Chapter 14 – Regional Economics

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Chapter 14 Regional Economics

This chapter is based on the background information and technical analysis documented in Appendix Q, *Regional Economics Technical Appendix*, which includes additional information on regional economic conditions and technical analysis of the effects of each alternative.

14.1 Affected Environment

Regional economics includes conditions and economic information relevant to the specific industries in which potential economic effects could occur, such as municipal and industrial (M&I) water uses, agriculture, fisheries, recreation, and hydropower. Presented below are descriptions of the affected environment specific to regional economics including agricultural economics and commercial and recreational fisheries economics. Descriptions of the affected environment for recreation resources are detailed in Chapter 18. The affected environment for power resources are detailed in Chapter 18.

Regional economic data is presented at a county level, with data compiled using Impact Planning and Analysis (IMPLAN) data files for 2021 (the most recent complete data set available) from a variety of sources, including, but not limited to, the United States Bureau of Economic Analysis, the United States Bureau of Labor, and the U.S. Census Bureau. This section presents IMPLAN data and results for economic output, employment, and labor income. Output is the dollar value of industry production. Employment is measured as the number of jobs. Labor income is the dollar value of total payroll (including benefits) for each industry plus income received by self-employed individuals.

According to the US Census Bureau, California's median, mean, and per capita household income for 2017 through 2021 was $84,097, $119,149, and $41,276, respectively. All counties except Placer and El Dorado within the Sacramento Valley Region have lower median household, mean household, and per capita incomes than the state average. All counties in the San Joaquin Valley Region have median household, mean household, and per capita incomes lower than the state average. The mean and median household incomes for all counties in the San Francisco Bay Area Region are higher than the state average. In the Central Coast Region, San Luis Obispo has a lower than state average median household income and Santa Barbara has a higher than state average median household income. All counties in the South Coast Region except Ventura, Orange and San Diego have lower median household income than the state average.

14.1.1 Agricultural Economics

California is the highest producer (by value) of agricultural commodities in the United States. California accounted for over 11.8% of the nation’s total agricultural value (cash farm receipts) in 2021 (California Department of Food and Agriculture 2022). According to the California Department of Food and Agriculture's *2021-2022 Agricultural Statistics Review* (2022), in 2021

the San Joaquin Valley Region counties accounted for approximately 59% ($36.1 million) of the agricultural produce (by value) in California. Sacramento Valley counties accounted for approximately 13% ($7.9 million). Southern California counties accounted for approximately 10% ($5.9 million) followed by Delta, Central Coast, and San Francisco Bay counties at 8% ($4.7 million), 5% ($3.0 million) and 2% ($1.5 million).

14.1.2 Commercial and Recreational Fisheries Economics

The commercial and recreational ocean salmon fisheries along the Southern Oregon/Northern California Coast are affected by the population of salmon that rely upon the Northern California rivers, including the Sacramento and San Joaquin Rivers. Changes in CVP and SWP water operations would affect the flow patterns and water quality of the Sacramento and San Joaquin rivers and the survivability of the salmon that use those rivers for habitat. Reclamation is aware of concerns by commercial and recreational fishery interests about local economic impacts resulting from salmon, trout, and other fisheries collapse or impacts in recent years.

Management of the California ocean salmon fishery is a combined effort of the California Department of Fish and Wildlife (CDFW) and the Pacific Fishery Management Council (PFMC), a regional council of the National Oceanic and Atmospheric Administration. CDFW manages salmon harvest from the shoreline to three nautical miles off the California coast. From three nautical miles to 200 nautical miles offshore is managed by PFMC. PFMC is responsible for developing the Pacific Coast Salmon Fishery Management Plan that guides management of the ocean commercial and recreational fishery in California, Oregon, and Washington (Pacific Fishery Management Council 2022). The annual ocean salmon fishery regulations promote the maximum amount of harvest while ensuring that suitable population levels are maintained (National Oceanic and Atmospheric Administration Fisheries 2023).

14.2 Effects of the Alternatives

The impact analysis considers changes in regional economic conditions related to changes in CVP and SWP operation under the alternatives as compared with the No Action Alternative.

