



IMPERIAL IRRIGATION DISTRICT RESOLUTION NO. 34-2020

WHEREAS, Section 56430 of the of the Cortese-Knox Local Government Reorganization Act of 2000 requires that Local Agency Formation Commissions (LAFCO's) conduct municipal service reviews, also known as service area plans, within their respective jurisdictions; and

WHEREAS, in conformance with Section 56430 of the Cortese-Knox Local Government Reorganization Act of 2000, IID has prepared a Service Area Plan for review by the Imperial County LAFCO to be updated for their review at least every five years; and

WHEREAS, the 2020 IID Service Area Plan, is the first Service Area Plan prepared by the IID and authorized by the board on October 22, 2019 for submission to Imperial County LAFCO, as an administrative draft; and

WHEREAS, the 2020 IID Service Area Plan documents IID's water service area, power service area and the district's capacity and capability to provide adequate services for any projected growth with the District boundary; and

WHEREAS, the Imperial County LAFCO held a Public Hearing and approved the 2020 IID Service Area Plan on October 22, 2020 via ICLAFCO Resolution No. 2020-09; and

WHEREAS, IID's next service area plan update is scheduled for 2026; and

WHEREAS, the project is exempt from the California Environmental Quality Act per Section 15306, Class 6 which consists of basic data collection, research, experimental management, and resource evaluation activities which do not result in a serious or major disturbance to an environmental resource; and

WHEREAS, the approved 2020 IID Service Area Plan was presented to the IID Board of Directors at a regular public meeting for consideration; and

NOW, THEREFORE, BE IT RESOLVED, that the IID Board of Directors hereby adopts the 2020 IID Service Area Plan dated December 1, 2020 as the final and official Service Area Plan document and incorporated hereto by reference.

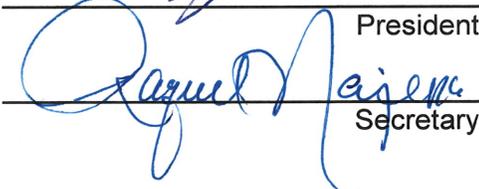
PASSED AND ADOPTED this 1st day of December, 2020.



IMPERIAL IRRIGATION DISTRICT



President



Secretary

Draft Service Area Plan 2019



For Submission to Imperial County LAFCO

Table of Contents

I. INTRODUCTION	1
A. IID GOVERNANCE	1
B. SERVICE AREA PLAN INTRODUCTION AND PURPOSE	1
C. SERVICE AREA PLAN REQUIREMENTS	9
D. ORGANIZATIONAL STRUCTURE.....	9
II. EXECUTIVE SUMMARY	11
A. AREA GROWTH SUMMARY	11
B. SUMMARY OF FINDINGS	12
III. GROWTH AND POPULATION PROJECTIONS.....	19
A. REGIONAL SETTING AND CHARACTERISTICS	19
B. GROWTH PROJECTIONS	23
C. IMPACTS FROM LAND USE CHANGES	31
IV. PUBLIC FACILITIES AND SERVICES.....	33
A. RAW WATER FACILITIES.....	34
B. IRRIGATION DRAINAGE FACILITIES	49
C. ENERGY FACILITIES.....	57
D. CONSERVATION PROGRAMS AND SERVICES.....	74
E. ADMINISTRATIVE SERVICES AND SUPPORT FACILITIES.....	98
V. FINANCING PLAN	114
A. EXISTING REVENUE SOURCES	114
B. CURRENT FACILITY FINANCING & RECOMMENDATIONS	118
C. POTENTIAL ADDITIONAL RESOURCES FOR CAPITAL NEEDS.....	128



Tables

Table I-1	Communities Within Service Areas	6
Table E-1	Service Area Population Projections	11
Table G-1	Disadvantaged Communities Within Service Areas	22
Table G-2	Imperial Region Population Projections	24
Table G-3	Coachella Valley Region Population Projections	24
Table G-4	Service Area Population Projections	25
Table G-5	Non-Agricultural Water Demand Projections	26
Table G-6	Agricultural Water Demand Projections as AFY	27
Table G-7	Total Water Demand Projections as AFY	27
Table G-8	IID Net Energy for Loan (NEL) Requirements	30
Table G-9	2018 Energy Load Forecast Expected Case Gross CP and NEL	31
Table W-1	IID 2018 Water Distribution System	39
Table W-2	IID 2018 Reservoir Specifications	39
Table W-3	IID 2018 Flow Monitoring and Control Devices	40
Table W-4	IID Metering Equipment	40
Table W-5	Non-Agricultural Water Demand Projections	43
Table W-6	Agricultural Water Demand Projections and Total Water Demand	44
Table D-1	IID Drainage Systems	51
Table D-2	IID Drain Monitoring Practices	52
Table E-1	IID Thermal Generation Plants/Units	63
Table E-2	2018 Energy Load Forecast Expected Case Gross CP and NEL	69
Table CW-1	System Conservation Program Historic Conservation Yields	80
Table CW-2	TLCFP Historic Conservation Yields	81
Table CW-3	On-Farm Efficiency conservation Program Historic Conservation Yields	82
Table CW-4	Water Efficiency Programs Historic Conservation Yields	82
Table CW-5	Total Water Conservation Targets	83
Table CW-6	Planned Operational Main Canal Reservoirs & Estimated Conservation Yields	84
Table CW-7	Planned Mid-Lateral Reservoir and Intertie Project Conservation Yields	85
Table CE-1	IID Board Adopted Energy Savings Targets	94
Table A-1	Administration and Support Facilities Inventory	106
Table A-2	Office Space Adequacy for Administrative and Support Staff	109
Table A-3	Administrative Facilities Demand	111
Table F-1	2019 Interim Water Supply Policy Development Impact Fee	116
Table F-2	2019 Interim Water Supply Policy Reservation Fee	116
Table F-3	Adopted 2018 Water Rate Schedule	119
Table F-4	Planned Water Capital Project Costs	120
Table F-5	Charge for Drainage Services	121
Table F-6	Projected Drainage Facilities Costs	122
Table F-7	Limited Schedule of Energy Rates	123
Table F-8	Planned Capital Energy Project Costs	124
Table F-9	Planned Water Transfer Capital Project Costs	126
Table F-10	Planned Administrative Facilities Capital Project Costs	128



Figures

Figure 1	Imperial Irrigation District Boundaries	3
Figure 2	IID Water Service Area	4
Figure 3	IID Energy Service Area	5
Figure 4	IID Service Population	21
Figure 5	Imperial Unit Canal Network	37
Figure 6	Water Quality Monitoring Program Sites	52
Figure 7	Energy Distribution Projects for Total IID System	67
Figure 8	CDWAR Colorado Hydrologic Region Groundwater Basins	86
Figure 9	Renewable Energy Resources 2017 Breakdown	90



I. INTRODUCTION

The Imperial Irrigation District (“IID”) is a public entity organized in 1911 pursuant to the Irrigation District Law (California Water Code sections 20500 et. seq.). IID is empowered to provide irrigation and energy related services to customers within its district boundaries and, through service contracts, to customers outside of its district boundaries. The district has the powers of eminent domain and is authorized to contract, to construct works, to fix rates and charges for commodities or services furnished, and to incur indebtedness related to its functions and purposes.

A. IID GOVERNANCE

The governing structure of the IID consists of an elected five-member Board of Directors that meet the first and third Tuesday of every month at 1285 Broadway, in El Centro, California. IID is managed by a board appointed general manager. IID’s general counsel and auditor also report directly to the board. The board is composed of five individuals who are elected by registered voters from the geographic divisions in which they reside within the district. All of the district political divisions are located within Imperial County.

The Imperial Irrigation District has two primary operational departments, the Water Department and the Energy Department, which are overseen by the general manager’s Executive Office and supported by four additional service departments: General Services, Information Technology, Finance and Human Resources. The IID Board of Directors receives critical administrative support from the Executive Department, which also handles governmental affairs and communications (internal and external), energy reliability compliance, real estate and risk management functions, which are discussed under the Administrative Section of this Service Area Plan (the “SAP”).

IID Operational Resources and Budget

The adopted IID 2019 Budget Plan demonstrates an overall operation of 1,418 employees with an almost equal distribution of employees within the Water Department (33 percent), Energy Department (33 percent) and all other Executive and Administrative/Support Departments (34 percent). The 2019 Budget Plan reflects revenues and funding estimated at \$586 million from the Energy Department and \$280 million from the Water Department. The current financial resources utilized by the district are discussed under the Finance Plan Section of this Service Area Plan (see website for full [2019 IID Budget Plan](#).)

B. SERVICE AREA PLAN INTRODUCTION & PURPOSE

The Board of Directors and the general manager are committed to the overall mission of providing reliable, efficient and cost-effective water and energy services to the communities



IID serves. The specific powers that are exercised by the district include, but are not limited to the following:

- Supply of raw water for beneficial purposes including the construction, operation and maintenance of canals, pipelines, and water conveyance infrastructure;
- Provision of drainage functions made necessary by the irrigation services provided for and by the district;
- Construction, operation and maintenance of dams, reservoirs, conjunctive use, reclamation, and other water management projects and works owned and/or operated by the district;
- Generation, purchase, or lease of electric power, including the acquisition, operation, and control of plants for the generation, transmission, and provision of electric power;

In this vein, this Service Area Plan examines all of these services provided by the IID, the current service demand and the projected future service needs within the district's service areas. Consistent with the *Cortese-Knox-Hertzberg Local Government Reorganization Act of 2000*¹, this Service Area Plan is structured to provide a basis and framework for current and future service assessments and planning.

Purpose of the Service Area Plan

In 1997, Assembly Bill (AB) 1484 established the Commission of Local Governance for the 21st Century. The role of the Commission of Local Governance was to evaluate local government organization and operational issues, develop a statewide vision, and determine how the State should grow. The *Cortese-Knox-Hertzberg Local Government Reorganization Act of 2000* was subsequently put in place and established procedures for local government changes of organization. This Service Area Plan aims to identify and assess current and future public facilities owned, operated, and/or maintained by IID for the provision of services as part of Imperial County LAFCO's Municipal Service Review process. Mitigation recommendations are incorporated in the respective sections to offset any potential impacts to IID facilities or services.

Geographic Location, District Boundary and Service Areas

The Imperial Irrigation District headquarters is located in southern California, approximately 120 miles east of San Diego and situated directly north of the U.S./Mexico International border in Imperial County. The district's boundary was originally established in 1911 under the Irrigation District Law (California Water Code Sections 20500 et. Seq.). As of 2019, IID's

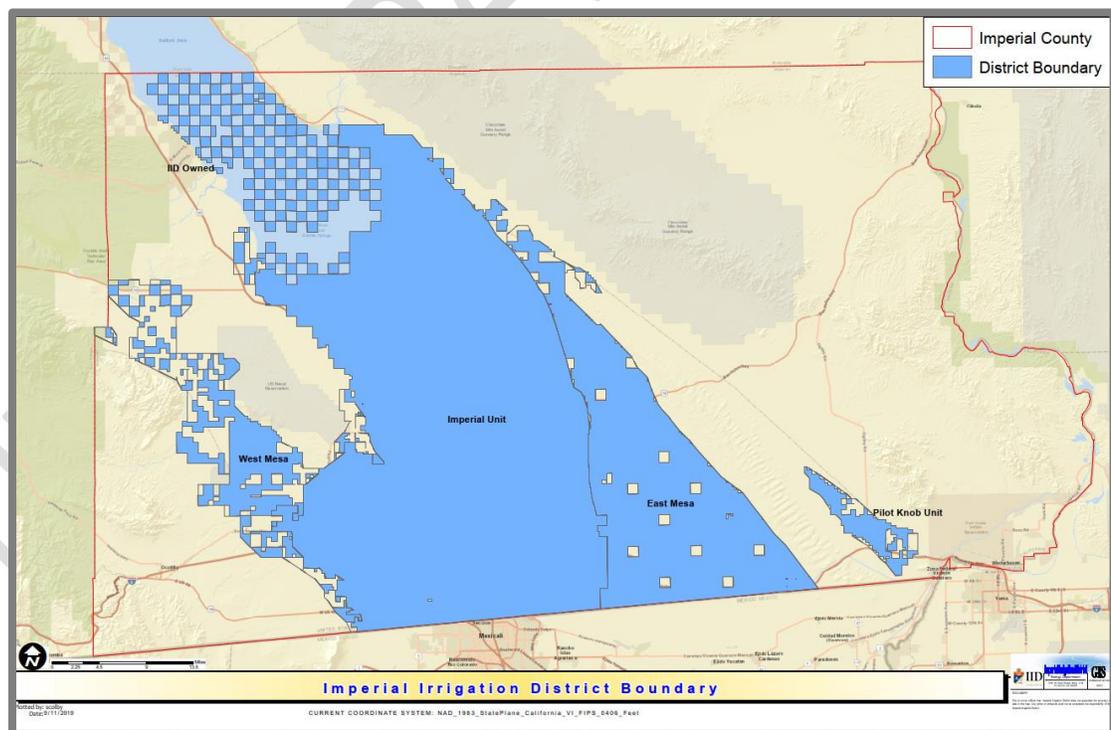
¹ The Cortese-Knox-Hertzberg (CKH) Local Government Reorganization Act of 2000 is [Government Code §§ 56000 et seq.](#) that provides LAFCO with its authority, procedures and functions to "approve or disapprove with or without amendment, wholly, partially or conditionally" proposals concerning the formation of cities and special districts, annexation or detachment of territory to cities and special districts, and other changes in jurisdiction or organization of local government agencies.



legal district boundary is entirely contained within Imperial County, but is not coterminous with Imperial County. Since 1943, IID has successfully provided electricity to service areas outside of its district boundaries through independent service agreements with customers in Imperial, Riverside, and San Diego counties. IID provides raw water services entirely within Imperial County while energy services extend into Riverside County and Borrego Springs in San Diego County (only for emergency responses).

