

7.6 Utilities and Public Services

Potential impacts on utilities and public services associated with CALFED Bay-Delta Program actions primarily involve relocating or modifying infrastructure components. Relocating or modifying a major infrastructure component would result in a potentially significant impact. Benefits from Program actions include decreased risk of structural failure of infrastructure because of increased levee stability.

7.6.1	SUMMARY	7.6-1
7.6.2	AREAS OF CONTROVERSY	7.6-2
7.6.3	AFFECTED ENVIRONMENT/EXISTING CONDITIONS	7.6-3
7.6.4	ASSESSMENT METHODS	7.6-9
7.6.5	SIGNIFICANCE CRITERIA	7.6-10
7.6.6	NO ACTION ALTERNATIVE	7.6-10
7.6.7	CONSEQUENCES: PROGRAM ELEMENTS COMMON TO ALL ALTERNATIVES	7.6-11
7.6.8	CONSEQUENCES: PROGRAM ELEMENTS THAT DIFFER AMONG ALTERNATIVES	7.6-15
7.6.9	PROGRAM ALTERNATIVES COMPARED TO EXISTING CONDITIONS	7.6-16
7.6.10	ADDITIONAL IMPACT ANALYSIS	7.6-17
7.6.11	MITIGATION STRATEGIES	7.6-18
7.6.12	POTENTIALLY SIGNIFICANT UNAVOIDABLE IMPACTS	7.6-18



7.6 Utilities and Public Services

7.6.1 SUMMARY

A vast network of utility generation/transmission systems and service providers cross all regions of the CALFED Bay-Delta Program (Program) study area, supplying urban and rural areas with power, water, and emergency services. Impacts on utilities and public services associated with Program actions primarily involve relocating or modifying infrastructure components and increasing power demands. Program actions are not expected to directly require construction or development of additional utility capacity, or to require public services in excess of current regional capacity. However, indirect effects may be associated with power and energy issues, as presented in Section 7.9.

Program actions are not expected to require construction or development of additional utility capacity, or to require public services in excess of current regional capacity.

Preferred Program Alternative. Beneficial impacts on utilities and other infrastructure are associated with improvement of existing levees. Electrical transmission lines, utility facilities, and emergency service centers would benefit from the reduced cumulative risk of levee failure in the area.

The Ecosystem Restoration and Levee System Integrity Programs, and the Storage and Conveyance elements could require relocating or modifying some utility and public service infrastructure components. If proposed mitigation strategies fail to successfully avoid relocation or modification of major infrastructure components, these impacts would be considered potentially significant. The Storage element could result in hydropower output modifications, construction impacts, and potential stimulation of municipal and industrial (M&I) development. The significance of these impacts would depend on the size, location, and quantity of storage facilities developed. The Water Quality Program and Storage element have the potential to increase the use of recreation facilities, thereby increasing demand for utilities and public services. Additionally, the Water Quality Program could increase energy demand to supply new treatment facilities. The Storage and Conveyance elements would create additional power demand to increase pumping operations. These increases in power consumption could require additional generating capacity, as discussed in Section 7.9. The Water Use Efficiency Program and Storage element could create a need for new distribution systems to provide power or recycled water to potential customers. Proper siting of such systems could mitigate impacts associated with new distribution corridors.

Alternatives 1, 2, and 3. Impacts on utilities and public services would be similar to those described for the Preferred Program Alternative but would differ in magnitude,



depending on the conveyance facilities being constructed and operated. Because Alternative 1 includes the fewest facilities, construction-related and operations-related impacts would be less. Although similar facilities are involved in Alternative 2, energy requirements most likely would be greater than those for the Preferred Program Alternative because of the higher rate of pumping. The isolated facility associated with Alternative 3 would involve the highest energy requirements and greatest potential for displacement of major infrastructure components.

The following table presents the potentially significant adverse impacts and mitigation strategies associated with the Preferred Program Alternative. Mitigation strategies that correlate to each listed impact are noted in parentheses.

**Potentially Significant Adverse Impacts and Mitigation Strategies
Associated with the Preferred Program Alternative**

<p>Potentially Significant Adverse Impacts</p> <p>Possible need for relocation or modification of major infrastructure components (1,2,4,5).</p> <p>Increased risk of gas line rupture during construction phase (3).</p>	<ol style="list-style-type: none"> 2. Constructing overpasses, small bridges, or other structures to accommodate existing infrastructure. 3. Coordinating construction activities with utility providers. 4. Designing and operating facilities to minimize the amount of energy required and to maximize the amount of energy created. 5. Designing project facilities to avoid or minimize their effect on existing infrastructure.
<p>Mitigation Strategies</p> <ol style="list-style-type: none"> 1. Siting project facilities and transmission infrastructure to avoid existing infrastructure. 	

No potentially significant unavoidable impacts on utilities and public services are associated with the Preferred Program Alternative.