The No Action Alternative is based on 2040 conditions. The changes to regional economic resources that are assumed to occur by 2040 under the No Action Alternative conditions would be different than existing conditions because of the following factors:

- Climate change and sea-level rise
- General plan development throughout California, including increased water demands in portions of the Sacramento Valley

In the long term, it is anticipated that climate change, and development throughout California, could affect water supply deliveries.

Under the No Action Alternative, Reclamation would continue with the current operation of the CVP, as described in the 2020 Record of Decision and subject to the 2019 Biological Opinions. The 2020 Record of Decision for the CVP and the 2020 Incidental Take Permit for the SWP represent current management direction or intensity pursuant to 43 CFR Section 46.30.

Although the No Action Alternative included habitat restoration projects at a programmatic level, the 2020 ROD did not provide environmental coverage for these projects, and all of the habitat projects considered under the No Action required or will require additional environmental documentation. Thus, ground disturbance for habitat restoration projects did not materialize as a result of implementing the No Action Alternative. For the purpose of the analysis, these habitat restoration projects are considered independent projects that will be considered under cumulative effects.

It is anticipated that climate change would result in more short-duration high-rainfall events and less snowpack in the winter and early spring months. This could result in decreasing CVP/SWP water supplies, recreation and hydropower generation. Additionally, land uses in 2040 would occur in accordance with adopted general plans and could convert natural or rural areas to developed areas, resulting in increased water supply demand and increased power use to supply water. These increases in demand could result in development of alternate supplies. It is assumed that costs associated with development of alternate supplies would be passed on the end users which could result decreases in discretionary income and could result in less discretionary spending in the regional economy.

The No Action Alternative, thus, is expected to result in potential changes in regional economic resources for M&I water uses, agricultural water uses, fisheries, recreation, and hydropower. These changes were described and considered in the 2020 Record of Decision.

For the purposes of this analysis, the changes in operations and flows are linked to changes in regional economic resources because they are related to water supply and hydropower generation. The evaluation of economic conditions is based on IMPLAN data and results for economic output, employment, and labor income.

14.2.1 Potential M&I water supply-related changes to the regional economies

Most water agencies conduct long-term resource planning every five years to ensure adequate water supplies are available to meet existing and future demands. If a substantial deficit is estimated during these planning exercises, water agencies may decide to secure alternate water supplies such as desalination and new groundwater development (considered new supply sources), water conservation projects, or water transfers/imported water. All or a portion of increased water costs to secure these alternate water supplies are passed on to the retail agencies and water customers through increased water rates, subject to prevailing legislation and regulatory framework regarding changes in water rates. An increase in water rates would reduce disposable income and could result in less spending in the regional economy. The No Action Alternative analysis includes CVP and SWP water supplies under existing conditions and future water demands (2040 water demands). M&I water supply costs under the No Action Alternative are expected to be higher in comparison to existing conditions since demands are expected to increase due to population growth under the No Action Alternative with no change to supplies. Consequently, M&I contractors would need to invest in alternate water supplies to meet increases in demand. Typically, increased water supply cost associated with development of alternate water supplies are passed on to water customers through water rate increases. This could result in a decrease in disposable income and could result in less spending in the regional economy under No Action Alternative. This analysis used outputs from the California Water

Economics Spreadsheet Tool (CWEST) model to identify changes in the composition of water supplies and resulting changes in water rates.

Alternatives 1 and all phases of Alternative 2 would increase water supply deliveries to North of Delta and South of Delta M&I contractors in comparison to No Action Alternative and consequently reduce water supply costs to contractors (see Table 14–1). Alternative 3 would decrease water supply deliveries and result in an increase to water supply costs to contractors (see Table 14–1). Alternative 4 would mostly result in an increase in deliveries and decrease in water supply costs to M&I contractors (see Table 14–1).