The district's legal boundaries were greatly influenced by the Boulder Canyon Project Act of 1928 and the Boulder Canyon Project Act Agreement of 1932, which together authorized and orchestrated the construction of Hoover Dam and the All-American Canal. According to the 1932 Boulder Canyon Act Agreement between the United States Department of the Interior and IID, changes in the district boundaries, beyond those authorized under the Agreement, cannot be made unless approved by Congress. The district's water service area is thus defined by the limits authorized under the Boulder Canyon Project Act Agreement. **Figure 1** identifies the legal boundaries of the Imperial Irrigation District as per record annexations (inclusions into the district) and **Figure 2** that follows, reflects the water service area (also known as the All-American Canal Water Service Area) within Imperial County as authorized by the Secretary of the Interior.²

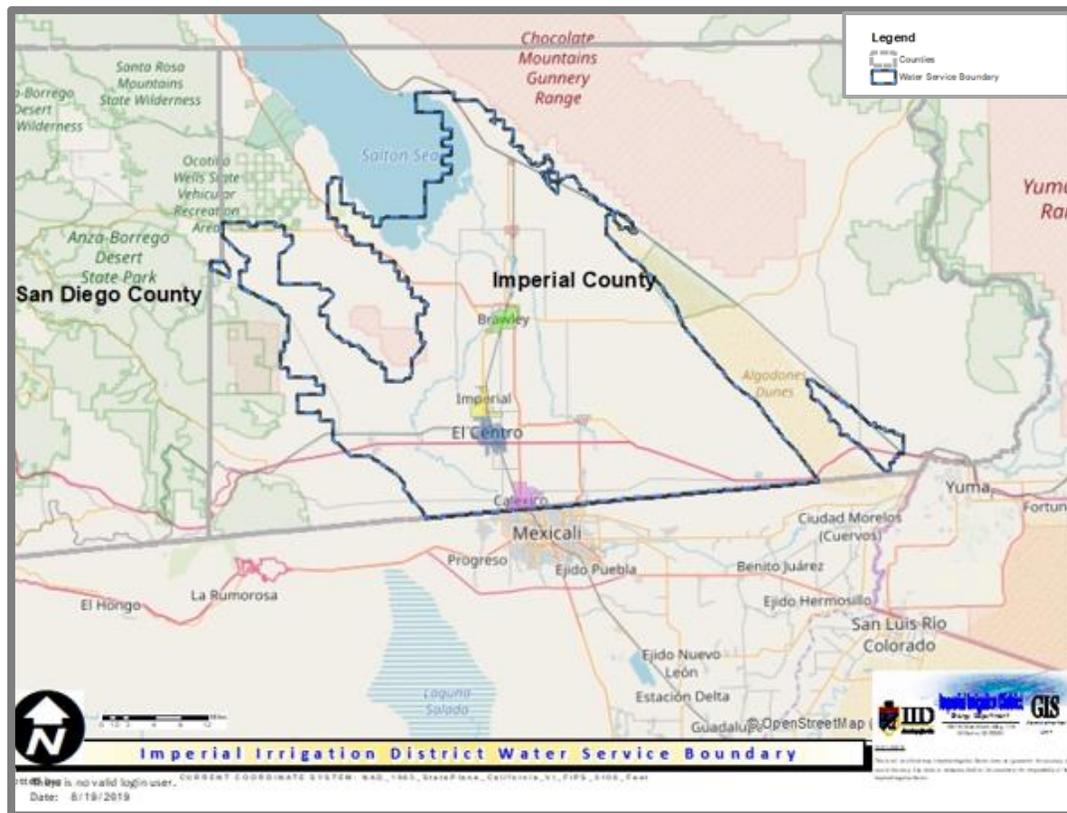
Figure 1-Imperial Irrigation District Boundary



² Figures 1, 2, and 3 are not to scale and are for assessment and planning purposes only.



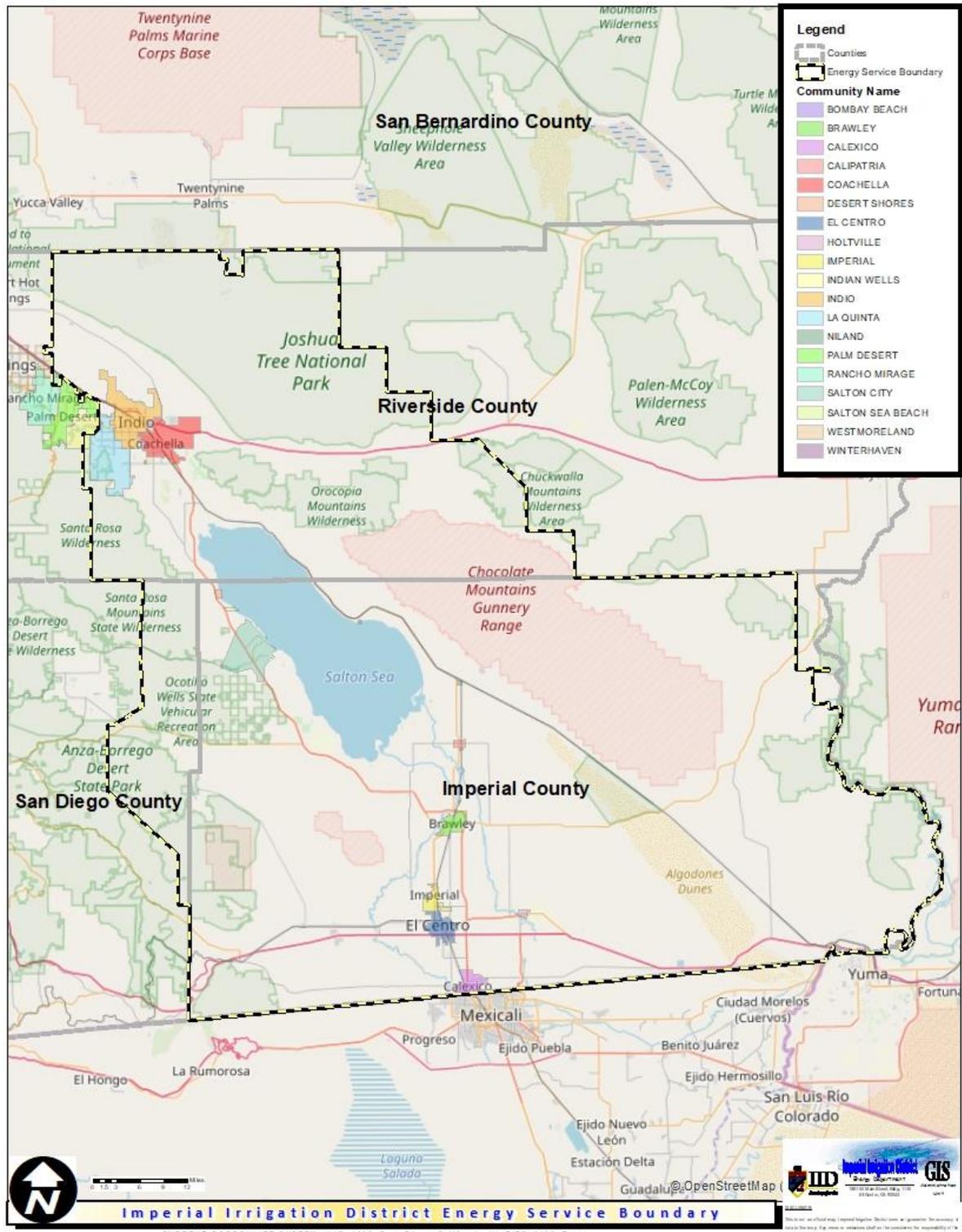
Figure 2 – IID Water Service Area



In contrast, IID's energy service area has been extended beyond the district boundaries and Imperial County boundaries, pursuant to service contracts approved by California regulatory authorities. These contracts include IID's 1934 Compromise Agreement with CVWD and the US Bureau of Reclamation, and the 1943 Purchase and Sale Agreement with California Electric Power Company, the predecessor to Southern California Edison. The 1943 Purchase and Sale Agreement has been modified and extended over the years by several Service Boundary Agreements and was approved by the California Public Utilities Commission. **Figure 3** identifies the IID energy service area.

In addition, IID was certified by the North American Electric Reliability Corporation (NERC) as one of 38 Balancing Authorities in the Western United States. As a federally certified Balancing Authority IID must ensure the reliability of the electric system within its geographical boundaries by, among other requirements, maintaining a continual balance between electric resources and electricity demands. IID is subject to the reliability, safety and security regulations promulgated by the North American Electrical Reliability Corporation, an agent of the Federal Energy Regulatory Commission (FERC) and enforced by the Western Electricity Coordinating Council (WECC).

Figure 3 - IID Energy Service Area



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In summary, the District's water service area is determined by its congressionally authorized district expansion limits while the energy service area is determined by contracts and both state and federal regulatory authorities. For example, IID's electrical service to the Coachella Valley is governed by the 1934 Compromise Agreement with the Coachella Valley Water District and the US Bureau of Reclamation, as well as the long-standing Service Boundary Agreement with Southern California Edison, which were approved and sanctioned by federal and state regulators. Further, IID's energy service area is subject to the strict reliability, safety and security standards promulgated and enforced by the Western Electricity Coordinating Council and the Federal Energy Regulatory Commission. Finally, IID's service areas for energy utilities remain under the purview of the California Public Utilities Commission, and according to state law, IID's service boundaries can only be modified with the concurrence of IID.

Communities in Service Areas

IID covers an irrigation service area of 1,658 square miles and an energy service area of 6,897 square miles, which partially overlap. Communities that are provided with either raw water services, or energy services, by IID are identified under **Table I-1** by county (continued on the next page). Not all of the communities in Imperial County are within the water service area and not all Riverside County communities are within the energy service area. Borrego Springs (in San Diego County) only receives incidental IID energy services and is therefore not reflected on the table.

Table I-1
Communities Within Service Areas

Imperial County Communities	Raw Water Service	Energy Service
Bombay Beach CDP		X
Brawley, City of	X	X
Calexico, City of	X	X
Calipatria, City of	X	X
Desert Shores CDP		X
El Centro, City of	X	X
Heber CDP	X	X
Holtville, City of	X	X
Imperial, City of	X	X
Niland CDP	X	X
Ocotillo CDP		X
Palo Verde CDP		X
Salton City CDP		X
Salton Sea Beach CDP		X
Seeley CDP	X	X
Westmorland, City of	X	X
Winterhaven		X



Table I-1 Continued
Communities Within Service Areas

Riverside County Communities	Raw Water Service	Energy Service
Bermuda Dunes, CDP		X
Coachella, City of		X
Desert Hot Springs, City of		X
Indian Wells, City of (portion)		X
Indio, City of		X
Indio Hills, CDP		X
La Quinta, City of		X
Mecca CDP		X
Palm Desert, City of (portion)		X
Rancho Mirage, City of (portion)		X
Sky Valley, CDP		X
Thermal, CDP		X
Thousand Palms CDP		X

*Census Designated Place (CDP).

IID's Sphere of Influence

The *Cortese, Knox, Hertzberg Local Government Reorganization Act of 2000* requires the LAFCO to determine and update the spheres of influence for all applicable jurisdictions within the county. A sphere of influence is defined by Government Code §56076 as “a plan for the probable physical boundary and service area of a local agency, as determined by the commission.” According to state law and court precedent, Imperial County LAFCO has the exclusive jurisdiction to conduct IID’s municipal service review. This is because IID’s legal district boundaries are entirely within Imperial County and there are no agreements transferring jurisdiction from Imperial County LAFCO to other LAFCOs.

As of the date of this 2019 Service Area Plan, IID had no plans to expand its current water service area, which is contained entirely within Imperial County, or to expand its energy service area, which extends beyond Imperial County into Riverside and San Diego counties. IID intends to continue providing quality, and economical water and energy service to all of the areas it currently provides with those services. Although, Imperial County LAFCO has not yet determined IID’s sphere of influence, according to California Government Code §56076, it should be coterminous with its current service areas. The Imperial Irrigation District’s boundaries and service areas are depicted in the previously introduced **Figures 2 and 3**.



IID Procedures for Extending Water Service Outside of District Boundaries

The delivery of water to lands within the Imperial County must meet certain requirements. Lands within the legal district boundaries are subject to an administrative process prior to water delivery services. Lands outside the legal boundary of the district, but within the authorized service area as described in IID's 1932 Agreement with the Bureau of Reclamation, may receive conserved water or file a petition for inclusion (annexation) into the district. All annexations are at the discretion of the IID Board of Directors. The decision for annexation of lands within the water service area is made by the IID Board of Directors based on a variety of considerations such as water supply and demand, hydrology, access to irrigation and drainage facilities, method of irrigation, and other limitations imposed by virtue of Section 206 of Public Law 100-675³ ("Protection of Existing Water Uses"). The following is a brief overview of water delivery service requirements under three distinct scenarios:

Scenario 1-Lands that are included within the legal district boundary

- Ensure water availability charges have been paid (annual per acre fee)
- Certificate of Ownership and Authorization Form is completed
- Associated capital costs are paid by the proponent
- Subject to IID Water Rules and Regulations

Scenario 2-Lands are outside the district boundary but within the AAC service area

- Option 1-Purchase conserved water from IID
- Option 2-File a petition for inclusion (annexation) into the district, then Scenario 1

Scenario 3-Lands are outside the district boundary, outside the AAC service area, but within Imperial County

- Option 1-Purchase conserved water from IID
- Option 2-Seek congressional authorization for expansion of district boundaries beyond the limits established by the Secretary of the Interior in 1932

As noted above, lands that are unable, or unwilling, to be annexed into the district, but that are located within Imperial County, have an option to purchase conserved water from IID. The transfer of conserved water outside of the district boundary is also at the discretion of the IID Board and must meet a number of conditions, including but limited to:

1. Authorization by the State Water Resources Control Board
2. Environmental Compliance
3. Subject to the 2003 Quantification Settlement Agreement provisions⁴

³ An Act to provide for the settlement of water rights claims, to authorize the lining of the all American Canal, and other purposes as detailed in the 1988 [Settlement Agreement](#).