7.6.2 AREAS OF CONTROVERSY

Areas of controversy as defined by CEQA involve differences of opinion among technical experts or information that is not available and cannot be readily obtained. According to this definition, no areas of controversy relate to utilities and public services. In addition, no areas of concern are associated with utilities and public services.



7.6.3 AFFECTED ENVIRONMENT/ EXISTING CONDITIONS

7.6.3.1 DELTA REGION

Water-Related Infrastructure. Most water conveyance facilities in the Delta have been developed under the authority of the federal government's CVP and California's SWP.

As part of CVP development, exportation of water from the Delta began in 1940 with the completion of the Contra Costa Canal. Other major federal units were completed during the early 1950s, including the Delta-Mendota Canal and the Delta Cross Channel (DCC). The DCC transfers water across the Delta from the Sacramento River to the Tracy Pumping Plant, which serves the Delta-Mendota Canal. Numerous SWP facilities have been developed in the Delta, including the Harvey O. Banks Delta Pumping Plant, the California Aqueduct, and the North Bay Aqueduct (NBA).

Water conveyance infrastructure consists of a multitude of agricultural, industrial, and municipal diversions for supplying water to the Delta itself and for export by the SWP and CVP. Diversions and conveyance require canals, waterways, levees, siphons, pumps, radial gates, and other miscellaneous infrastructure. Municipal and industrial (M&I) demands in the Delta are met by conveying water through the Contra Costa Canal to the cities of Martinez, Antioch, and Pittsburgh and to numerous industrial complexes in the vicinity.

Electric Utility and Communication Infrastructure. Power transmission facilities have developed parallel to the population growth of various communities surrounding the Delta. Pacific Gas and Electric (PG&E) and the Western Area Power Administration have developed power transmission lines across the Delta islands and waterways. Many of the corridors are within the periphery of the Delta upland areas, including several natural gas-fired plants. Power-generating facilities are absent from the central Delta. Communication infrastructure in the region includes underground cable and fiber optic lines, and communication/transmission towers.

Natural Gas Infrastructure. Natural gas was discovered in the Delta Region in 1935 and has since been developed into a significant source supply and depot for underground storage. Gas fields, pipelines, underground storage areas, and related infrastructure are located in the Delta. Infrastructure consists mainly of pipelines and storage facilities owned by oil and gas companies, public utilities, and various independent leaseholders.

Public Services. Police protection is provided by various departments within the cities and counties of the Delta Region. For example, the San Joaquin Sheriff's Department marine patrol division provides water patrol services to approximately 600 square miles of waterways in the Delta area. The Contra Costa County Sheriff's Department provides law enforcement services in the area as well. Fire protection service is provided by various departments in the Delta area, including the San Joaquin County Delta Fire Protection

A multitude of agricultural, industrial, and municipal diversions supply water to the Delta itself and exports to the SWP and CVP.

Power-generating facilities are absent from the central Delta.

Gas fields, pipelines, underground storage areas, and related infrastructure are located in the Delta.



District and the Contra Costa Fire Protection District. Volunteer firefighters are also available to respond to fire emergencies as needed. Fire suppression in areas not under the jurisdiction of a fire protection district is the responsibility of the landowners. Emergency services are provided by cities and counties in the region.

7.6.3.2 BAY REGION

Water-Related Infrastructure. Three subregions in the Bay Region are internally independent in terms of water supply: the North Bay, the South Bay, and Contra Costa Water District. The North Bay consists of SWP entitlement holders served by the SWP's NBA and others who use this facility in exchanges. Two water districts are served by the NBA: Napa County Flood Control and Water Conservation District (NCFCWCD) and Solano County Flood Control and Water Conservation District (SCFCWCD). In Solano County, Reclamation's Solano Project provides a substantial source of water supply. Local reservoirs in Napa County provide additional supply. NCFCWCD serves SWP water in southern Napa County. SCFCWCD serves the cities of Vallejo, Vacaville, Fairfield, Benicia, and Suisun. The two districts have transferred water and obtained surplus water through the NBA. In addition to SWP entitlement water, Vallejo receives water allocated from water rights through the NBA.

Three subregions in the Bay Region are internally independent in terms of water supply: the North Bay, the South Bay, and Contra Costa Water District.

The South Bay is served by the SWP's South Bay Aqueduct (SBA) and through the San Felipe Division with CVP contract supplies. Three SWP entitlement holders—Alameda County Water District, Alameda County Zone 7, and the Santa Clara Valley Water District (SCVWD)—are located in the South Bay. In addition, SCVWD is served by the San Felipe Division of the CVP and wholesales water in a large part of the region south of San Francisco Bay.