Alternative 1, most Alternative 2 phases, and Alternative 4 would mostly result in an increase in M&I water supply deliveries, while Alternative 2 Without TUCP with Systemwide Voluntary Agreements and Alternative 3 would decrease water supply deliveries. The No Action Alternative would require the development of alternate supplies to meet water demands, but increased CVP and SWP deliveries under Alternatives 1, most Alternative 2 phases, and Alternative 4 would reduce water supply costs as alternate water supply projects would not need to be implemented. Additionally, there would be reductions in lost water sales revenues, transfer costs, groundwater pumping savings, and/or excess water savings. Typically, water supply cost increases are passed on to water customers through water rate increases.

As summarized in Table 14–1, water supply costs under Alternative 1, most Alternative 2 phases, and Alternative 4 would decrease in comparison to the No Action Alternative. Consequently, water rates under Alternatives 1, most Alternatives 2 phases, and Alternative 4 could be lower than the No Action Alternative. Water rates under Alternative 2 Without TUCP with Systemwide Voluntary Agreements and Alternative 3 could be higher than the No Action Alternative. This could result in an increase in disposable income and could result in more spending in the regional economy under Alternative 1, most Alternative 2 phases, and Alternative 4.

Table 14–2 summarizes the regional economic effects on employment, labor income, and revenue from decreased water supply costs to CVP and SWP M&I contractors. Most of the economic developments under Alternative 1, Alternative 2 phases, and Alternative 4 would occur in the Southern California region (Ventura, Los Angeles, Orange, Imperial, San Diego, Riverside, and San Bernardino Counties) since approximately 85% of the increased M&I deliveries would be in this region.

Under Alternative 3, decreased CVP and SWP deliveries would increase water costs due to increased alternate water supply costs. This increase in water supply costs could be passed on to the water customer through water rate increases. Increase in water rates could result in a decrease in disposable income and could result in less spending in the regional economy. Table 14–2 summarizes the regional economic effects on employment, labor income, and revenue from increased water supply costs under the alternatives.

Table 14–1. Annual Changes to M&I Water Supply Costs under the Action Alternatives Compared to the No Action Alternative (in thousand dollars)

	Sacramento River Region	San Joaquin River Region	San Francisco Bay Region	Central Coast Region	South Coast Region
Alternative 1	($115)	($12,533)	($34,100)	($2,198)	($274,279)
Alternative 2 With TUCP Without VA	($720)	($3,743)	($3,520)	($299)	($1,660)
Alternative 2 Without TUCP Without VA	($413)	($2,357)	$1,986	($373)	($27,984)
Alternative 2 Without TUCP With Delta VA	($4,475)	($3,677)	($5,696)	($335)	($30,266)
Alternative 2 Without TUCP With Systemwide VA	$1,578	$3,663	$4,182	$281	$28,192
Alternative 3	$7,070	$17,319	$26,534	$4,286	$1,112,874
Alternative 4	($137)	($1,359)	($275)	($617)	($89,832)

All costs in 2023 dollars. Numbers in parentheses are negative values.
Values presented in the table refer to cost savings from contract water not used to meet demand or reduce groundwater pumping and reflect aggregate impacts across contractors. Negative refers to savings and positive refers to costs.

Table 14–2. M&I Water Supply Costs Related to Regional Economic Effects under the Action Alternatives Compared to the No Action Alternative

	Sacramento River Region	San Joaquin River Region	San Francisco Bay Region	Central Coast Region	South Coast Region
EMPLOYMENT (NUMBER OF JOBS [a])					
Alternative 1	0.4	41.1	104.7	9.0	1,352.5
Alternative 2	(6.0) – 16.9	(12.0) – 12.3	(12.8) – 17.5	(1.1) – 1.5	(139.0) – 149.2
Alternative 3	(26.7)	(56.7)	(81.5)	(17.5)	(5,487.6)
Alternative 4	0.5	4.5	0.8	2.5	443.0
LABOR INCOME (IN MILLION DOLLARS)					
Alternative 1	$0.02	$1.9	$7.4	$0.4	$75.9
Alternative 2	($0.3) – $0.93	($0.6) – $0.57	($0.9) – $1.2	($0.1) – $0.074	($7.8) – $8.4
Alternative 3	($1.47)	($2.64)	($5.77)	($0.85)	($307.84)
Alternative 4	$0.029	$0.207	$0.060	$0.123	$24.8
OUTPUT (IN MILLION DOLLARS)					
Alternative 1	$0.1	$7.2	$24.5	$1.6	$266.1