⁴ [2003 QSA](#) are a set of interrelated contracts that resolve certain disputes among the United States, the State of California, IID, MWD, CVWD and SDCWA, for a period of 35 to 75 years, regarding the reasonable and beneficial use of Colorado River water and the ability to conserve, transfer and acquire conserved Colorado River water.



C. SERVICE AREA PLAN REQUIREMENTS

IID Service Area Plan Context

Service area plans support Imperial County LAFCO's Municipal Service Review process, which by state law occurs every five years. This 2019 IID Service Area Plan would be the first service area plan prepared by the Imperial Irrigation District for submission to Imperial County LAFCO.

Minimum Contents of Service Area Plans

The required contents of an up-to-date Service Area Plan are determined by Imperial County LAFCO Guidelines and reviewed by the LAFCO for sufficiency. Per Government Code Section 56430, the LAFCO, in undertaking its periodic municipal service review, shall prepare a written statement of its determinations with respect to each of the following requirements:

1. *Growth and population projections for the affected area;*
2. *The location and characteristics of any disadvantaged unincorporated communities within, or contiguous to, the sphere of influence;*
3. *Present and planned capacity of public facilities, adequacy of public services, and infrastructure needs or deficiencies;*
4. *Financial ability of agencies to provide services;*
5. *Status of, and opportunities for, shared facilities;*
6. *Accountability for community service needs, including governmental structure and operational efficiencies;*
7. *And any other matter related to effective or efficient service delivery, as required by commission policy.*

Role of the Imperial County Local Agency Formation Commission

The Imperial County LAFCO is charged with the review and approval of the IID Service Area Plan. Imperial County LAFCO conducts this municipal service review because IID's legal boundaries are entirely within Imperial County and there are no agreements transferring jurisdiction from Imperial County LAFCO to other LAFCOs.

D. ORGANIZATIONAL STRUCTURE OF SERVICE AREA PLAN

This Service Area Plan discusses the services provided by the Imperial Irrigation District, identifies the service demands existing at the time of Plan's preparation, and estimates the future demand for such facilities and services. In doing so, it considers new planned, or projected, development from local urban areas and increased agricultural water use demand. An approximate 20-year planning period is used to forecast population growth, and the



estimated facility and service demands are based on population projections in five-year increments through 2040.

This Service Area Plan provides the information necessary for LAFCO to conduct a municipal services review in compliance with Section 56430, and is organized into the following six sections that satisfy the Guidelines adopted by the Imperial County LAFCO:

- I. **INTRODUCTION AND BACKGROUND:** Provides a brief description of the Imperial Irrigation District, Service Area Plan requirements, including the overall content of the Service Area Plan presented herein.
- II. **EXECUTIVE SUMMARY:** Provides an overview and summary of the service assessments and conditions identified regarding existing facilities, demand, mitigation, and costs.
- III. **GROWTH AND POPULATION PROJECTIONS/DEMAND:** Provides a discussion on existing and projected populations within the district's service area and describes potential impacts to agricultural water demand (agricultural land) associated with population growth and projected transition of service demand.
- IV. **PUBLIC FACILITIES AND SERVICES:** Provides a thorough description of existing and planned IID facilities and services, their current and projected adequacy, and any opportunities for shared facilities, or services, with other agencies. The following facilities and services are included in the review:
 - A. Water Services and Facilities
 - B. Irrigation Drainage Services and Facilities
 - C. Energy Services and Facilities
 - D. Conservation Programs and Services
 1. Water Conservation Programs
 2. Energy Efficiency Programs
 - E. Administrative Services and Facilities
- V. **FINANCIAL PLAN:** The financial section identifies and discusses existing and potential future sources of revenue and financing mechanisms for public facilities and services that may be available to the Imperial Irrigation District.



II. EXECUTIVE SUMMARY

This Service Area Plan illustrates IID’s long-term strategic objectives consistent with other IID adopted plans. A number of uncertainties facing the IID in the next several years are mitigated, within limitations. These external issues include, but are not limited to 1) the protection of water rights held in trust for water uses within the district; 2) the increasing use of efficiency-based water conservation measures ; 3) compliance with state and federal water quality programs; 4) future hydrologic water supply conditions and federal operational guidelines 5) the emerging and changing State and Federal mandates impacting renewable energy portfolio standards and emission reduction targets; 6) significant high-voltage electric transmission development to augment the export of locally produced renewable resources; 7) regulatory and reliability compliance requirements from energy oversight agencies; 8) additional regulatory compliance requirements for both the Energy and Water Departments; and 9) enforcement/implementation of the State of California’s restoration responsibilities in support of a smaller but sustainable Salton Sea.

A. AREA GROWTH SUMMARY

The population and growth projections presented herein provide a context for the analysis and findings introduced for each individual public service facility in terms of the performance standard, inventory of existing facilities, existing service demand versus projected future demand, adequacy and mitigation. Per the Department of Finance data, it is estimated that the 2018 service area population in Imperial County was 190,624, while the service area population in the Coachella Valley communities within Riverside County, that are currently served, is estimated at 239,120 (adjusted to exclude partially served communities). The following **Table E-1** displays the projected population of Imperial Irrigation District’s service area through Year 2040, in five-year increments.

Table E-1
Service Area Population Projections

Year	Imperial County Projected Population	Coachella Valley Projected Population	Total Service Area Projected Population
2020	214,590	252,388	468,998
2025	232,998	288,867	523,890
2030	251,611	330,619	584,260
2035	263,309	378,405	643,749
2040	293,889	433,099	729,028

Source: For Imperial County, 2012 Imperial Integrated Regional Water Management Plan and for Riverside County Communities, the Department of Finance twenty-eight year historic annual average growth rate of 2.7 percent (based on the population history for the specified communities as a whole) was applied.

This Service Area Plan uses population and growth projections for the region formally adopted



under the 2012 Imperial Integrated Regional Water Management Plan (IRWMP) to assist in meeting future water resource demands. Population projections from the IID 2018 Integrated Resource Plan (IRP) drafted by the Energy Department in 2018 were used to assist in meeting future energy resource demands. The Imperial IRWMP was updated in 2012 and formally adopted by IID, the Imperial County Board of Supervisors and the City of Imperial as the IRWMP administrator. The IID Board adopted the Energy IRP in December 2018. These plans provide a comprehensive detail of factors affecting projected demands for both water and energy, which are only briefly discussed under this Service Area Plan.

In summary, the projected raw water demand for agricultural use is projected to remain the same unless there is substantial permanent irrigated land retirement as a result of planned land use changes (conversion of farmland to urban use). Non-agricultural water demands are anticipated to increase over the planning period, consistent with population projections, but at substantially lower water demand levels per acre than the 2018 average of 4.7 AF/AC of water for agricultural irrigation. Conversely, the projected energy demand to meet population and commercial/industrial growth is expected to grow substantially, particularly in the Riverside County service areas. One driving factor is expected to be the new industrial energy load from the cannabis industry.

B. SUMMARY OF FINDINGS

The service review findings in this Service Area Plan are based on information obtained from existing IID reports and adopted plans, adopted budgets, annual reports, and discussions with IID staff. The following IID facilities and services were reviewed: water facilities, drainage facilities, energy facilities, conservation/efficiency programs and services and administrative facilities. Findings for each facility and/or service are summarized in the tables that follow a respective, brief narrative. The tables summarize the relevant performance standard for the desired level of service and a description of the corresponding facilities assessment to meet current and future demands.

Raw Water Supply, Storage and Conveyance Facilities

IID's annual consumptive use is capped at 3.1 million acre-feet (MAFY) of water during the term of the Quantification Settlement Agreement (QSA). The QSA was enacted in 2003 as the nation's largest agriculture-to-urban water conservation and transfer program between the Secretary of Interior, Imperial Irrigation District, Coachella Valley Water District (CVWD), The Metropolitan Water District of Southern California (MWD), San Diego County Water Authority (SDWA) and other affected parties. IID water conveyance and operational storage facilities are all located within the County of Imperial and are reviewed in context with IID's water system. These facilities include reservoirs, canal systems, pipelines, and flow equipment that convey and measure raw water for irrigation to agricultural operations, rural residences, municipalities and water districts for treatment to potable water users and businesses within



the service area. Water facilities also include SCADA control systems and system equipment necessary for the efficient operation and conveyance of raw water. These water services are managed and operated by the IID Water Department.

Raw Water Facilities	
Performance Standard*	Agricultural water supply: 5.1 AFY/Acre Non-Ag water supply: .40 AFY/Acre Operational Water Storage: 7,750 AF Goal Water Conservation Target: 476,000 AFY
Existing Facilities (2018)	Water distribution canals: 1,668 Miles Operational reservoirs: 4,372 AF Farm delivery gates: 4,780 Canal/Lateral controls: 470 Automated systems: 300+ Mobile metering: 17
Existing Demand (2018)	Agricultural water demand: 2.2 MAF/Year Non-Ag water demand: 93,000 AF/Year All other water delivery*: 385,000 AF/Year Total outflow: 2.6 MAF/Year Total conservation for transfer purposes: 495,897 AF
Adequacy	2018: Sufficient
Future Demand	2030: 2.3 MAFY in-valley/487 KAF for transfer purposes 2040: 2.3 MAFY in-valley/487 KAF for transfer purposes
Mitigation	Continue to protect Colorado River water rights held in trust for IID water uses within the district.
Funding Sources	Current funding – Water sales and water transfer revenues Future funding – Water sales and water transfer revenues
2019 Budget	\$71.1 million for operation and maintenance \$28 million for capital projects (Excludes Drainage & Water Transfer Projects)

* Includes water uses for environmental, recreational, canal seepage, operational discharge, mitigation, evaporation, and miscellaneous uses. Table does not include conserved water volumes created for water transfer purposes. Please see Water Conservation Section.



Irrigation Drainage Facilities & Services

IID operates a comprehensive irrigation drainage system with the primary purpose of transporting water from agricultural irrigated lands in Imperial Valley. IID drainage facilities include facilities that convey agricultural discharges from the fields to the Alamo River, the New River or directly to the Salton Sea. IID drains, as a matter of necessity, also collect treated wastewater discharge, and surface runoff from non-agricultural uses. Although municipalities and other point source dischargers are allowed to discharge into IID's drain facilities, the IID drainage system is not intended for, nor designed, to collect or convey, urban or stormwater runoff. IID drainage facilities may include pumps when necessary due to drain elevations and/or depth challenges in order to maintain obligations to growers. These drainage facilities are managed and operated by the IID Water Department.

Drainage Facilities									
Performance Standard	IID Design Guidelines, NPDES requirements, IID discharge requirements, and any FEMA requirements.								
Existing Facilities (2018)	<table> <tr> <td>All-American Drains:</td> <td>50 Miles</td> </tr> <tr> <td>Drains (Earthen):</td> <td>1,296 Miles</td> </tr> <tr> <td>Drains (Concrete Lined):</td> <td>109 Miles</td> </tr> <tr> <td>Drains (Piped):</td> <td>121.5 Miles</td> </tr> </table>	All-American Drains:	50 Miles	Drains (Earthen):	1,296 Miles	Drains (Concrete Lined):	109 Miles	Drains (Piped):	121.5 Miles
All-American Drains:	50 Miles								
Drains (Earthen):	1,296 Miles								
Drains (Concrete Lined):	109 Miles								
Drains (Piped):	121.5 Miles								
Existing Demand (2018)	Capacity: Capacity to receive irrigation run-off Quality: Operational and regulatory monitoring								
Adequacy	Capacity: Sufficient capacity to receive irrigation run-off Quality: Ag Waiver Under Board Order R7-2015-0008 2017 Monitoring of Total Suspended Solids (main drains): <ul style="list-style-type: none"> • Eight of 16 drain sites achieved TSS goal 								
Future Demand	Capacity: Consistent capacity to receive irrigation run-off Quality: Final sediment TMDL numeric target of 200 mg/L Total Suspended Solids (TSS) goal of 200 mg/l								
Mitigation	Continual monitoring, implementation of Best Management Practices and nine (9) drainage quality mitigation measures recommended.								
Funding Sources	Current: Water sales/Drainage fees Future: Water sales/Drainage service fees								
2019 Budget	\$2 million for capital costs								



Energy Facilities & Services

IID energy facilities and services cover the entire Imperial County and extend into portions of the Coachella Valley in Riverside County and eastern portions of San Diego County (as an emergency response operation). Energy facilities include generation facilities, energy storage facilities and energy transmission and distribution lines. Since IID is not a member of the California Independent System Operator (CAISO) as a Balancing Authority, IID must be able to provide reliable energy services even during extreme events and is regulated by the Western Electricity Coordinating Council (WECC). The operation and management of energy facilities and services are all under the IID’s Energy Department.