The Suisun Marsh is located in the Bay Region. The Program actions that would directly affect utilities and public services in the marsh are levee improvements under the Levee System Integrity and Ecosystem Restoration Programs. Levee System Integrity Program actions would take place primarily in the Delta Region and, for most resources, the program is discussed only for the Delta Region. Utilities and public services associated with Suisun Marsh are described under "Delta Region" for the Levee System Integrity Program. Ecosystem Restoration Program actions are described under "All Regions" and include Suisun Marsh.

Electric Utility and Communication Infrastructure. Bay Region electric infrastructure consists of a large and complex grid of power plants, transmission lines, and substations. Generating facilities in the region primarily are fired with natural gas and oil. Major power generation facilities and oil refineries are located along the straits, and their operations can combine to significantly affect the chemical and thermal quality of the water in the Bay-Delta. Entrainment at some of the intakes to these facilities contributes to the cumulative impacts of those at the Delta pumps. Communication infrastructure in the region includes underground cable and fiber optic lines, and communication/transmission towers.



Public Services. Various departments within the cities and counties of the Bay Region provide fire protection, police protection, and emergency services to members of their respective communities.

7.6.3.3 SACRAMENTO RIVER REGION

Water-Related Infrastructure. The Sacramento Valley has relatively abundant water supplies of good quality in comparison to the other regions. The Sacramento River Region provides its own M&I water and does not use M&I water exported directly from the Delta.

The major M&I water use in the region occurs in the Sacramento metropolitan area. Most surface water use in the region is diverted from the American River. Direct diversions from the Sacramento River may provide a larger share of supplies in the future. Another large user is the City of Redding. The CVP provides municipal water service to a large number of small M&I providers in the area.

Water resources in the Sacramento Basin have been developed for local agricultural, municipal, and industrial needs. Water resources are exported to the Bay-Delta and are used to generate power at hydroelectric facilities. Most of the developed surface water storage in the region is contained in four major reservoirs: Lake Shasta on the Sacramento River (about 4.5 MAF), Oroville Reservoir on the Feather River (about 3.5 MAF), Folsom Lake on the American River (about 1.0 MAF), and Lake Berryessa on Putah Creek (about 1.6 MAF). An additional 2.2 MAF of flood control storage is provided by a system of basins, levees, channels, and bypasses that include the Butte, Colusa, Sutter, American, and Yolo Basins. Levees and bypasses extend more than 150 miles, from Red Bluff to Suisun Bay. Flood control measures include bypass overflows that act as auxiliary channels to the Sacramento River during high-water periods.

Electric Utility and Communication Infrastructure. Infrastructure consists primarily of hydroelectric and natural gas-fired generating facilities, transmission lines, substations, distribution lines, fiber optic and cable lines, and communication towers.

Hydropower generation levels fluctuate significantly with reservoir releases, which are in turn affected by droughts (and other climatic conditions), minimum streamflow requirements, flow fluctuation restrictions, and water quality requirements. Changes in power generation affect coordinated operations of both PG&E and CVP facilities.

Natural Gas Infrastructure. Pipelines, storage areas, and compressor stations are located in the Sacramento Valley and other parts of northern California.

Public Services. Various departments within the cities and counties of the Sacramento River Region provide fire protection, police protection, and emergency services to members of their respective communities.

The Sacramento Valley has relatively abundant water supplies of good quality in comparison to the other regions.

Water resources are exported to the Bay-Delta and are used to generate power at hydroelectric facilities.



7.6.3.4 SAN JOAQUIN RIVER REGION

Water-Related Infrastructure. Table 7.6-1 shows recent imports into the region through SWP and CVP facilities. The data show the influence of the recent drought and reduced allocations, especially in 1991 and 1992. Most Delta water delivered into the region is provided to Kern County Water Agency (KCWA) in exchange for groundwater pumped by the City of Bakersfield.

Table 7.6-1. M&I Water Delivered to the San Joaquin River Region from the Delta, 1990 to 1994

WATER SOURCE	1990	1991	1992	1993	1994
Central Valley Project					
Cross Valley Canal	459	407	297	0	0
Delta-Mendota Canal	5,531	5,586	7,221	8,005	7,843
San Luis Canal	12,996	10,528	15,098	11,787	14,374
State Water Project					
Kern County Water Agency	<u>127,837</u>	<u>33,122</u>	<u>56,305</u>	<u>94,220</u>	--
Total	146,823	49,643	78,921	114,012	22,217

Notes:

Does not include water rights deliveries or water transfers.

-- = Not available.

Sources:

Reclamation 1996, DWR 1996.

Table 7.6-2 shows characteristics of some San Joaquin Valley M&I providers. Per capita use rates are generally higher than in the coastal regions, reflecting climate and landscape factors. Local water supplies are unable to meet local demands, and supplemental water is imported from the Delta Region. Infrastructure in the region consists mainly of channels, aqueducts, reservoirs, and irrigation structures.