	Sacramento River Region	San Joaquin River Region	San Francisco Bay Region	Central Coast Region	South Coast Region
Alternative 2	($1.1) – $3.2	($2.1) – $2.1	($3.0) – $4.1	($2,103.63) – $0.28	($27.3) – $29.4
Alternative 3	($5.0)	($9.9)	($19.1)	($3.2)	($1,079.6)
Alternative 4	$0.10	$0.78	$0.20	$0.46	$87.1

All costs in 2024 dollars. Numbers in parentheses are negative values.
[a] Jobs include full-time, part-time and temporary jobs created or lost.

14.2.2 Potential agriculture-related changes to the regional economy

During past water supply shortages, agricultural contractors have typically increased groundwater pumping to substitute for reduced water supplies. If groundwater is not available, growers would idle field crops and use available surface water to irrigate permanent crops. Implementation of the Sustainable Groundwater Management Act (SGMA) could constrain the ability to increase or maintain groundwater pumping to fully offset reductions in surface water deliveries. This analysis used outputs from the SWAP model to identify the effect of changes in the availability of agricultural water supplies to growing practices in the Sacramento and San Joaquin River Regions. Groundwater pumping and SGMA implementation is represented in the SWAP model to govern whether and to what amount project water users can utilize groundwater to offset reductions in surface water deliveries. The SWAP model constrains groundwater pumping to maximum sustainable yield in the modeled area. SWAP model results are estimated for both below normal (used as a proxy for overall average) and dry conditions, defined according to the yearly Sacramento River Index values associated with the water deliveries from the CalSim 3 operations model. As summarized in Table 14–3 and Table 14–4, changes in annual agricultural water supplies would result in changes to total irrigated acreage and gross revenue generated in both regions.

Table 14–5 and Table 14–6 summarize the annual regional economic effects resulting from changes in agricultural water supplies delivered under the alternatives when compared to the No Action Alternative. Changes to irrigated acreage and agricultural revenue would affect businesses and individuals who support farming activities, such as farm workers, fertilizer and chemical dealers, wholesale and agricultural service providers, truck transport, and others involved in crop production and processing. The changes in agricultural revenue results presented in Table 14–3 include price adjustments for crops that reflect both demand shifts from current conditions to 2040 (fixed price revenue) and price changes caused by alternative-driven changes in crop production/ supply shifts (price effect revenue). Since IMPLAN assumes fixed prices, regional economic effects were estimated using the fixed price agricultural revenue results. Price effect revenue results would primarily result in changes to proprietor income and are not expected to result in substantial impacts on the regional economy.

Table 14–3. Agricultural Water Supply Costs under the Action Alternatives Compared to the No Action Alternative for Sacramento River Region

	Alternative 1	Alternative 2	Alternative 3	Alternative 4
AVERAGE CONDITIONS [a]				
Average Annual CVP/SWP Deliveries (AF)	4,501	(101,274.8) – (5,985.2)	(79,652)	7,106
Irrigated Acreage (acres)	955	(8,929.2) – (4,758.2)	(22,818)	1,151
Total Agricultural Revenue (million dollars)	($29.5)	$65.9 – $83.2	$42.9	$77.6
Fixed Price Agricultural Revenue (million dollars) [b]	($5.3)	($7.9) – $2.3	($25.9)	$10.1
Price Effects Agricultural Revenue (million dollars) [c]	($24.2)	$67.4 – $89.8	$68.8	$67.6
DRY CONDITIONS [d]				
Average Annual CVP/SWP Deliveries (AF)	13,632	(79,069.5) – (15,356.1)	(86,124)	5,872
Irrigated Acreage (acres)	4,379	(11,916.9) – (5,012.6)	(21,123)	1,889
Total Agricultural Revenue (million dollars)	($26.5)	$71.8 – $91.5	($29.5)	$97.8
Fixed Price Agricultural Revenue (million dollars) [b]	$6.2	($9.3) – ($4.2)	($54.9)	$14.8
Price Effects Agricultural Revenue (million dollars) [c]	($32.7)	$78.6 – $95.8	$25.4	$83.0

All costs in 2024 dollars. Numbers in parentheses represent negative values. Values are an annual average change between the No Action Alternative and the alternatives under 2040 conditions.
AF = acre-feet; CVP = Central Valley Project; SWP = State Water Project
[a] Average Conditions refers to an average of all year types in the CalSIM simulation period.
[b] Agricultural Revenue based on fixed prices for agricultural products, current price used in the analysis.