Energy Facilities & Services			
Performance Standard	IID must match generation to load as a Balancing Authority.		
Existing Facilities (2018)	Generation facilities (Over 1,246 MW including power purchases) <ul style="list-style-type: none"> • AAC hydroelectric resources (32 MW) • Palo Verde Nuclear Generating Station (14 MW) • Western Parker Davis Dam (32.6 MW) • Yucca Steam Plant (70 MW) • IID thermal generation plants (Over 592 MW) Energy storage facilities: 33 MVA/20MW Energy transmission lines: 1,800 Miles Substations: 128 Distribution lines: 4,404 miles of overhead lines 1,744 miles of underground lines		
Existing Demand (2018)*	2018	1,125 MW Gross CP 1,067 MW Net CP	3,928,541 MWh Gross NEL 3,763,360 MWh Net NEL
Adequacy	Sufficient: 1,246 MW in 2018 (resources to cover load plus reserve)		
Future Demand*	2025	1,231 MW Gross CP 1,138 MW Net CP	4,300,459 MWh Gross NEL 3,956,559 MWh Net NEL
	2035	1,395 MW Gross CP 1,332 MW Net CP	4,873,768 MWh Gross NEL 4,630,854 MWh Net NEL
Mitigation	Continued implementation of the Energy Integrated Resource Plan and corresponding recommendations.		
Funding Sources	Current: Energy sales		Future: Energy sales
2019 Budget	\$161.1 million for operation and maintenance \$101.7 million for capital projects		

* Demand and projected data is from the 2018 Draft Energy Integrated Resource Plan. Coincident Peak (CP) was derived from Net energy for Load Forecast (NEL) and historical representative load factors. The NEL forecast was derived from the total retail sales forecast and the average difference of NEL and retail sales in historical years.



Conservation Programs and Services

IID is responsible for implementing both water and energy efficiency/conservation efforts. IID is located at the heart of many available natural resources to develop renewable generation facilities as well as energy efficiency and conservation. Summarized findings are independently presented for water conservation and energy efficiency.

Water Conservation - As a party to the nation’s largest agriculture-to-urban water conservation and transfer agreement, IID is implementing numerous efficiency-based conservation programs to create just under 500,000 AFY of conserved water (from 2003 baseline numbers). IID adopted a federal Water Conservation Plan (2016) that outlines its water use and conservation programs used to meet its water transfer commitments. Water conservation projects and programs are managed by the IID Water Department.

Water Conservation Programs/Services	
Performance Standard	Maintaining agricultural production with increased water use efficiencies that require less water than historic totals. Water conservation volumes shall further be consistent with the targets under the Quantification Settlement Agreement.*
Existing Programs (2018)	Agricultural Water Use Efficiency Programs <ul style="list-style-type: none"> • On-Farm Water Conservation Programs • System Water Conservation Programs Renewable Energy Water Efficiency Program Standards Urban Water Use Efficiency Program Standards
Existing Demand (2018)*	2018: 377,200 AFY
Adequacy	2018 Conservation Yield: Target exceeded
Future Demand*	2020: 450,200 AFY of conserved water 2030: 487,200 AFY of conserved water
Mitigation	Continue to implement the 2016 Water Conservation Plan.
Funding Sources	Water transfer revenues
2019 Budget	\$108 million for O&M for water transfer projects \$34 million for capital projects for water transfer projects

* Conservation targets included in the suite of QSA Agreements include the 1988 IID/MWD Transfer, IID/SDCWA Transfer, IID/CVWD Transfer, the All-American Canal Lining Project as well as the satisfaction of Miscellaneous PPR’s. Amounts are independent of increases and reductions in conformance with the Intentional Overrun and Payback Policy and Intentionally Created Surplus program.



Energy Efficiency- IID implements a comprehensive energy conservation portfolio consistent with AB 2021 and SB 350 including new measures under SB100 for greenhouse gas emission reductions. Energy efficiency standards are detailed under the most recently adopted [2018 Integrated Resource Plan](#). Energy efficiency programs are managed under the IID’s Energy Department.

Energy Conservation Programs/Services			
Performance Standard	Energy Efficiency Savings Renewable Energy Portfolio to reach 50% Emission Reductions by 7% to 10%		
Existing Programs (2018)	Energy Efficiency Programs <ul style="list-style-type: none"> • Residential Programs (4) • Commercial Programs (6) Renewable Energy Programs <ul style="list-style-type: none"> • Green Energy Rate Program • Net Energy Metering Program • Net Billing Program • Feed-In Tariff Program Emission Reductions Program (E-Green Program)		
Existing Demand (2018)	2018 Efficiency Savings: 15,674 MWh target 2018 Renewable: 33% target 2018 Emission Reduction: NA for 2018		
Adequacy	Efficiency Savings:	20,000 MWh +	Satisfactory
	Renewable:	31%	Satisfactory
	Emission Reduction:	TBD	NA for 2018
Future Demand	2025 Efficiency: 26708 MWh target 2030 Efficiency: NA After 2027’s 22435 MWh 2025 Renewable: 33% target 2030 Renewable: 50% target 2025 Emission Reduction: 40% Below 1990 levels 2030 Emission Reduction: 50% to 60% Below 1990 levels		
Mitigation	Continue to implement the adopted Integrated Resource Plan and adopted programs.		
Funding Sources	Current funding – Energy sales Future funding- Energy sales		
2019 Budget	\$6.3 million for efficiency programs \$117.0 million for renewable requirements		



Administrative Facilities & Services

Administrative facilities include buildings that house administrative and general service staff and that provide internal support services and general services to IID clients, governmental affairs and the business community, as well as the water and energy departments. Five IID departments oversee and deliver administrative services as follows: Executive Department, General Services Department, Information Technology (IT) Department, Finance Department, and Human Resources Department. Performance takes into account the Final Report of Space Requirements HQ Facilities Development Program Management Project prepared by Griffin-Lyon Program and Construction Managers, LLC., in 2012 for IID.

Administrative Facilities																	
Performance Standard	.75 Admin FTE/1,000 in population served 450 SF of building space/1,000 in population served 125 SF of office space per FTE																
Existing Facilities	<table> <tr> <td>Executive Department</td> <td>13,484 SF</td> </tr> <tr> <td>General Services Department</td> <td>19,575 SF</td> </tr> <tr> <td>Information Technology Department</td> <td>25,264 SF</td> </tr> <tr> <td>Finance Department</td> <td>16,195 SF</td> </tr> <tr> <td>Human Resources Department</td> <td>17,164 SF</td> </tr> <tr> <td>Subtotal</td> <td>91,682 SF</td> </tr> <tr> <td>Common Areas (Exclusively Admin)</td> <td>98,230 SF</td> </tr> <tr> <td>TOTAL ADMIN AREAS</td> <td>189,912 SF</td> </tr> </table>	Executive Department	13,484 SF	General Services Department	19,575 SF	Information Technology Department	25,264 SF	Finance Department	16,195 SF	Human Resources Department	17,164 SF	Subtotal	91,682 SF	Common Areas (Exclusively Admin)	98,230 SF	TOTAL ADMIN AREAS	189,912 SF
Executive Department	13,484 SF																
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Information Technology Department	25,264 SF																
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Human Resources Department	17,164 SF																
Subtotal	91,682 SF																
Common Areas (Exclusively Admin)	98,230 SF																
TOTAL ADMIN AREAS	189,912 SF																
Existing Demand	2018 FTE: 322 Admin FTE (based on 429,744 in population) 2018 Space: 193,385 SF (based on 429,744 in population)																
Adequacy	2018 Admin FTE: 463 Meets/Exceeds Demand 2018 Admin Area: 189,912 SF Meets Demand (+166,700 SF Shared Common Areas)																
Future Demand	2030: 438 Admin FTE and 262,917 SF of space 2040: 546 Admin FTE and 328,063 SF of space																
Mitigation	By 2030, 73,005 SF of additional admin space may be needed or the conversion of shared common areas.																
Funding Sources	Current: Water and Energy Department revenues Future: Water and Energy Department revenues																
2019 Budget	\$77.5 million for Operations \$2.4 million for capital costs for facilities/buildings																



III. GROWTH AND POPULATION PROJECTIONS

IID has separated its operations into two primary departments, the Water Department and the Energy Department. Future water service demand will be determined by existing water transfer agreements, trends in the Imperial Valley farming community, industrial development in the geothermal industry and the level of urban growth that will reduce acreage of irrigated farmland. Energy service demand will largely be determined by population and economic trends in the Imperial Valley and the Coachella Valley and the pace of industrial growth in the cannabis industry. Both the water and energy service sectors will be greatly impacted by conservation efforts and the associated regulatory requirements.

The water and the energy departments have respectively completed integrated resource plans. On September 23, 2008, the IID Board of Directors adopted a strategic plan tasking the Water Department to develop an Integrated Regional Water Management Plan (IRWMP) to assist in meeting future water resource demands. On September 29, 2009, the IID Board accepted the findings of the draft IWRMP and authorized development of the Imperial IRWMP to further these efforts and to assist regional water planning efforts through a process conforming to California Department of Water Resources guidelines. The Imperial IRWMP was finalized in 2012 at which time it was adopted by IID, the Imperial County Board of Supervisors and the City of Imperial as IRWMP administrator. The Energy Department also adopts an Integrated Resource Plan which is updated every five years with the most recent adoption of the 2018 IRP.

IID intends to continue to serve agricultural operations in the Imperial Valley and support the orderly growth and development of urban areas throughout its respective water and energy service areas in both counties. It is the IID's intent to encourage cities and the respective counties to plan for growth in a sustainable and orderly manner. Orderly development will enable IID to plan improvements, phasing service expansion consistent with the jurisdictions anticipated growth, agricultural demand and outstanding commitments. This section of the Service Area Plan provides an overview of the district's irrigation characteristics in Imperial County and identifies the anticipated population and economic growth throughout its principal two-county service area, both of which are critical factors on how the IID will adequately serve the communities with water and/or electrical services.

A. REGIONAL SETTING AND CHARACTERISTICS

Regional Setting

IID water service area is in the Imperial Valley, entirely within the boundaries of the County of Imperial, but its energy services extend into the Coachella Valley of Riverside County and in limited form to San Diego County. The Imperial Valley and Coachella Valley have a strong agricultural economy. Although this region is naturally a desert, with high temperatures and



low average rainfall of less than three inches (75 mm) annually, the economy is heavily based on agriculture production due to irrigation, supplied wholly from the Colorado River. Colorado River water is channeled through the All-American Canal and Coachella Canal.

IID Water Department maintains an annual inventory of areas receiving water. As of 2018, an estimated 520,307 acres are serviced by IID with raw water. The 2018 Annual Inventory of Areas Receiving Water indicated that the total net area irrigated for crops was 444,098. Another 27,584 were farmable acres, but temporarily out of production (under a temporary fallowing program), while an additional 48,625 acres received raw water for rural home sites, feed lots, solar and industrial areas as well as municipal uses.

The Imperial County Agricultural Commissioner's Office estimated the county's agricultural production value in 2017 was \$2,065,600,000⁵. Vegetable and Melon Crops were the single largest production category by dollar value (\$1.01 billion), comprising 49.32 percent of the county total. Three products dominated this category: leaf lettuce (\$217.7 million), broccoli (\$94.8 million), and head lettuce (\$116.6 million). At 21.92 percent, Livestock represented the second largest category (\$452.7 million) and consisted mostly of feedlot cattle (\$387.1 million). Field Crops ranked third with \$365.8 million and 17.71 percent. Together, these three super categories accounted for 88.95 percent of the county's direct farm production values. These crops had a total water demand of 2,185,974 AF in 2017, while the Provisional Water Balance Report showed a total water flow of 2,663,611 AF for the same calendar year.

Approximately 61 percent of the 146,375 electric customers served by the IID reside outside its water service boundaries. Communities served by IID include the cities of Coachella, Desert Hot Springs, Indio and La Quinta, and portions of the cities of Palm Desert, Rancho Mirage and Indian Wells. There are also a number of unincorporated areas in Riverside County that receive electric services from IID as well as Borrego Springs and some isolated home-sites in east San Diego County during storm events for emergency response. The dynamics of the Energy Department are largely driven by growth and development demand while the dynamics in the Water Department are largely driven by water transfer agreements and urban growth in the Imperial Valley.

Population History

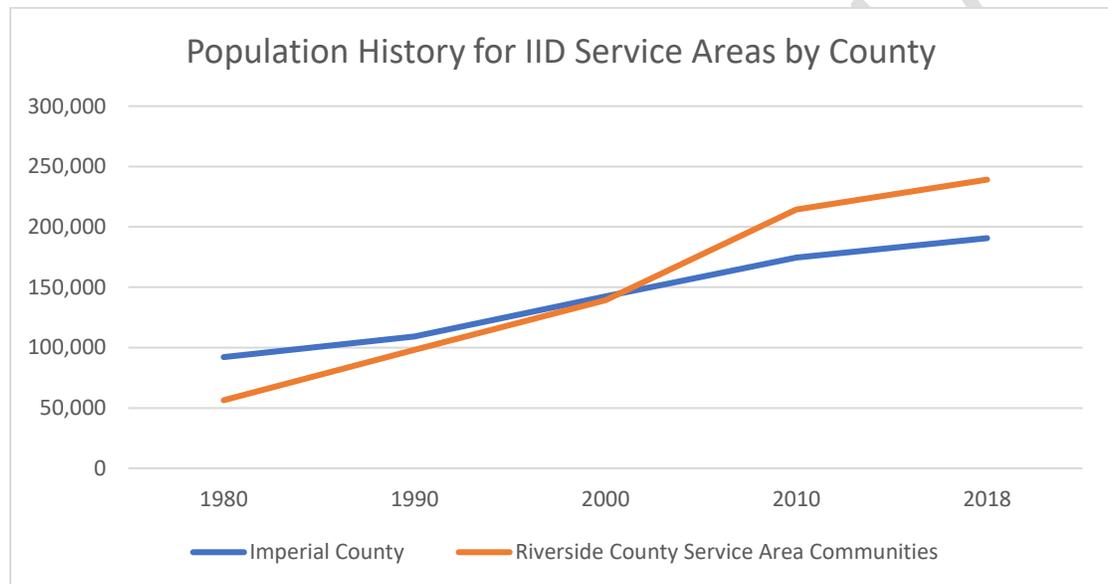
The Imperial County population discussed herein encompasses the entire water service area, which includes all of the cities in Imperial County and all of the unincorporated communities under the jurisdiction of Imperial County. Riverside County population data is restricted to the communities (incorporated and un-incorporated) that receive energy services from IID, specifically Coachella, Indio, La Quinta, Mecca, Thousand Palms, Thermal and small portions of Indian Wells, Palm Desert, and Rancho Mirage. Based on population data available from the California Department of Finance and the US Census Bureau, the Imperial County and

⁵ As per the 2017 [Crop and Livestock Report](#).



service area communities in Riverside County have experienced moderate population growth since the 1980s with the Riverside County communities experiencing aggressive growth between 2000 and 2010. It is estimated that the 2018 service area population in Imperial County was 190,624, while the service area population (actively served by IID) in the Coachella Valley communities within Riverside County was estimated at 239,120 as denoted in **Figure 4**.