Table 7.6-2. Characteristics of Some San Joaquin River Region Providers

PROVIDER	POPULATION (1990)	WATER INTO SYSTEM (1990 mgd)	SERVICE CONNECTIONS (1990)	GPCD (1990)	PERCENT PURCHASED	PERCENT METERED	PERCENT SURFACE WATER	\$/af AVERAGE COST
Stockton	210,943	17,130	64,179	222	52	100	52	\$311
Huron	4,766	284	621	163	100	N/A	100	
Coalinga	8,450	1,032	2,665	327	100	16	100	
Bakersfield, CA Water	172,800	20,222	51,641	321	15	24	15	\$263

Note:

GPCD = Gallons per capita per day.

mgd = Million gallons per day.



Electric Utility and Communication Infrastructure. Infrastructure consists primarily of natural gas-fired and hydroelectric generating facilities, transmission lines, substations, distribution lines, fiber optic and cable television lines, and communication towers.

Natural Gas Infrastructure. Although gas fields and storage areas are not known to exist in the region, several major pipelines traverse the entire length of the San Joaquin Valley.

Public Services. Various departments within the cities and counties of the San Joaquin River Region provide fire protection, police protection, and emergency services to members of their respective communities.

7.6.3.5 OTHER SWP AND CVP SERVICE AREAS

The Other SWP and CVP Service Areas region includes two distinct, noncontiguous areas: in the north, are the San Felipe Division's CVP service area and the South Bay SWP service area; to the south, are the SWP service areas. The northern section of this region encompasses parts of the central coast counties of Santa Clara, San Benito, Santa Cruz, and Monterey. The southern portion includes parts of the Imperial, Los Angeles, Orange, Riverside, San Bernardino, San Diego, San Luis Obispo, Santa Barbara, and Ventura Counties.

Water-Related Infrastructure. Table 7.6-3 shows recent imports into the Other SWP and CVP Service Areas through SWP facilities. These data show the influence of drought and reduced water allocations, especially in 1991 and 1992. SWP deliveries to metropolitan areas declined 72% from 1990 to 1991 and did not recover until 1993. Similar delivery patterns were experienced by the other SWP M&I entitlement holders in the region. SWP and CVP water is pumped from CCFB in the Delta and is transported into the region via the California Aqueduct and the Delta-Mendota Canal. Key SWP and CVP infrastructure includes reservoirs, aqueducts, power plants, and pumping plants.

Key SWP and CVP infrastructure includes reservoirs, aqueducts, power plants, and pumping plants.

Table 7.6-3. M&I Water Delivered to the Central Coast and South of Kern County from the Delta, 1990 to 1993 (in acre-feet)

WATER SOURCE	1990	1991	1992	1993
State Water Project				
The Metropolitan Water District of Southern California	1,396,423	391,447	707,311	1,408,050
Other southern California	<u>189,483</u>	<u>51,249</u>	<u>105,090</u>	<u>193,092</u>
Total	1,585,906	442,696	812,401	1,601,142

Note:
Does not include water rights deliveries or water transfers.

Sources:
Reclamation 1996, DWR 1996.



Table 7.6-4 shows some characteristics of M&I providers in the southern portion of the region.¹ Only those providers delivering more than 10,000 million gallons (or 30,7000 acre-feet) annually are included. In the South Coast Subregion, per capita use rates generally reflect distance from the coast (Table 7.6-5). Most providers supply a mix of purchased and developed water, and almost all providers use a mix of surface water and groundwater supplies.

Table 7.6-4. Characteristics of Some Providers in the Other SWP and CVP Service Areas

PROVIDER	POPULATION (1990)	WATER INTO SYSTEM (1990 mgd)	SERVICE CONNECTIONS (1990)	GPCD (1990)	PERCENT PURCHASED	PERCENT METERED	PERCENT SURFACE WATER	\$/af AVERAGE COST
Central Coast Region								
San Luis Obispo	41,958	1,560	12,350	102	0	100	59	\$890
Goleta	70,480	1,934	13,750	75	76	100	75	\$1,381
Santa Barbara	85,571	3,079	24,146	99	61	100	68	\$1,364
South Coast Region*								
Carson et al.	101,000	12,667	31,611	344	73	100	73	
Long Beach	429,433	24,448	87,923	156	65	100	65	\$498
Los Angeles	3,485,398	218,809	635,698	172	73	100	89	\$462
Glendale	180,038	10,144	32,778	154	93	100	93	\$312
Pasadena	131,590	12,629	36,998	263	66	N/A	67	\$331
Anaheim	266,406	24,064	55,500	247	49	100	49	
Fullerton	114,144	10,584	27,890	254	54	100	54	
Huntington Beach	181,519	12,530	48,571	189	53	100	53	
Santa Ana	293,742	16,665	43,491	155	25	N/A	25	
Riverside	226,505	22,217	66,348	269	8	100	8	\$268
Ontario	133,179	12,101	28,019	249	46	100	46	
Rancho Cucamonga	101,409	13,810	32,567	373	46	100	59	
Fontana	75,000	10,411	28,000	380	100	100	30	
Mission Viejo	109,250	10,700	37,445	268	100	100	100	
El Cajon et al.	227,293	13,514	53,347	163	98	100	99	
San Diego	1,100,549	73,927	235,810	184	100	100	100	\$576
Chula Vista & Vicinity	135,163	15,986	60,673	324	87	100	96	
South Lahontan Region								
Palmdale	68,842	6,073	19,626	242	43	100	44	\$488

* Only those providers with 10,000 million gallons per year or more.