[c] Agricultural Revenue based on projected price effect for agricultural products based on changes to irrigated acreage in the Central Valley and other global effects on crop prices.
[d] Dry Conditions refer to an average of dry years only, using Sacramento River Index.

Table 14–4. Agricultural Water Supply Costs Related to Regional Economic Effects under the Action Alternatives in Comparison to the No Action Alternative for Sacramento River Region

	Employment (number of jobs)[a]	Labor Income (million dollars)	Revenue (million dollars)
AVERAGE CONDITIONS			
Alternative 1	(86.9)	($2.0)	($7.2)
Alternative 2	(123.9) – 23.1	($2.9) – $0.9	($11.5) – $5.5
Alternative 3	(603.3)	($12.1)	($41.3)
Alternative 4	122.6	$3.4	$15.8
DRY CONDITIONS			
Alternative 1	61.5	$1.9	$9.8
Alternative 2	(118.6) – (53.4)	($3.1) – ($1.3)	($13.5) – ($5.9)
Alternative 3	(784.5)	($19.5)	($80.3)
Alternative 4	132.5	$4.4	$22.6

All costs in 2024 dollars; Labor income and output in parentheses represent negative values.
[a] Jobs include full-time, part-time and temporary jobs created or lost.

Table 14–5. Agricultural Water Supply Costs under the Action Alternatives Compared to the No Action Alternative for the San Joaquin River Regions

	Alternative 1	Alternative 2	Alternative 3	Alternative 4
AVERAGE CONDITIONS [a]				
Average Annual CVP/SWP Deliveries (AF)	466,371	(116,491.0) – 49,205.0	(1,146,414)	107,657
Irrigated Acreage (acres)	91,372	(37,982.2) – (3,805.5)	(303,764)	28,406
Total Agricultural Revenue (million dollars)	$337.0	($255.5) – ($95.3)	($1,589.9)	($56.4)
Fixed Price Agricultural Revenue (million dollars) [b]	$340.9	($221.5) – $29.2	($1,549.5)	$101.3
Price Effects Agricultural Revenue (million dollars) [c]	($3.9)	($124.5) – ($33.9)	($40.4)	($157.7)

	Alternative 1	Alternative 2	Alternative 3	Alternative 4
DRY CONDITIONS [d]				
Average Annual CVP/SWP Deliveries (AF)	318,194	(120,681.4) – (48,681.2)	(821,700)	2,062
Irrigated Acreage (acres)	87,164	(53,680.6) – (20,096.6)	(210,633)	(1,907)
Total Agricultural Revenue (million dollars)	$411.9	($330.5) – ($224.0)	($1,178.9)	($173.4)
Fixed Price Agricultural Revenue (million dollars) [b]	$403.6	($251.3) – ($108.6)	($1,261.0)	($28.2)
Price Effects Agricultural Revenue (million dollars) [c]	$8.3	($115.4) – ($79.2)	$82.1	($145.2)

All costs in 2024 dollars. Numbers in parentheses represent negative values. Values are an annual change between the No Action Alternative and the alternatives under 2040 conditions.
AF = acre-feet; CVP = Central Valley Project; SWP = State Water Project
[a] Average Conditions refers to an average of all year types in the CalSIM simulation period.
[b] Agricultural Revenue based on fixed prices for agricultural products, current price used in the analysis.
[c] Agricultural Revenue based on projected price effect for agricultural products based on changes to irrigated acreage in the Central Valley and other global effects on crop prices.
[d] Dry Conditions refer to an average of dry years only, using Sacramento River Index.