Figure 4-IID Service Population



Source: Department of Finance for incorporated communities and US Census for Census Designated Places.

Imperial County as a whole grew at an average annual growth rate of 1.11 percent during the past eight years. Over the same time period, the Riverside County communities serviced by IID had an average annual growth rate of 1.38 percent. The IID service area population for both water and power services is estimated to be 429,744 for 2018.

Disadvantaged Communities

Government Code Section 56430 (a) (2) further requires the identification of location and characteristics of any disadvantaged unincorporated communities within, or contiguous to, a sphere of influence. The capacity and adequacy of infrastructure, public facilities, and public services must be identified for disadvantaged unincorporated communities, which are defined as areas of inhabited territory located within an unincorporated area of a county in which the annual median household income is less than 80 percent of the area median household income.

According to the California Department of Housing and Community Development (HCD), Imperial County’s area median income in 2017 was \$59,900 and thus the disadvantaged household income was \$47,920 for 2017. There are approximately thirteen disadvantaged



unincorporated communities within the IID water and energy service area boundaries that fall within this definition. The communities of Heber, Niland and Seeley are the only disadvantaged communities located within the district boundaries. **Table G-1** identifies all of the unincorporated disadvantaged communities within the IID water and energy service areas and their most current economic statistic regarding poverty level for all unincorporated, Census Designated Place (CDP) identified under the American Community Survey.

Table G-1
Disadvantaged Communities Within Service Areas

Imperial County Unincorporated Community	Poverty Level	Raw Water Service Area	Energy Service Area
Bombay Beach CDP	18.0%		X
Desert Shores CDP	31.5%		X
Heber CDP	13.9%	X	X
Niland CDP	37.7%	X	X
Ocotillo CDP	43.7%		X
Palo Verde CDP	NA*		X
Salton City CDP	28.9%		X
Salton Sea Beach CDP	68.3%		X
Seeley CDP	45.8%	X	X
Winterhaven, CDP	22.2%		X
Riverside County Unincorporated Community	Poverty Level	Water Service Area	Energy Service Area
Mecca CDP	41.8%		X
Thermal CDP	32.2%		X
Thousand Palms CDP	13.4%		X

* Although current poverty statistic estimates were not available for the Palo Verde community, the 2010 Census identified 47.3 percent of the population in poverty.

Source: US Census, American Community Survey, 2012-2016 Five Year Estimate for Percentage of Persons in Poverty.

The percentage of the population living in poverty in Imperial County is one of the highest in the state of California and has remained constant over the last four decades. According to the US Census Bureau, Imperial County had a 1990 poverty rate of 23.8 percent, a 2000 poverty rate of 22.6 percent and a 2010 poverty rate of 23 percent. According to the 2012-2016 American Community Survey, the most recent statistics show the County of Imperial at a 24.1 percent poverty rate. The State of California poverty rate was 15.8 percent for the same report period. Although statistics for Riverside County as a whole are not applicable given the limited area served in 2018 by IID, two of the unincorporated communities in Riverside County far exceeded the State poverty rate.



IID offers Financial Assistance Programs through the Energy Department that are income-qualified assistance programs for economically disadvantaged households designed to help customers meet their energy needs. Rate discounts are offered to income-qualified customers and a special rate is offered for those using critical medical equipment. A financial assistance program is offered to customers facing financial crisis that are at risk of disconnection for nonpayment. For rural residents that are enrolled under the Energy Financial Assistance Programs, eligibility for potable water services (bulk or bottled water from qualified agency) may also be arranged by the Water Department. This assistance is provided for alternative potable water services for drinking and cooking for residents in the IID water serve area who do not receive treated water. This is done in order to avoid water disconnect and to ensure IID maintains compliance with Environmental Health Services requirements, as administered through the California Department of Public Health⁶(CDPH).

B. GROWTH PROJECTIONS

It is projected that future population growth will largely occur within the unincorporated areas via annexations by local municipalities given the limited opportunities available for infill development in most cities within Imperial County and Riverside County Service Areas. Other factors that affect service demand include economic growth. This chapter provides an overview of population projections as well as growth projections adjusting service demand from other factors to project raw water demand and energy service demand.

1. Population Projections for Service Demand

a) Imperial County Population Growth Projections

The Southern California Association of Governments (SCAG) has prepared a twenty-year population projection for the County of Imperial. SCAG estimates that by 2020 the Imperial County will have a population of 234,000 and reach 282,000 by 2040. These projected figures were based on a historic growth rate of 1.8 percent for Imperial County, which was conservatively lower than what was adopted under the Imperial IRWMP projections of 2.4 percent for incorporated cities and 3.8 percent for unincorporated communities which projected a population of 293,889 by 2040. The population projections noted on **Table G-2**, as adopted under the 2012 Imperial Integrated Regional Water Management Plan are conservative for the purpose of projecting water service demand from Imperial County population growth.

⁶ IID strictly enforces enrollment with an alternative potable water service purveyor. IID maintains a compliance database and provides an annual update to CDPH.



Table G-2
Imperial Region Population Projections

Year	Imperial County Projected Population
2020	214,590
2025	232,998
2030	251,611
2035	263,309
2040	293,889

Source: Imperial Integrated Regional Water Management Plan 2012.

b) Riverside County Population Growth Projections

Population projections in the Riverside County service area are limited to the communities of Coachella, Desert Hot Springs, Indio and La Quinta, including portions of the cities of Palm Desert, Rancho Mirage and Indian Wells. The following unincorporated communities are also included: Bermuda Dunes, Indio Hills, Mecca, Sky valley, Thermal and Thousand Palms. These populations represent an estimated population of 239,120 in 2018 which is projected to reach 486,660 by 2040. The population projections noted on **Table G-3**, are conservative figures, using the historic annual average growth rate of 2.7 percent.

Table G-3
Coachella Valley Region Population Projections

Year	Coachella Valley Projected Population
2020	252,388
2025	288,867
2030	330,619
2035	378,405
2040	433,099

Source: Department of Finance twenty-eight year historic annual average growth rate of 2.7 percent which is based on the population history for the specified communities as a whole.

c) Total Service Area Population Growth Projections

The combined population growth for both service regions is displayed in **Table G-4**. Population affecting water demand is applicable only in Imperial County, while population affecting energy demand encompasses both the Imperial County region and the Coachella Valley Region in Riverside County.



Table G-4
Service Area Population Projections

Year	Imperial County Projected Service Population	Riverside County Projected Service Population	Total Service Area Projected Population
2020	214,590	252,388	468,998
2025	232,998	288,867	523,890
2030	251,611	330,619	584,260
2035	263,309	378,405	643,749
2040	293,889	433,099	729,028

Source: For Imperial County, 2012 Imperial Integrated Regional Water Management Plan and for Riverside County Communities, the Department of Finance twenty-eight year historic annual average growth rate of 2.7 percent which is based on the population history for the specified communities as a whole.

2. Growth Projections and Impacts on Service Demand

As previously noted, population projections are not the only factors affecting water service demand and energy service demand. Agricultural intensity affects water service demand, but may have little impact on energy demand. Non-residential/Non-agricultural land uses resulting from urban sprawl (e.g. industrial development) may result in a decline for water demand, but be an increased demand for energy services.

a) Water Demand Projections

Non-Agricultural Water Demand- Approximately 96 percent of all IID raw water demand is from agricultural land uses with the remaining four percent serving non-agricultural land uses. Non-agricultural uses include municipal, industrial, feedlots/dairies, environmental resources, recreation, rural service pipes and other non-agricultural uses. Industrial demand includes geothermal, but not solar, energy production. The aforementioned population growth projections for the Imperial County contribute to the non-agricultural water demand projections by an estimated 28 percent. Riverside County has no demand on water services from IID.

Future agricultural water service demand will vary from current service demand as a result of changes in economic, land use, and hydrologic conditions. Historic trends show agricultural land conversion to urban uses, often results in less irrigated crop land in production. Cities with potential, permanent agricultural land conversions in Imperial County include Imperial, Brawley, Calexico, Holtville and El Centro. This conversion generally results in a decreased raw water demand in Imperial County since agricultural operations use an average of 4.6 AF Water/Acre annually while municipal uses use an average of 0.53 AF Water/Acre annually.



Imperial Valley historic 2015 and forecasted 2020 to 2055, non-agricultural water demands were projected under the adopted Imperial Integrated Regional Water Management Plan (IRWMP) in 2012. These water demand projections are applied in Water Supply Assessments for new development projects in Imperial Valley and applied consistently throughout this Service Area Plan.

Table G-5 provides the 2015 historic and 2020-2040 projected water demand in five-year increments, without conservation efforts which are discussed under the Conservation Chapter of this Service Area Plan. Total water demand for non-agricultural uses is projected to be 163.2 KAF in the year 2040. This is a forecasted increase in the use of non-agricultural water from 56 KAF for the period of 2015 to 2055.

**Table G-5
Non-Agricultural Water Demand Projections**

User	2015 KAFY	2020 KAFY	2025 KAFY	2030 KAFY	2035 KAFY	2040 KAFY
Municipal	30.0	34.1	37.1	40.1	41.9	46.9
Industrial	26.4	33.1	39.8	46.6	53.3	60.1
Other	5.5	5.5	5.5	5.5	5.5	5.5
Feedlots/Dairies	17.8	19.1	19.1	19.1	19.1	19.1
Environmental Resources	8.1	12.2	12.2	12.2	12.2	12.2
Recreation	7.4	7.4	7.4	7.4	7.4	7.4
Service Pipes	12.0	12.0	12.0	12.0	12.0	12.0
Total Non Ag Water Demand	107.2	123.4	133.1	142.9	151.4	163.2

Source: These water demands are from IID Provisional Water Balance rerun in 2017 and modified from 2012 Imperial IRWMP projections to incorporate a reduction of three percent based on IID 2015 delivery data.

Agricultural Water Demand- In 2017, gross agricultural production for Imperial County was valued at \$2,065.6 million USD, of which most was produced within the IID water service area.⁷ Although the agriculture-based economy is expected to continue, land use is projected to change somewhat over the years as industrial and/or alternative energy development and urbanization occur in rural areas and in areas adjacent to existing urban centers, respectively. Population growth, inevitably results in urban sprawl, which in turn results in the conversion of farm ground.

Agricultural water demands were also projected under the adopted Imperial IRWMP of 2012. **Table G-6** provides the 2015 historic and 2020-2040 forecasted agricultural consumptive use and delivery demand within the IID water service area, which is entirely within Imperial County. Agricultural evapotranspiration (ET) demand of approximately 1,475.7 KAF in 2015 is expected to increase in 2018 to around 1,566.5

⁷ [2017 Imperial County Crop and Livestock Report.](#)



KAF with termination of following programs that provided 105.3 KAF of water for Salton Sea mitigation in 2017. Forecasted agricultural ET remains constant, as reductions in water use are to come from efficiency conservation not reduction in agricultural production. When accounting for agriculture ET, tailwater and tilewater, total agricultural consumptive use (CU) demand ranges from 2,157.7 KAF in 2015 to 2,209.5 KAF in 2040. Forecasted total agricultural delivery demand is around 1 KAFY higher than the CU demand due to subsurface flow to Salton Sea.

Table G-6
Agricultural Water Demand Projections as AFY

	2015 KAFY	2020 KAFY	2025 KAFY	2030 KAFY	2035 KAFY	2040 KAFY
Ag ET from Delivered & Stored Soil Water	1,475.7	1,566.5	1,566.5	1,566.5	1,566.5	1,566.5
Ag Tailwater to Salton Sea	283.6	322.9	272.9	222.9	222.9	222.9
Ag Tilewater to Salton Sea	398.4	420.1	420.1	420.1	420.1	420.1
Total Ag CU Demand	2,157.7	2,309.5	2,259.5	2,209.5	2,209.5	2,209.5
<i>Subsurface Flow to Salton Sea</i>	<i>1.0</i>	<i>1.0</i>	<i>1.0</i>	<i>1.0</i>	<i>1.0</i>	<i>1.0</i>
Total Ag Delivery Demand	2,158.7	2,310.6	2,260.5	2,210.5	2,210.5	2,210.5

Source: 2015 record from IID 2015 Provisional Water Balance rerun 03/21/2017

Water demand is projected to remain constant for agricultural use between 2030 and through 2055 for the purpose of this Service Area Plan. These figures are conservative as there is a probability that agricultural water demand will likely decrease due to permanent urban sprawl and other water conservation efforts. These factors may result in a permanent decrease on water demand as discussed further throughout this Service Area Plan. Other uses accounted for in demand projections include water delivery for environmental, recreational, canal seepage, operational discharge, mitigation, evaporation, and approximately 35 KAFY of unaccounted water.