Notes:

GPCD = Gallons per capita per day.
mgd = Milligrams per day.
af = Acre-feet.

¹ The regions listed in Tables 7.6-4 and 7.6-5 are hydrologic regions used by DWR in its "California Water Plan" update.



Electric Utility and Communication Infrastructure. A complex system of generating facilities, substations, and transmission infrastructure exists in the South Coast and Central Coast Regions. Natural gas, nuclear, oil, hydroelectric, and other technologies are used for power production. Communication infrastructure in the region includes underground cable and fiber optic lines and communication/transmission towers.

Natural Gas Infrastructure. Gas storage areas, pipelines, and compressor stations are present in southern California. Pipelines and compressor stations also are present in northern California.

Public Services. Various departments within the cities and counties of the region provide fire protection, police protection, and emergency services to members of their respective communities.

Table 7.6-5. Per Capita per Day Water Use for the Other SWP and CVP Service Areas, 1968 to 1990 (gallons)

YEAR	ALL USES
South Coast Region	
1990	211
1980	191
1968	179
Central Coast Region	
1990	189
1980	210
1968	194
South Lahontan Region	
1990	278
1980	280
1968	305

A complex system of generating facilities, substations, and transmission infrastructure exists in the South Coast and Central Coast Regions.

7.6.4 ASSESSMENT METHODS

Impacts on utilities and public services were evaluated by comparing existing infrastructure to areas of potential construction or land use changes that would result in displacement or modification of the following components:

- Electrical facilities and supply
- Water conveyance facilities
- Natural gas fields and storage reservoirs
- Underground pipelines
- Communication facilities

Whether displacement or modification of the components listed above would affect existing police, fire, and emergency services also was considered in the evaluation.

Due to the programmatic level of detail for the Program alternatives, the impacts presented in this section are general. Additional information would be needed for more specific conclusions.

Whether displacement or modification of infrastructure would affect existing police, fire, and emergency services also was considered in the evaluation.



7.6.5 SIGNIFICANCE CRITERIA

Significance criteria for identifying impacts on utilities and public services are based on the displacement or modification of facilities and services due to either water-related facility development or economic stimulation. The facilities and services that may be affected include those listed above.

Impacts on utilities and public services were considered potentially significant if Program actions would:

- Create a demand for utilities that exceeds the capacity and outputs of existing infrastructure and requires new infrastructure or facilities.
- Create a demand for public services that substantially exceeds the capacity of public service agencies.
- Intersect with major infrastructure components, such as bridges or overpasses, requiring relocation of the components.
- Increase the anticipated risk of gas line rupture during the construction phase, especially to gas lines crossing exterior levees.

Due to the programmatic level of detail for the Program alternatives, the impacts presented are general. Locations of storage and conveyance facilities have not been determined, and site-specific impacts cannot be determined at the programmatic level. For this impact analysis, it was assumed that mitigation strategies could successfully relocate facilities to avoid displacement of major infrastructure components.

7.6.6 NO ACTION ALTERNATIVE

7.6.6.1 DELTA REGION

The 2020 level of development will result in an increase in population throughout the state, including the Delta Region. Population increases could require construction of additional power-generating facilities and additions or reconfiguration of the existing power distribution grid (such as transmission lines or substations). The need for additional police, fire, and emergency services would correspond to increased population in the region.

Development of water supply projects could indirectly affect the Delta Region. No Action Alternative water supply developments outside the Delta Region could necessitate development of in-Delta infrastructure, which could require development of greater utility capacity and more power distribution grids to accommodate greater pumping demands.

Significance criteria for identifying impacts on utilities and public services are based on the displacement or modification of facilities and services due to either water-related facility development or economic stimulation.

No Action Alternative water supply developments outside the Delta Region could necessitate development of in-Delta infrastructure.



7.6.6.2 BAY AND SACRAMENTO RIVER REGIONS

The effects of population growth discussed above for the Delta Region are applicable to the Bay and Sacramento River Regions.