Table 14–6. Agricultural Water Supply Costs Related to Regional Economic Effects under the Action Alternatives in Comparison to the No Action Alternative for San Joaquin River Region

	Employment (number of jobs)[a]	Labor Income (million dollars)	Revenue (million dollars)
AVERAGE CONDITIONS			
Alternative 1	3,951.7	$116.72	$504.08
Alternative 2	(1,752.9) – 432.1	($64.3) – $10.8	($329.7) – $40.9
Alternative 3	(14,404.2)	($480.8)	($2,304.3)
Alternative 4	(75.8)	($5.1)	$146.1
DRY CONDITIONS			
Alternative 1	3,722.3	$123.89	$596.32
Alternative 2	(1,854.5) – (779.8)	($70.7) – ($30.7)	($373.0) – ($163.1)
Alternative 3	(10,672.5)	($375.31)	($1,873.80)
Alternative 4	(75.8)	($5.1)	($40.0)

All costs in 2024 dollars; Labor income and output in parentheses represent negative values.
[a] Jobs include full-time, part-time and temporary jobs created or lost.

14.2.3 Potential fisheries-related changes to the regional economy

The commercial and recreational (ocean sports) ocean salmon fishery along the SONCC are affected by the population of salmon that rely upon the Northern California rivers, including the Sacramento and San Joaquin rivers. As described in detail in Chapter 12, Fish and Aquatic Resources, annual average Central Valley Chinook salmon abundance (includes Spring, Winter, Fall and late-Fall runs) in the Bay under all alternatives would be negligeable in comparison to the No Action Alternative. There would be minimal impacts to commercial and recreational ocean salmon harvest under Alternative 1 compared to the No Action Alternative. Consequently, revenues received by fisherman from changes to ocean salmon harvest would be minimal. Ocean fisheries support industries such as fish processors, boat manufacturers, repair and maintenance would see no changes in revenue. Overall fisheries related changes to the regional economy under Alternative 1 would be minimal.

Coho salmon, fall-run and spring-run Chinook salmon impacts under all the alternatives would be minor in comparison to the No Action Alternative. These salmon populations are extremely important to the Yurok Tribe and Hoopa Valley Tribe as part of their lives, cultural traditions, ceremonies, and community health (Bureau of Reclamation 2012). Salmon populations in the Trinity River would not be adversely affected under the alternatives, therefore, there would be no fisheries-related adverse effects to revenue and disposable incomes in the Trinity River Region. Consequently, there would be no adverse effects to the Tribe's economy.

14.2.4 Potential impacts to regional recreational economics

Changes in reservoir levels under the alternatives could impact recreational use and spending in the region. Recreation (leisure and hospitality sector) is in the top three industries in terms of employment in Trinity, El Dorado and Napa counties that fall within the study area. The alternatives are not expected to impact reservoir levels and recreational use and spending in Napa County or Lake Tahoe in El Dorado County. This analysis only considers potential recreational use and spending effects on regional economics in Trinity County forecast from changes to Trinity Reservoir levels under the alternatives. Average water elevations in Trinity Reservoir under Alternative 1, Alternative 3, and Alternative 4 would remain the same or be slightly higher when compared to the No Action Alternative. Therefore, camping, day use opportunities at the campgrounds surrounding Trinity Reservoir, and recreational fishing access are expected to be similar under Alternative 1, Alternative 3, and Alternative 4 in comparison to the No Action Alternative.

The minimum elevations of Trinity Reservoir under all phases of Alternative 2 would remain the same as the No Action Alternative from January through March. From April through November, all phases of Alternative 2 would have a lower minimum elevation compared to the No Action Alternative, except for Alternative 2 With TUCP Without VA, which would have higher minimum water levels by up to eleven feet. In December, Alternative 2 With TUCP Without VA and Alternative 2 Without TUCP Systemwide would have higher minimum elevations compared to the No Action Alternative, while the other Alternative 2 phases would be similar to or slightly higher than the No Action Alternative. Under all Alternative 2 phases and the No Action Alternative, minimum water elevations from September through November would be at or below 2,170, making the Minersville boat ramp unusable. In August, the minimum water elevation

under Alternative 2 Without TUCP and With Delta VA, would be four feet below the No Action Alternative and may be less than 2,170 feet, making the Minersville boat ramp unusable.