Table G-7
Total Water Demand Projections in AFY

Year	Non-Agricultural Water Demand	Agricultural Water Demand	Total Projected Water Demand
2020	123,400	2,310,600	2,434,000
2025	133,100	2,260,500	2,393,600
2030	142,900	2,210,500	2,353,400
2035	151,400	2,210,500	2,361,900
2040	163,400	2,210,500	2,373,900

Source: 2012 Imperial Integrated Regional Water Management Plan, non-agricultural demand is adjusted for 2015 historic deliveries from Provisional Water Balance.



b) Energy Demand Projections

Population forecasts on their own are unable to project energy demand. Non-residential energy sales accounts for approximately 50 percent of all IID electrical energy sales. Commercial sales accounted for about 40 percent of 2017 IID total energy sales with industrial energy sales comparable to municipal and/or agricultural power. New and rapidly increasing industrial loads are anticipated in the Coachella Valley.

Economic Data is a clear driving factor for energy demand. Economic data used in the energy load forecast regression models are population, total employment, farm employment, retail employment, personal income, and gross regional product (GRP). The projected energy demand from non-residential commercial/industrial growth is expected to grow substantially, particularly in the Riverside County service area.

In 2014, IID completed a Request for Proposals (RFP) to acquire energy load forecasting services as well as the tools and training to allow IID staff to complete all future forecasts. The IID Energy Department has prepared the system load term load forecast of peak demands, net energy requirements and energy sales to customers presented in this Service Area Plan for its service territory. The load forecast relies on industry accepted standards of practice, as well as rigorous, detailed and thorough analysis, critical to obtaining results that are both realistic and statistically sound. In this load forecast, an econometric approach was utilized to forecast IID's total retail sales. The Net Energy for Load (NEL) forecast was derived from the total retail sales forecast and the average difference of NEL and retail sales in historical years; Coincident Peak (CP) forecast was derived from NEL forecast and historical representative load factors. The forecast is primarily driven by several key variables that have an impact on hourly/daily/monthly/yearly loads and the forecast incorporated into the load impact resulting from these variables including, but are not limited to:

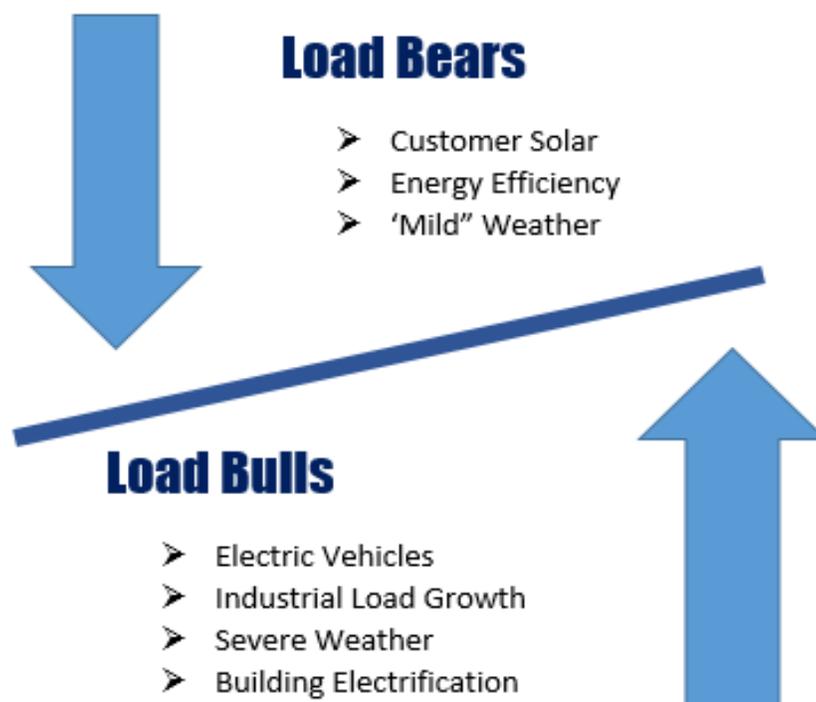
- Weather changes
- IID Energy Efficiency (EE) programs
- IID Rooftop Photo-voltaic (PV) Solutions Programs
- Electric Vehicles programs (EV)
- New Industrial Load Impact
- Regulatory Requirement Changes

IID's main energy load service area covers Imperial County and part of Riverside County. Woods & Poole Economics, Inc. provided economic forecast data that was used for the IID's energy load forecast analysis under the 2018 Integrated Resource



Plan. It is anticipated that the long-term economic outlook for the two counties will follow the same economic trend as the following national assumption through 2050 (with some local differences): steady and modest economic growth; Gross Domestic Product (GDP) average growth of 1.9 percent; steady job gains; relatively stable unemployment rate; increase in inflation from 0.3 percent to 3.9 percent, and; overall per-capita increases of 65 percent.

Since the forecast variables are uncertain, the severity of their impact on load depends on how each of these variables transpire. Generally, these variables can either encourage load growth or deter it. Below is a diagram that illustrates which variables encourage load growth and which variables deter load growth:



Under the Energy Department's IRP, for the 2018 forecast, three main cases were used to represent the potential outcomes: 1) High Case **Scenario**- Combining severe weather conditions, high industrial growth, high electric vehicle penetration, low energy efficiency, and low rooftop/customer solar penetrations; 2) Mid Case **Scenario** (Expected) – Combining normal weather, normal industrial growth, average electric vehicle penetration, average energy efficiency, and average rooftop/customer solar penetrations; and 3) Low Case **Scenario**—Combining mild weather conditions, normal economic industrial growth, low electric vehicle penetration, high energy efficiency, high rooftop/customer solar penetrations.

Table G-8
IID Net Energy for Load (NEL) Requirements

2018 Load Forecast (LF) Time Period	Average Annual Growth Rate
2001-2017	1.7%
2018-2027	1.2%
2028-2037	1.7%

Source: 2018 Draft Integrated Resource Plan.

Due to the unpredictability of weather temperature for the long term forecast, and the fact that weather has an important impact on energy consumption, the 2018 IID Load Forecast provides retail sales, NEL and CP forecasts under three weather scenarios: Normal (base/expected), Mild and Severe. These weather scenarios are used to estimate the load under the normal, abnormally severe and abnormally mild weather conditions and are combined with several other variables to create three cases. For details regarding methodology modifications in the 2018 Load Forecast compared with 2016 Load Forecast and the rationale of the modifications and limitations, please refer to the 2018 Energy Integrated Resources Plan.

Although the expected forecast may be used as a single point of reference for various activities, it is recommended that the ranged forecast be considered in all long term planning activities to capture the unpredictable impact of weather changes on load. Consider the forecast as a range helps long term planning activities capture the varying possibilities of needs because of uncontrollable risks and the relationship of demand and supply. The weather impact (mild/expected/severe) on the gross result of the load forecast expected case is shown in **Table G-9**, which is representative of the energy consumption for all IID customers as per billing accounts, including losses and IID consumption, and assuming that energy conservation programs will be zero. Please refer to the Conservation Chapter of this Service Area Plan for details on energy conservation efforts.



Table G-9
2018 Energy Load Forecast Expected Case Gross CP and NEL

Year	LF Projected Case (<i>mild weather</i>)		LF Projected Case (<i>expected weather</i>)		LF Projected Case (<i>severe weather</i>)	
	Gross CP (MW)	Gross NEL (MWh)	Gross CP (MW)	Gross NEL (MWh)	Gross CP (MW)	Gross NEL (MWh)
2018	1,070.80	3,740,593	1,124.60	3,928,541	1,183.30	4,133,568
2019	1,085.20	3,791,058	1,139.70	3,981,267	1,199.30	4,189,437
2020	1,096.90	3,842,420	1,152.00	4,035,339	1,212.30	4,246,598
2021	1,112.50	3,886,383	1,168.20	4,081,084	1,229.30	4,294,454
2022	1,126.70	3,935,798	1,183.20	4,133,184	1,245.10	4,349,672
2023	1,142.30	3,990,609	1,199.70	4,190,873	1,262.60	4,410,674
2024	1,154.00	4,042,513	1,212.00	4,245,549	1,275.70	4,468,523
2025	1,172.20	4,094,756	1,231.00	4,300,459	1,295.80	4,526,503
2026	1,187.10	4,146,929	1,246.70	4,355,303	1,312.30	4,584,406
2027	1,202.50	4,200,600	1,262.90	4,411,860	1,329.50	4,644,229
2028	1,214.70	4,254,971	1,275.80	4,468,148	1,343.10	4,704,805
2029	1,233.60	4,309,259	1,295.70	4,526,350	1,364.10	4,765,285
2030	1,249.20	4,363,703	1,312.10	4,583,747	1,381.50	4,825,976
2031	1,264.70	4,418,196	1,328.60	4,641,267	1,398.90	4,886,819
2032	1,276.90	4,472,874	1,341.50	4,699,019	1,412.50	4,947,928
2033	1,296.10	4,527,784	1,361.70	4,757,006	1,434.00	5,009,279
2034	1,311.90	4,582,942	1,378.40	4,815,224	1,451.60	5,070,861
2035	1,327.80	4,638,443	1,395.20	4,873,768	1,469.30	5,132,781
2036	1,340.20	4,694,599	1,408.30	4,933,023	1,483.20	5,195,460
2037	1,360.00	4,750,767	1,429.10	4,992,362	1,505.20	5,258,250

Source: 2018 Energy Integrated Resource Plan

C. IMPACTS FROM LAND USE CHANGES

The transition from agricultural land use typically results in a net decrease in water demand for municipal, commercial, and solar energy development; and a net increase in water demand for geothermal energy development. Local energy resources include geothermal, wind, biomass and solar. The County General Plan provides for development of energy production centers or energy parks within Imperial County.⁸ Alternative energy facilities will help California meet its statutory and regulatory goals for increasing renewable power generation and use and decrease water demands in Imperial County.

The IID Board has adopted several policies and programs to address how to accommodate water demands and minimize potential negative impacts on agricultural water uses.

⁸ Imperial County General Plan, Geothermal/Alternative and Transmission Element, revised 2006 and 2015.



Conservation Programs are independently assessed under its respective chapter of this Service Area Plan and are consistent with the following policies that have been adopted by the district:

Imperial Integrated Regional Water Management Plan: adopted by the IID Board on December 18, 2012, and by the County, the City of Imperial, to meet the basic requirement of California Department of Water Resources (CDWR) for an IRWM plan. In all, 14 local agencies adopted the 2012 Imperial IRWMP.

Interim Water Supply Policy for Non-Agricultural Projects: adopted by the IID Board on September 29, 2009, to ensure sufficient water will be available for new development, in particular, anticipated renewable energy projects until the board selects and implements capital development projects such as those considered in the Imperial IRWMP.

Temporary Land Conversion Following Policy: adopted by the IID Board on May 8, 2012, and revised on March 29, 2016, to provide a framework for a temporary, long-term following program to work in concert with the IWSP and IID's coordinated land use/water supply strategy.

Equitable Distribution Plan: adopted by the IID Board on October 28, 2013, to provide a mechanism for IID to administer apportionment of the district's quantified annual supply of Colorado River water; IID Board approved a resolution repealing the Equitable Distribution Plan (EDP) on February 6, 2018 due to ongoing litigation. In the absence of the EDP, all water users will continue to be subject to the requirement of reasonable and beneficial use standards.



IV. PUBLIC FACILITIES AND SERVICES

This Service Area Plan will address public facilities, services, and programs provided by the Imperial Irrigation District to its service areas over the course of a 20-year planning period. Although the Imperial Irrigation District has two primary departments for water and energy service delivery (the Water Department and the Energy Department), IID offers other related services that are carried out by these two departments and supported through five other administrative departments: Executive, General Services, Information Technology, Finance and Human Resources (hereafter, Administration). For the purpose of this Service Area Plan, facilities and services are presented in the following areas:

A. Raw Water Services & Facilities -	Imperial Irrigation District
B. Drainage Facilities -	Imperial Irrigation District/Municipalities
C. Energy Facilities -	Imperial Irrigation District
D. Conservation Programs -	Imperial Irrigation District
E. Administrative Facilities -	Imperial Irrigation District

An analysis of the listed facilities and services are provided under this chapter. Each facility is analyzed in detail based on the guidelines developed by LAFCO for Service Area Plans and on the performance standards established by the Imperial Irrigation District. Each respective service area provides a description of the nature of each service to be provided, a description of the service level capacity and a determination on whether adequate services are and will be provided within the projected demand and twenty-year planning time frame. Each facility's service analysis is presented in three detailed sections as follows:

1. **Performance Standard:** A description of the desired level of service that the respective public facility must provide.
2. **Facility Planning and Adequacy Analysis:** A description of the existing facilities, the current adequacy of the facilities, the future demand for facilities and the phasing of the demand for facilities as follows:
 - a) Inventory of Existing Facilities
 - b) Adequacy of Existing Facilities
 - c) Future Demand and Planned Facilities
 - d) Opportunities for Shared Facilities/Services
 - e) Phasing of Facilities/Services
3. **Mitigation:** As applicable, recommendations to ensure that adequate facilities and services will be provided for are addressed under the respective service area.

This Service Area Plan further contains a Financial Plan. The Financial Plan offers information of how the facilities, services and programs extended by the Imperial Irrigation District are currently being funded and identifies opportunities of how future services, facilities and programs may be funded.



A. RAW WATER FACILITIES

IID diverts water from the Colorado River and delivers it to over 520,000 acres within its water service area in Imperial Valley. Imperial Dam, located about 20 miles north of Yuma, Arizona, is a diversion structure for the river, All-American Canal and Gila Canal water deliveries, serving southeastern California, Arizona and Mexico. The operations of IID's River Division Office at Imperial Dam, as well as water delivery to other contractors in Arizona, California and the Republic of Mexico, all fall under the direction of the US Bureau of Reclamation.

The IID's only source of water is its Colorado River entitlement. IID has a "present perfected" right to 2.6 million acre-feet (MAF). Because these vested rights preempt the 1902 Reclamation Law and are not subject to reclamation law limitations, in times of water shortage, present perfected rights must be satisfied first. Under the 2003 execution of the QSA and Related Agreements signed by the Secretary of Interior, Imperial IID, CVWD, MWD and the SDCWA, IID's annual consumptive use is capped at 3.1 million acre-feet (MAF) for a minimum 45-year term, with possible extension for another thirty-years. This Service Area Plan will consider the 3.1 MAF water resource to meet anticipated demands during this planning period.