7.6.6.3 SAN JOAQUIN RIVER REGION

The potential effects of population growth and water supply development discussed for the Delta Region are relevant to the San Joaquin River Region. In addition, land retirement in drainage problem areas could result in potentially significant impacts on public services and utilities, but these impacts are unlikely. Conversion to recreational use could result in a greater demand for public services, potentially exceeding existing capacity.

Land retirement in drainage problem areas could result in potentially significant impacts on public services and utilities, but these impacts are unlikely.

7.6.6.4 OTHER SWP AND CVP SERVICE AREAS

The effects of population growth and water supply development discussed above for the Delta Region are likely to be applicable to the Other SWP and CVP Service Areas.

7.6.7 CONSEQUENCES: PROGRAM ELEMENTS COMMON TO ALL ALTERNATIVES

For utilities and public services, the environmental consequences of the Ecosystem Restoration, Water Quality, Levee System Integrity, Water Use Efficiency, Water Transfer, and Watershed Programs, and the Storage element are similar under all Program alternatives, as described below. The environmental consequences of the Conveyance element vary among Program alternatives, as described in Section 7.6.8.

7.6.7.1 ALL REGIONS

Ecosystem Restoration Program

Implementation of the Ecosystem Restoration Program could result in the following impacts on utilities and public services:

Restoration actions could require relocation or modification of major infrastructure components.



- Increased electricity requirements for water pumping.
- Additional public services required for new parks and refuges.
- Increased need for public services at existing parks and refuges because increases in recreational fishing stocks and waterfowl could result in a greater number of fisher/hunter days per year.

Program actions are not expected to require public services in excess of current regional capacity. Except for actions that require relocation or modification of major infrastructure, impacts on utilities and public services associated with ecosystem restoration are considered less than significant.

Although unlikely, a slight possibility exists that some infrastructure would need to be relocated or modified as a result of the Ecosystem Restoration Program. These infrastructure components could include electrical transmission lines and substations, communication lines, natural gas lines, or water conveyance structures. Relocation and modification of existing major utility infrastructure may result in potentially significant adverse impacts. These changes are not expected to require construction or development of additional utility capacity. Mitigation is available to reduce impacts to a less-than-significant level.

Water Quality Program

Implementation of the Water Quality Program could result in the following impacts on utilities and public services:

- Relocation of water supply intakes and conveyance infrastructure.
- Upgrades to treatment processes.
- Land conversion to avoid creation of salt drainage.
- Upgrades to stormwater systems.
- Installation of treatment facilities, requiring electricity and water conveyance infrastructure.
- Implementation of BMPs, such as alterations in irrigation.

Increased utility demands are expected to be met by existing capacity. The Water Quality Program is expected to increase recreational use by reducing pollutant loadings (for example, lower toxic levels for humans and wildlife). Any increase in the need for public services is not likely to exceed existing capacity. Mitigation is available to reduce impacts to a less-than-significant level at the project-specific level.

Increased utility demands by Water Quality Program actions are expected to be met by existing capacity.



Water Use Efficiency Program

Because the Water Use Efficiency Program is policy based and highly variable in outcome, effects are difficult to foresee. Since actions generally are driven by incentives and are extremely unlikely to require additional utility or public service capacity, the Water Use Efficiency Program is not expected to affect utility infrastructure or public service. Distribution systems would be needed to provide the increased levels of recycled water to potential customers. Impacts associated with the establishment of these systems can be mitigated to less-than-significant levels at the project-specific level.

The Water Use Efficiency Program is not expected to affect utility infrastructure or public service.

Water Transfer and Watershed Programs

The Water Transfer and Watershed Programs are not expected to affect utilities or public services in any region.

In addition to the impacts applicable to all regions, region-specific impacts for specific programs are identified below.

The Water Transfer and Watershed Programs are not expected to affect utilities or public services in any region.

7.6.7.2 DELTA REGION

Levee System Integrity Program

Modification and relocation of existing levees under the Levee System Integrity Program may require the displacement or modification of utility infrastructure, including natural gas and electric transmission lines and communication infrastructure. These actions are not expected to affect major infrastructure components and are not anticipated to result in potentially significant adverse impacts. Construction associated with implementation of the program could cause an increased risk of gas line rupture, in particular to lines that cross exterior levees. These impacts can be mitigated to less-than-significant levels.

Beneficial impacts on utilities are associated with improvement of existing levees. Natural gas and electrical transmission lines and facilities, and communication infrastructure would benefit from the overall reduced risk of levee failure in the area.

Infrastructure would benefit from the overall reduced risk of levee failure in the area.

Storage

Storage features could affect existing infrastructure. Natural gas and electric transmission lines, and communication infrastructure could be displaced by storage facilities. Mitigation is available to reduce potentially significant impacts to less-than-significant levels.



7.6.7.3 SACRAMENTO RIVER AND SAN JOAQUIN RIVER REGIONS

Storage

The potential impacts associated with the development of groundwater storage include increased energy consumption for pumping and relocation of minor infrastructure. These impacts are not anticipated to be potentially significant.