When Trinity Reservoir levels fall below 2,170 feet and all the boat ramps on the lake are unusable, recreational visitation could substantially decrease and cause adverse regional economic impacts to Trinity County. Such a situation could occur under Alternative 2 Without TUCP Delta VA for the month of August, which could result in decreases visitation to the lake. Given the limited changes in Trinity Reservoir levels throughout the year forecast under all other Alternative 2 phases in comparison to the No Action Alternative, limited impacts are forecast on camping, day use opportunities at the campgrounds surrounding Trinity Reservoir, and recreational fishing access. Consequently, Alternative 2 phases except for Alternative 2 Without TUCP Delta VA are not expected to have a substantial impact to recreational visitation, recreational revenue and recreational regional economics in Trinity County. Alternative 2 Without TUCP Delta VA could have a short-term adverse effect on recreational regional economics in Trinity County.

Consequently, there would be no adverse effects on recreational visitation, recreational revenue, and the recreational regional economy in Trinity County under all four action alternatives.

14.2.5 Potential impacts to regional economics from changes to hydropower

As described in detail in *Chapter 18, Power,* the CVP net hydropower generation would be slightly lower over the long-term and over dry and critically dry years under Alternative 1 compared to the No Action Alternative. Under the Alternative 2 phases, and Alternative 3, the CVP net hydropower generation would be similar or slightly higher over the long-term and over dry and critically dry years compared to the No Action Alternative. CVP net hydropower generation would be slightly lower under Alternative 4. The hydropower generated by the CVP is marketed and transmitted by the Western Area Power Administration (WAPA) Sierra Nevada Region. As CVP annual and plant-in-service power costs increase (including Central Valley Project Improvement Act Environmental Restoration Funds), and available energy for sale decreases, the net unit cost of CVP power may decrease. Typically, increases or decreases in power costs would be passed on to customers through rate increases or decreases, respectively. Alternative 1 would result in a decrease in disposable income and could result in less discretionary spending in the regional economy. Alternative 2, and Alternative 3, would result in an increase in disposable income and could result in more discretionary spending in the regional economy. Conversely, Alternative 4 would result in slight increases in power costs, which could decrease disposable income and discretionary spending in the regional economy.

Under Alternative 1, Alternative 2 and Alternative 4, SWP net generation over the long-term would be lower for both long-term average and in dry and critically dry years in comparison to the No Action Alternative. Under Alternative 3 compared to the No Action Alternative, SWP annual energy generation would be lower for both the long-term average and for dry and critically dry years , but the energy required by the SWP to move the water would also be lower for both the long-term average and for dry and critically dry years resulting in an increase in SWP net generation over the long-term for both long-term average and in dry and critically dry years. Power generated by the SWP is transmitted by PG&E, Southern California Edison, and California ISO through other facilities (California Department of Water Resources 2022). The SWP also markets energy in excess of the SWP demands to a utility and members of the WSPP,

formerly known as the Western Systems Power Pool. A decrease in SWP net generation under Alternatives 1, 2 and 4 would increase the need for the development of other alternative supplies which could result in an overall increase in power cost. Typically, increase in power costs would be passed on to customers through rate increases. This would result in a decrease in disposable income and could result in less discretionary spending in the regional economy. Alternative 3 would result in an increase in disposable income and could result in more discretionary spending in the regional economy.

14.3 Mitigation Measures

No avoidance and minimization measures or additional mitigation measures have been identified for Regional Economics.

14.4 Cumulative Impacts

The No Action Alternative would continue with the current operation of the CVP and may result in changes to the regional economy in the Sacramento River, San Joaquin River, San Francisco Bay, Central Coast, and South Coast regions. The action alternatives would have varying effects on economic output, employment, and labor income. The magnitude of the changes is dependent on alternative and water year type. Given the changes in regional economic conditions, the No Action Alternative and action alternatives may contribute to cumulative changes to Regional Economic resources as described in Appendix Q, *Regional Economics* and Appendix Y, *Cumulative Impacts*.