Of the water that the IID conveyed in 2018, approximately 96 percent was used for agriculture purposes in the Imperial Valley to serve a total of 5,316 farm accounts. The remaining 4 percent was delivered to six cities, two special districts and a private water company that treat the raw water to safe drinking water standards and sell it to their residential and commercial clients through their independent distribution systems in addition to water deliveries to rural service pipes.

1. Performance Standards for Raw Water Delivery

Water for Agricultural Use- IID must be able to deliver to the agricultural community raw water to irrigate approximately 475,000 acres of farm ground that has had a historic demand of approximately 2,200,000 AFY. This includes lands that have been fallowed or not farmed. The district has not adopted a performance standard for agricultural use, but has identified an annual average of 5.1 AF of water per acre of farmable land. This standard would be consistent with the 10-year average, water use history, per acre, of all fields in IID. The 5.1 AF/Acre will continue to be the desired maximum average for performance assessment of agricultural water use.

Raw Water for Non-Agricultural Use- Other in-valley areas that receive water from IID are classified as industrial/urban uses for the purpose of this Service Area Plan. These uses include municipalities, feedlots, cattle yards, managed marsh land, recreation areas, rural service pipes and similar non-agricultural uses. These uses encompassed 49,034 acres in 2017 and had an annual demand of 92,214 AF for the same year, averaging .53 AFY/AC. Considering the State-wide water conservation goals that call for urban areas to reduce



their water use by 25 percent, the IID performance standard for water availability to non-agricultural uses is set at a conservative .50 AFY/AC.

Operational Water Storage- The use of operational reservoirs allows for increased delivery flexibility and provides conservation opportunities within the district. Ideally, the IID would like to attain 8,750 AF of raw water storage for the operational efficiency of the 475,000 total farmable acreage served. Since not all irrigated farmground can benefit from an operational reservoir, the standard is not set per acre, but is hereby established as a set target district-wide.

2. Water Facility Planning and Adequacy Analysis

All water services and facilities are managed through the IID Water Department. The Water Department contains an administrative section and eight operational sections: 1) Engineering Services, 2) Water Resources & Grant Management, 3) Environmental Mitigation 4) Farm Units Programs, 5) System Control, Monitoring & Data Management, 6) All-American Canal/Dam Operation & Management, 7) Water Dispatch, and 8) Southend O&M and Northend O&M. Three of these sections, the Water Resources & Grant Management Section, the Farm Unit Programs Section and the Environmental Mitigation Section have a primary focus on conservation and environmental mitigation efforts and are therefore discussed under the Conservation Programs chapter of this Service Area Plan. The remaining Water Department sections with primary functions for water facilities operations and water delivery services are summarized below:

- **Water Administration Section** is responsible for the oversight of all operations, maintenance, engineering services, budgetary process and accountability for the Water Department. This section interfaces with the Board of Directors, general manager and the public to ensure effective communication and proper administration of policies and procedures. Water Administration also ensures that the sections and units within the Water Department are meeting goals and objectives established by and for the Water Department in their Strategic Plan.
- **The Engineering Services Section** has three primary functions: 1) Provides engineering services for the water department, other agencies, developers, miscellaneous power and other capital maintenance and planning projects; 2) Manages the Capital Improvement Program (CIP), and 3) Serves as a liaison for the district and provides protection of district interests through planning and commenting on technical and legal documents and/or policies procedures, operation and maintenance.
- **The System Control/Monitoring and Data Management Section** maintains the automated control and monitoring sites distributed throughout the



irrigation system. A secondary function is to conduct flow measurement and carry out data management tasks using several data systems including SCADA, WIS/WISKI, Truepoint, GIS and Decision Support.

- **The All-American Canal/Dam O&M Section** is responsible for transporting irrigation, industrial and municipal water through the main canals for scheduled deliveries. This section also plans, organizes, directs, prioritizes and implements comprehensive strategies and programs for the construction, maintenance and repair of Senator Wash, Imperial Dam, the main canals, and related structures.
- **Water Dispatching Section** estimates and orders Colorado River water for Imperial Valley irrigation distribution. The section makes the irrigation water available to the water divisions for delivery to farmland and cities by routing the available irrigation water through the main canal system using IID's SCADA system. This section prepares water analysis reports and water accounting from the All American Canal Station 1117 to Station 4242 which becomes part of the USBR Colorado River accounting.
- **The South-End & North-end O&M Section** has the primary responsibility of delivering irrigation water to its southend and northend customers, respectively, in the most economical and efficient manner. This section is responsible for the district's irrigation and drainage systems including the maintenance of open channel canals, pipeline canals, water deliveries, and open channel drains. The office staff interfaces with water customers involving water orders, water card process requests, service pipes and small acreage accounts.

a) Inventory of Existing Water Facilities

Water is diverted at the Imperial Dam through the 80-mile-long All-American Canal and into a vast gravity-flow water distribution system, which the district owns, operates and maintains. There are 11 main canal scheduling areas supported by 11 raw water storage reservoirs. The reservoirs help absorb flow mismatches from the main canal reach upstream of the reservoir and allow delivery of scheduled flows into the next reach downstream. These operational measures constitute a supply-control process, where flows to meet scheduled water deliveries are released into canals and routed from upstream to downstream according to the operations schedule. A summary inventory of IID water facility system follows:

Imperial Dam- The Imperial Dam overlaps the California-Arizona border. The All-American Canal trashrack and headgates are located adjacent to the California abutment of the dam. Three desilting basins (design capacity 4,000 cubic feet per



second each) remove the sand and silt from the river water before it passes to the All-American Canal. The sand and silt removed are continuously returned to the river at the California Sluiceway Channel. The Imperial Dam and Gila Headworks are operated and maintained by IID with costs shared by the Bureau of Reclamation and the California and Arizona water agencies they serve. IID is responsible for directing water to California, Arizona and Mexico as per its USBR contract.



Water Distribution Facilities- The All-American Canal (AAC) is a federal canal that IID operates and maintains under contract for Reclamation. While the Bureau of Reclamation owns the physical structure, IID owns the AAC capacity and as such, operated and maintained by the district with share of costs from USBR and all the state water agencies it serves. Within the Imperial Valley, three main canals receive water from the All-American Canal: the East Highline, the Central Main, and the Westside Main, which are owned and operated by IID. From these main canals, the raw water is distributed through an extensive network of supply and lateral canals to numerous IID customers. Please see **Figure 4 - Imperial Unit Canal Network**. The main and supply canals have diversions to lateral canals, and from lateral canals into customer's head ditches. The extensive network of irrigation conveyance facilities include over 1,641 miles of open channel canals. IID maintains earthen, concrete lined and piped sections as noted in **Table W-1**, which proceeds **Figure 5**.

Figure 5 - Imperial Unit Canal Network

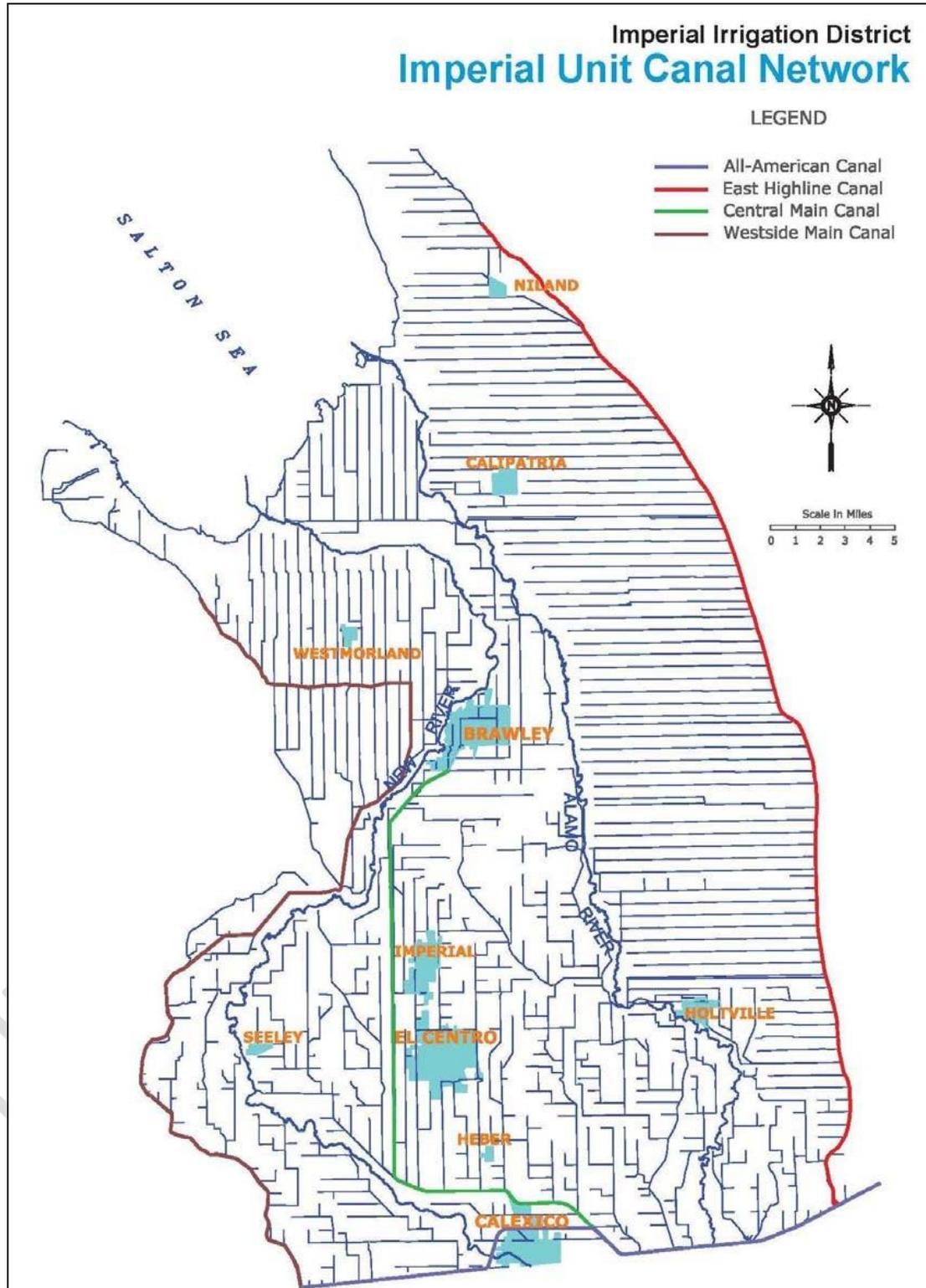


Table W-1
IID 2018 Water Distribution System

System	Earthen	Concrete Lined	Piped	Total Length Miles
All-American Canal ¹	56.720	23.000	.071	79.720
Main Canals	128.218	22.072	0.00	150.290
Lateral Canals	321.278	1,089.794	26.738	1,437.810
TOTAL	506.216	1,134.866	26.809	1,667.820

¹ The AAC is a federal canal that IID operates and maintains under contract for Reclamation. The New River Siphon is a 374 foot piped portion of the AAC.

Water Operational Reservoirs- Raw water storage is an integral component of the water distribution system for operational purposes. Operational reservoirs are important for water system delivery and control delivery efficiency and have grown increasingly critical to accommodate water transfers. IID's water distribution system includes seven regulating (R) and four interceptor (I) reservoirs with a combined water storage capacity of 4,372 acre-feet. **Table W-2** provides an inventory of existing reservoir specifications as of 2018.

Table W-2
IID 2018 Reservoir Specifications

Reservoir	Surface Area	Storage Capacity, AF	Maximum Depth, FT	Flow Capacity	
				Inlet	Outlet
Singh (R)	32	323	11.0	100	100
Sheldon (R)	50	476	10.0	100	100
Fudge (R)	38	300	10.0	100	100
Sperber (R)	64	470	9.0	100	200
Carter (R)	32	350	11.3	150	50
Galleano (R)	40	425	21.0	150	75
Bevins	37	253	12.9	165	50
Young	47	275	9.0	100	100
Russell	29	200	8.3	100	50
Wiley	51	300	7.0	190	51
AAC Off-line Storage (R)	74	1,000	13.6	400	400
TOTAL	494	4,372			

Source: IID [Reservoir Webpage](#).

Water Control Center- In September 1993, IID completed the construction of a \$3 million Water Control Center. The 10,000 square-foot building constructed at IID Headquarters houses hardware and software used to regulate automated gates for water control and to collect the information needed to verify efficiency. The building



is equipped with a backup generator that ensures uninterrupted power service to the control system. Other technology at the Water Control Center includes earthquake disaster recovery features, computer generated screens displaying control room information and changeover procedures to allow for continuous 24-hour service. The district further has numerous flow monitoring and control devices comprised of elements depicted on **Table W-3**.

Table W-3
IID 2018 Flow Monitoring and Control Devices

Element	Approximate Number
Farm Delivery Gates	4,780
Lateral Headings (33.5% automated)	233
Discharge/Flow Monitoring	147
Main & Supply Canal Check Gates* (89% automated)	66
Non-Leak Gates	20
TOTAL	5,246

Source: IID System Control/Monitoring and Data Management Section Staff, 2018

* The Gates represent 66 locations with 160 gates total as most locations have multiple gates.

Water Measuring & Accounting Equipment- IID measures and records all water deliveries to users except for service pipes and small parcels. Flow is also measured and recorded throughout the water transportation system (and at key points in the drainage system) using SCADA technology by means of IID's WIS/WISKI which is an Oracle-based system to collect and process flow data in support of water management. IID has over 300 automated measurement systems and an additional 126 manual main canal or lateral headings and 4,549 delivery gates. The district also owns other miscellaneous metering equipment for efficient water accounting as noted in **Table W-4 Metering Equipment**.

