management Plan already creates an additional regulatory check on development compared to other rural, unincorporated regions in California. There is significant concern that the Delta Stewardship Council's proposed regulation of "covered actions" will create additional costs and uncertainty for investment in the Delta, and work against its goal to enhance the Delta. It would be best for the Delta economy if the Stewardship Council did not add additional layers of regulation, approvals, and potential appeals. At minimum, the DSC should expand its list of exemptions to include investment in agricultural, recreation, and tourism enterprises, especially around the Legacy Communities.

### *Delta Vision Economic Development Strategies*

Although most of the Delta Vision Strategic Plan is focused on water supply and ecosystem restoration, it was also the source of several proposals to enhance "Delta as a Place" and economic development. The analysis in the ESP identifies the National Heritage Area and Delta Investment Fund as the most promising strategies generated in Delta Vision. A National Heritage Area could be an effective means to brand and coordinate strategies to enhance resource-based recreation, agritourism, and historical and cultural tourism. The proposed Delta Investment Fund would be a useful tool to implement the strategy in an effective and coordinated way.

## **Recommended Actions for Economic Sustainability**

***The following actions are recommended.*** All of these actions and strategies are consistent with economic sustainability in the Delta and the coequal goals of increased water supply reliability and ecological restoration.

- **Improve core, non-project Delta levees to the PL 84-99 standard by 2015 using the existing Delta levee subventions and special project programs.** This engineering

standard has been developed and supported by numerous studies, is attainable with current bond funds, and consistent with the intended use of the bonds California voters passed in 2006. Achieving this goal will increase water supply reliability, and will leverage the substantial benefit of federal support from the Army Corps of Engineers in the event of future levee failures. (Chapter 4)

- **Improve many Delta Levees beyond the PL 84-99 that addresses earthquake and sea-level rise risks, improve flood fighting and emergency response, and allow for vegetation on the water side of levees to improve habitat.** Upgrades beyond PL 84-99 are the appropriate place to consider implementing island-by-island life-cycle cost-benefit analyses. Improvement of most core Delta levees to this higher standard would cost \$1 to \$2 billion. While this is a longer-term program, planning should be initiated immediately. (Chapter 4)
- **Transfer responsibility for coordination of regional emergency management and response and recovery to a regional agency.** The regional agency should place much more emphasis on preventative maintenance and inspections, flood-fighting, and emergency response. The Delta Protection Commission should consider taking on this role.
- **Maintain or enhance the value of Delta agriculture.** The contribution of agriculture to the economy of the Primary Zone is irreplaceable, and it is also very important to the Secondary Zone and regional economy. While some modest loss in agricultural acreage may be unavoidable, it is possible to maintain and enhance the value of Delta agriculture if current trends towards higher value crops continue. The requirement to protect the value of Delta agriculture must be part of any habitat, water supply or development plans. The fifth draft of the Delta Plan under development by the Delta Stewardship Council includes maintaining and enhancing Delta agricultural revenues as a performance measure.
- **Initiate a process to streamline local, State, and federal regulations and permitting.** Overlapping layers of regulatory oversight in the Delta create uncertainty and costs that discourage private investment needed for economic sustainability.
- **The Delta Stewardship Council should not increase regulation of “covered actions” for industries it is trying to enhance in the Delta.** Exemptions should be made for needed investments in agriculture, recreation, and tourism.
- **An existing agency should be designated to manage and implement economic sustainability efforts in the Delta.** The agency would ensure that strategic actions, such as marketing efforts and recreation enhancements, are implemented in a systematic, efficient, and consistent fashion throughout the Delta. The Delta Protection Commission should consider taking on this role.

- **Create a Delta and/or Legacy Communities “brand” to enhance awareness.** The agricultural products, attractions, and communities of the Delta should be marketed strategically in order to raise the stature of the region and encourage added visitation.
- **Designate the Delta as a National Heritage Area (NHA).** This recommendation is contingent on the outcome of the Delta Protection Commission feasibility study. The NHA could be an effective tool for marketing and branding the Delta and implementing the recreation and tourism enhancement strategy.
- **The Delta Investment Fund should be established and used strategically to implement the recreation and tourism enhancement strategies.** Funding for planning and development of focal point complex areas and catalyst features, especially those close to Legacy Communities, should be a high priority.
- **Develop measurable targets for recreation and tourism and agricultural sustainability, and track performance over time.** A key first step is to improve data on recreation and tourism use with an updated visitor survey and additional primary data collection that is repeated at five-year intervals. This data is crucial for future recreation planning and marketing. Agricultural data is more available but needs to be consistently collected and compiled over time.
- **Create flood bypass and habitat improvements in the Yolo bypass, McCormack-Williamson Tract, and the lower San Joaquin River near Paradise Cut.** In all cases, the BDCP and State interests should work collaboratively with local stakeholders to minimize negative economic impacts and develop effective mitigation. In the lower San Joaquin River, an alternative proposal developed collaboratively with local stakeholders is recommended as an alternative to the more expansive and costly plan outlined in the draft Bay Delta Conservation Plan (BDCP). These ecological and flood-control investments should be designed with appropriate facilities to enhance recreational opportunities.
- **Improve water quality and freshwater outflow in the Delta.** In addition to ecosystem benefits, this goal improves agriculture, recreational boating and fishing, and in-Delta municipal and industrial water supplies.

**The following proposed actions to further the coequal goals are not recommended because they conflict significantly with economic sustainability.** These proposed actions all had significant negative impacts on all three key components the Delta economy evaluated in the plan: agriculture, recreation and tourism, and infrastructure services.

- **A 15,000 cubic feet per second isolated water conveyance facility is inconsistent with economic sustainability.** This project would have significant negative effects on all aspects of the Delta economy. There are unacceptably high risks surrounding the financial feasibility, environmental impacts, and operations of the project. There are many alternative options for increasing water supply reliability, and the large cost of isolated conveyance could drain resources that could support the state policy of reducing reliance on water exports from the Delta.

- **Tidal marsh in the south Delta is inconsistent with economic sustainability.** Tidal marsh in the south Delta eliminates a large amount of high-value agricultural land and would affect water quality in ways that are negative for recreational, municipal, industrial, and agricultural uses.
- **A large area of open water in the Central Delta caused by the permanent flooding of several contiguous islands is inconsistent with economic sustainability.** Although the agricultural value of these deeply subsided islands does not justify levee investments, this strategy would cause significant harm to recreation, and negatively affect water quality for in-Delta municipal and industrial uses through increased levels of organic carbon, and increase flood risks on adjacent islands.

Finally, the plan discusses a number of additional potential actions that require further study and development. These are mostly medium-term strategies that could be consistent with Delta economic sustainability and the coequal goals. However, there are significant concerns or uncertainties regarding their impact on the Delta economy that must be further researched and addressed before they can be recommended in the plan. These potential actions include proposals for smaller capacity water conveyance such as a 3,000 cfs tunnel, moving water supply intakes for conveyance downstream into the west Delta, proposals for enhanced through-Delta conveyance such as Delta corridors, extensive use of wildlife-friendly agricultural easements as described in the BDCP, tidal marsh in the west Delta and Cache Slough, and subsidence-reversal agriculture on private lands.

In conclusion, the recommended strategies in the Economic Sustainability Plan show that it is possible to sustain and enhance the Delta economy while making significant progress towards the coequal goals of increased water supply reliability and ecosystem restoration.