Surface water storage projects could result in a range of potentially significant impacts on existing utilities and public services. Beneficial and adverse impacts would differ only in magnitude in these regions, depending on the quantity of storage facilities developed. The majority of impacts would be related to hydropower output modifications, storage facility construction phases, and the potential stimulation of M&I development. Please refer to Section 7.9, "Power Production and Energy."

Greater storage could facilitate habitat rehabilitation and perhaps recreation. Although the demand for public services is likely to increase under such circumstances, it is not likely to exceed existing capacity.

During construction of storage facilities, infrastructure could be displaced. New structures could require relocating or modifying natural gas, electric, and communication transmission lines and other major infrastructure, resulting in potentially significant adverse impacts. Mitigation is available to reduce impacts to a less-than-significant level.

Because of opportunities created through water-related facilities, development of M&I facilities is possible. The potential effects of development include increased demand for utilities and public services. These increases in power demand are expected to be met by existing facilities and agencies.

Storage Program impacts primarily would be related to hydropower output modifications, storage facility construction phases, and the potential stimulation of M&I development.

New storage structures could require relocating or modifying major infrastructure.

7.6.7.4 OTHER SWP AND CVP SERVICE AREAS

Storage

Although storage facilities are not proposed for the Other SWP and CVP Service Areas, electric power, possibly generated in these areas, would be needed to convey water throughout different areas of the state. The operation of additional water storage facilities could affect the amount of power required and the amount available. Please refer to Section 7.9, "Power Production and Energy," for a discussion of impacts on power and energy.

The operation of additional water storage facilities could affect the amount of power required and the amount available.



7.6.8 CONSEQUENCES: PROGRAM ELEMENTS THAT DIFFER AMONG ALTERNATIVES

For utilities and public services, the Conveyance element results in environmental consequences that differ among the alternatives, as described below.

7.6.8.1 PREFERRED PROGRAM ALTERNATIVE

This section includes a description of the consequences of a pilot diversion project. If the pilot project is not built, these consequences would not be associated with the Preferred Program Alternative.

Construction of floodways, setback levees, intake structures, interties, and channel conveyance modifications could displace infrastructure in the Delta Region, resulting in potentially significant adverse impacts. Natural gas and electric transmission lines, and communication infrastructure may need to be relocated. Relocation of major transmission lines are considered a potentially significant impact. Mitigation is available to reduce impacts to a less-than-significant level.

The new conveyance facilities—in addition to increased pumping at existing facilities—would require additional power. Please refer to Section 7.9, “Power Production and Energy.”

Impacts on public utilities infrastructure that are associated with the Conveyance element primarily involve the Delta Region. Although conveyance facilities are not proposed for areas outside the Delta, electric power is used to convey water throughout different areas of the state. The operation of additional infrastructure could affect the amount of power required and the amount available.

Impacts on public utilities infrastructure that are associated with the Conveyance element primarily involve the Delta Region.

7.6.8.2 ALTERNATIVES 1, 2, AND 3

Impacts on utilities and public services under Alternatives 1, 2, and 3 would be similar to those described for the Preferred Program Alternative, differing in magnitude depending on the conveyance facilities being constructed. Alternative 1 includes the fewest facilities; therefore, construction- and operations-related impacts would be less than those for the Preferred Program Alternative.

Although similar facilities are involved in Alternative 2 as those described for the Preferred Program Alternative, energy requirements most likely would be greater than those of the Preferred Program Alternative because of the higher rate of pumping.

Impacts on utilities and public services under Alternatives 1, 2, and 3 would be similar to those described for the Preferred Program Alternative, differing in magnitude depending on the conveyance facilities being constructed.



Construction-related impacts on utilities and public services under Alternative 3 would be greater than those described for the Preferred Program Alternative because more facilities would be constructed. Construction of an isolated facility with possible dual points of intake would result in greater potential for displacement of existing infrastructure. These impacts are considered potentially significant. If mitigation strategies do not successfully avoid displacement of existing major infrastructure, these impacts would be considered potentially significant and unavoidable.

Construction of an isolated facility with possible dual points of intake under Alternative 3 would result in greater potential for displacement of existing infrastructure.

In addition, operation of an isolated facility would require more power than other facilities. Please refer to Section 7.9, "Power Production and Energy."

7.6.9 PROGRAM ALTERNATIVES COMPARED TO EXISTING CONDITIONS

This section presents the comparison of the Preferred Program Alternative and Alternatives 1, 2, and 3 to existing conditions. This programmatic analysis found that the potentially beneficial and adverse impacts from implementing any of the Program alternatives when compared to existing conditions were the same impacts as those identified in Sections 7.6.7 and 7.6.8, which compare the Program alternatives to the No Action Alternative.

The impacts of Program alternatives on utilities and public services could be slightly greater when compared to existing conditions than when compared to the No Action Alternative because existing demands for utilities and public services are less than those projected under the No Action Alternative. Relocation or modification of major infrastructure components has been identified as the most probable potentially significant impact associated with the Program. Impacts on utilities and public services from conversion of land to urban or industrial uses that was retired because of drainage problems also has been identified as a potentially significant impact. The magnitude of these impacts would not differ between the No Action Alternative and existing conditions because retirement of these lands is included in the No Action Alternative.

The impacts of Program alternatives on utilities and public services could be slightly greater when compared to existing conditions than when compared to the No Action Alternative.

At the programmatic level, the comparison of the Program alternatives to existing conditions did not identify any additional potentially significant environmental consequences than were identified in the comparison of Program alternatives to the No Action Alternative.

The reduced risk of structural failure of utilities would result from increased levee stability due to the Levee System Integrity Program, when compared to existing conditions.



The following potentially significant environmental consequences are associated with the Preferred Program Alternative:

- Possible need for relocation or modification of infrastructure components from Ecosystem Restoration and Levee System Integrity Programs, and Storage and Conveyance element actions.
- Increased risk of gas line rupture during the construction phase.

No potentially significant unavoidable impacts on utilities and public services are associated with the Preferred Program Alternative.

7.6.10 ADDITIONAL IMPACT ANALYSIS

Cumulative Impacts. For a summary comparison of cumulative impacts on all resource categories, please refer to Chapter 3. For a description of the programs and projects that contributed to this cumulative impact analysis, please see Attachment A.

Except in the Bay Region and the Other SWP and CVP Service Areas, Program actions and the projects listed in Attachment A would result in cumulative impacts on utilities and public services. Adverse impacts on utilities and public services could result from relocation or modification of utility infrastructure and increases in demand for utilities and public services. Impacts associated with planned projects could combine with those of the Preferred Program Alternative to magnify impacts on utilities and public services. Foreseeable cumulative actions include the installation of treatment and water conveyance facilities, creation of electrical and water conveyance infrastructure, relocation or modification of electrical transmission lines, relocation or modification of gas pipelines, land conversion, and creation of new parks and refuges that require additional public services.

Mitigation strategies have been identified that would reduce the impacts associated with Program actions and the projects listed in Attachment A. Nevertheless, cumulative impacts on utilities and public services are considered potentially significant.

Growth-Inducing Impacts. Improvements in water supply as a result of the Preferred Program Alternative could induce growth, depending on how the additional water supply was used. If the additional water is used to expand agricultural production or urban housing development, the proposed action would foster economic and population growth. Expansion of agricultural production and population could cause increased demand for utilities and public services, but the significance of the utilities and public services impact would depend on where the agricultural or population growth occurred and how it is managed.

Short- and Long-Term Relationships. The Program could result in short-term disruption of utilities during construction. Long-term impacts could be caused by increased demand for

Except in the Bay Region and the Other SWP and CVP Service Areas, Program actions and the projects listed in Attachment A would result in cumulative impacts on utilities and public services.

Cumulative impacts on utilities and public services are considered potentially significant.



energy and public services. Impacts associated with the increased demand for utilities and public services would be offset by the overall long-term productivity and improved ecosystem health of the Bay-Delta system resulting from the Program.

Irreversible and Irretrievable Commitments. Construction, operation, and maintenance of the project facilities could increase demand on energy, utility infrastructure, and transmission line capacity. Any significant increased demand on energy, utility infrastructure, or transmission line capacity would result in an irreversible and irretrievable commitment of resources. Program actions are not expected to require construction or development of additional utility capacity, or to require public services in excess of current regional capacity.

Construction, operation, and maintenance of Program facilities could increase demand on energy, utility infrastructure, and transmission line capacity.

7.6.11 MITIGATION STRATEGIES

These mitigation strategies will be considered during specific project planning and development. Specific mitigation measures will be adopted, consistent with the Program goals and objectives and the purposes of site-specific projects. Not all mitigation strategies will be applicable to all projects because site-specific projects will vary in purpose, location, and timing.

Mitigation strategies that could be implemented to avoid impacts include:

- Siting project facilities to avoid existing infrastructure.
- Constructing overpasses, small bridges, or other structures to accommodate existing infrastructure.
- Coordinating construction activities with utility providers.

Mitigation strategies that could be implemented to reduce impacts include:

- Designing and operating facilities to minimize the amount of energy required and to maximize the amount of energy created.
- Designing project facilities to avoid or minimize their effect on existing infrastructure.

7.6.12 POTENTIALLY SIGNIFICANT UNAVOIDABLE IMPACTS

No potentially significant unavoidable impacts on utilities or public services are associated with the Preferred Program Alternative.

No potentially significant unavoidable impacts on utilities or public services are associated with the Preferred Program Alternative.