Table W-4
IID Metering Equipment

Equipment Type	Number
All-American Propeller Meter	10
Flow Tracker/Point Velocity	2
ADCP (Rivercat-Sontek)	2
ADCP (Stream Pro RDI)	1
Marsh-McBurney	2
TOTAL	17

Source: 2016 Water Conservation Plan updated in 2019 by IID Staff.



Personnel and Vehicles- The Water Department (excluding the Water Resources & Grant Management Section, the Farm Unit Program Section, and Environmental Section) is supported by a staff of 376 employees and 238 company owned vehicles. The particulars under each respective Water Department Section are noted below.

Water Department Personnel 2018 (382 Total FTE):

- Water Administration Section (6 FTE)
- Engineering Section (53 FTE)
- System Control/Management Section (27 FTE)
- AA Canal/Dam O&M Section (34 FTE)
- Operational Reporting Section (22 FTE)
- Southend O&M Section (132 FTE)
- Northend O&M Section (108 FTE)

Water Department Vehicles in 2018 (241 Total):

- Water Administration (3 Vehicles)
- Engineering Section (23 Vehicles)
- System Control/Management Section (22 Vehicles)
- AA Canal/Dam O&M Section (27 Vehicles)
- Operational Reporting Section (2 Vehicles)
- Southend O&M Section (94 Vehicles)
- Northend O&M Section (70 Vehicles)

b) Adequacy of Existing Water Facilities

IID's Colorado River 3.1 MAFY water entitlement is significant, and as the agency in charge of these water rights, IID continues to responsibly manage its Colorado River water supply and related resources in an efficient manner. Per the Provisional Water Balance, IID has a generally consistent, consumptive agricultural use water demand of 2.2 MAF/Year, on average (based on historic volumes). Total Non-Agricultural Water delivery is under 93,000 AF/Year. Including all other water deliveries⁹ (385,000 AF/Year) the total volume is 2.6 MAF/Year. IID water supply and water transportation facilities are able to satisfactorily meet this water demand.

Water Reservoirs- The 4,327 acre-feet of reservoir storage capacity has demonstrated to be sufficient to maximize efficiency within the existing district's irrigation system given all the water transfer demands. An additional 4,300 AF of operational water reservoirs are projected to be constructed over the next five years to accommodate water transfers without any adverse impacts to the current agricultural system and irrigation clients.

⁹ Includes water delivery for environmental, recreational, canal seepage, operational discharge, mitigation, and evaporation.



Water Distribution Facilities- IID's extensive water distribution system is sufficient to meet the needs of the district's water service area. There are no water service expansions proposed, or anticipated. For water conservation efforts, there is a need to construct lateral interties throughout the IID irrigation system, as feasible. These project demands are discussed under the conservation chapter of this SAP.

Water Control Center- The Water Control Center became operational in 1993 and is approximately 25 years old. In early 1998, IID was awarded the International Award of Excellence for Innovation Technology of its System Automation Program (Water Control Center and remote flow monitoring sites), which provides improved water management utilizing modern control technology. SCADA system upgrades, including computer and processing unit installations, are continuously budgeted and upgraded.

Water Measuring & Accounting Equipment- IID had over 126 manual main canal or lateral headings and 4,549 manual delivery gates as of 2018. It is the intent of IID to complete several water measuring and accounting projects within the next four years for upgrades towards automation of lateral heading and in direct relation to water transfer demands.



Manual Lateral Heading

c) Future Demand for Water Facilities & Planned Improvements

The adopted 2012 Imperial Integrated Regional Water Management Plan addresses the region's water supply and demand, including baseline and forecasted values through 2050. In-valley water demand is separated from two sources of demand: 1) agricultural, and 2) non-agricultural (municipal, industrial, feedlots, dairy, environmental, recreation and similar uses). Historically, approximately 96 percent of water is distributed for agricultural uses while 4 percent of raw water is distributed for

non-agricultural uses. During 2017, less than 1.2 percent of the non-agricultural water demand went to public agencies for treatment to potable water standards.

Non-agricultural demands are anticipated to increase over the planning period. The Imperial Integrated Regional Water Management Plan determined a historic per capita municipal raw water demand of .23 AFY (weighted average) which is equal to 205 gallons per day, per capita and accounts for all municipal water use and not just residential, prior to treatment and distribution. As of 2016, the Municipal Water Demand was 30,418 AFY and accounted for approximately 34 percent of the total (89,060 AFY) non-agricultural water delivery.

The same per-capita measure will be applied to future projections. This measure is conservative considering the increasing water conservation measures being employed by the respective agencies. **Table W-5** projects Municipal water demand separate from the projected demand from other non-agricultural uses outside of municipal demand. The remaining 66 percent demand, for the same calendar year, came from feedlots, industrial, rural service pipes and similar non-agricultural uses. Water demand from these other non-agricultural areas is anticipated to increase modestly throughout the planning period. Although the figures include geothermal, they do not include solar or energy production.

Table W-5
Non-Agricultural Water Demand Projections

Year	Projected Population	Municipal AFY Demand Projections	Other Non-Ag AFY Demand Projections
2020	214,590	49,356	89,300
2025	232,998	53,590	96,000
2030	251,611	57,871	108,800
2035	263,309	60,561	109,500
2040	293,889	67,594	116,300

Source for Municipal: Imperial Integrated Regional Water Management Plan 2012. Source for Other Non-Ag: 2015 Provisional Balance using a multiplier of .03.

As has been the case historically, annual agricultural demands are expected to vary from year-to-year based on commodity markets, rainfall, temporary, or long-term, fallowing and other factors. The projected raw water demand for agricultural use is expected to decline modestly between 2020 and 2030 due to conservation efforts and then remain constant for year 2030 and beyond unless there is a moderate permanent irrigated land retirement as a result of planned land use changes (conversion of farmland to urban use). These permanent changes would be directly correlated to the increase in population, via urban sprawl and conversion of farmland to urban uses. **Table W-6** combines Agricultural Water Demand & Non-Agricultural Water Demand for a total water demand during the planning period.



Table W-6
Agricultural Water Demand Projections & Total Water Demand

Year	Agricultural AFY Demand Projections	All Non-Agricultural AFY Demand Projections	Total Projected AFY Demand
2020	2,309,600	138,656	2,450,276
2025	2,259,500	149,590	2,411,115
2030	2,209,500	160,671	2,372,201
2035	2,209,500	170,061	2,381,596
2040	2,209,500	183,894	2,395,434

Source: 2012 Imperial Integrated Regional Water Management Plan.

Planned Water Facilities- No new water facilities are anticipated as a result of the projected water demand, considering IID does not expect to expand its water service footprint nor does IID expect to increase the water demand beyond its authorized consumptive use. By contrast, IID plans to implement a number of water reduction measures for overall water conservation and to accommodate water transfers (please refer to water conservation section.) Some of the existing water facilities, however, are planned for retrofit and rehabilitation for more efficient operation, as per the 5-Year Capital Improvement Plan of the Water Department (last revised July 2018) which may be modified from time to time. Any relevant water conservation data associated with capital projects is discussed under the Conservation Programs section of this Service Area Plan.

Water Reservoirs- An estimated 4,300 additional acre-feet of operational reservoir storage capacity is planned for by IID. The following is a list of the planned main canal reservoirs:

- Central Main Reservoir
- East Highline & All-American Canal Reservoir
- East Highline North
- Trifolium 10
- West Side Main

The following is a list of planned mid-lateral reservoirs and the total acres they would serve:

- East Highline Lateral 1 (1,361 Acres)
- E Lateral (1,720 Acres)
- Rose Lateral (TBD)

Imperial Dam-Planned Imperial Dam projects are also projected within a five-year timeframe by IID and noted below:

- AAC Section 1-Basin Gallery Sludge Pipes
- AAC Section 1-Repair & Replace Clarifier Training Wall Caps



- AAC Section 1-Refurbish Roller Gate Actuator and Gear Train
- AAC Section 1-Refurbish Station 48+50 Check Gates
- AAC Section 1-Refurbish Two Bypass & 14 Clarifier Inlet Gates
- AAC Section 1-Repair California Trash Screen Railway
- AAC Section 1-Replace 588 Valves on Clarifiers
- AAC Section 3-Construct Floating Bulkhead for Pilot Knob
- AAC Section 3-Rebuild Pilot Knob Wasteway Gates
- AAC Section 3-Refurbish Pilot Knob Check Gates
- California Sluiceway- Gate Replacement
- Construct USBR Stoplogs for Unused Gates (50 percent of costs)
- Refurbish/Replace Imperial Dam Service Water Tank & Piping to CA Abutment
- Replace Service Water Piping from California Abutment to AZ Abutment
- Repair Unused Radial Gate
- Gila Headworks Construct USBR Stoplogs (50 percent of costs)
- Gila Headworks-Rebuild One Diversion Gate Pair & Repair Endbeds
- Gila Headworks Gate Refurbishment
- Gila Headworks Repair/Replace Arizona Trash Screen Railway
- Gila Headworks Trunnion Repair
- Laguna Dam-Refurbish and Install Gate
- Senators Wash-Units 1, 2, 3, & 5 Rewind Stator & Refurbish Pump
- Support Facilities – Replace Housing Area Sewer Mains & Water Mains

Water Distribution Facilities- An estimated fifteen (15) miles of concrete lining is planned for the IID Canal System. These improvements are expected to facilitate maintenance by replacing deteriorated segments or installing new concrete on earthen sections. Planned capital improvements to the existing IID canal system are as follows:

- Northend Deliveries, Check Structures, Gate Replacements
- Southend Deliveries, Check Structures, Gate Replacements
- New Briar Bypass for the Alamitos Check & Ash Check (Southend)
- South Date Pipeline (≈1,050 feet)

Northend Concrete Lining Projects

- O Lateral-Delivery 16 to RR (1/2 Mile Estimated)
- Mesquite lateral G8 to G9
- Orange Lateral G7 to G8 (1/2 Mile Estimated)
- Munyon Lateral G12 to G14 (1 Mile Estimated)
- Malva 2 G3 to G4 (1/2 Mile Estimated)
- Trifolium Ext Lateral 2 – 2A Split to Delivery Gate 56 (0.6 Miles Estimated)
- L Lateral G25 to G27 (1/2 Mile Estimated)
- Moss Lateral G5 to G6 (1/2 Mile Estimated)
- Oak Lateral G4 to G8 (1 3/4 Mile Estimated)



- Trifolium Lateral 7 – G122 to G124 (1/2 Mile Estimated)
- Lavender G9 to G10 (1/2 Mile Estimated)

Southend Concrete Lining Projects

- New Briar- Heading to Anza Road (1/2 Mile Estimated)
- Pampas G23A to G24 (1/4 Estimated Miles)
- Possible Inline Reservoir Candidate (1 Mile Estimated)
- Hemlock-Gunterman to Delivery 2 and to Delivery 5A (3/4 Mile Estimated)
- Hemlock-Delivery 5A to Lateral 2B Heading (1/2 Mile Estimated)
- Pear 9th Street-G62 to End (3/4 Miles Estimated)
- Ash Main-Check at G53 to Mets Road (1/2 Mile Estimated)
- Ash Main- Mets Road to McCabe Road (3/4 Mile Estimated)
- Ash Main- McCabe Road to Ash 25 Heading (1/2 Mile Estimated)
- Pampas G10 to G12
- Dogwood G1 to Dogwood Lateral 2 HD (1/2 Mile Estimated)

Water Control Center- The Water Control Center is expected to have annual upgrades during 2020, 2021, and 2022 of approximately \$120,000 annually. The improvements consist of new computers and processing unit installations.

Water Measuring & Accounting Equipment- IID anticipates numerous automation equipment purchases within the next five years. Improvements resulting from water transfer demand would result in district wide operational discharge sites costing over \$8 million, and district wide interties, also at a value of over \$8 million, all of which are proposed to be implemented during the next four years (to be paid from water transfer revenues.) IID system projects also include the following:

- Sheldon Outlet
- All American Canal Pilot Knob Spill
- WSM No. 8 Check
- EHL Delivery 35 Check
- WSM Spruce Check Monitoring
- CM Canal No. 4 Check PLC Controller Replacement
- CM Canal No. 4 Check Gate Actuators & Sensors for Check & Lateral Turnouts
- WSM Foxglove Check PLC Controller Replacement
- WSM Foxglove Check Gate Actuators & Sensors for Check & Lateral Turnouts
- CM Canal Newside Check PLC Controller Replacement
- CM Canal Newside Check Gate Actuators & Sensors for Check & Lateral Turnouts



d) Opportunities for Shared Water Facilities

IID does not share owned reservoirs, or distribution facilities with other jurisdictions or agencies other than the AAC. The AAC is a federal canal that IID operates and maintains under contract for the Bureau of Reclamation. IID owns the canal's capacity, having fully reimbursed Reclamation for construction costs. The AAC benefits a number of agencies outside of the district boundaries under the 2003 Quantification Settlement Agreement. It is also possible that in the future, the district will increase storage of water at Lake Mead for mutual benefit. Storage is limited by the Intentionally Created Surplus Forbearance Agreement¹⁰. Without an amendment, the language existing as of 2018 would only allow IID to retrieve up to 100,000 AFY.

e) Phasing of Water Facilities

All of the district's short-term construction projects and major capital purchases are included in the Water Department's Capital Improvement Plan which spans over a five-year period. These capital projects exclude projects that are part of the water transfer and conservation measures discussed under the Conservation Programs Section of this Service Area Plan.

3. Water Facilities and Services Mitigation

The Imperial Irrigation District has an overall water supply goal to diversify the regional water supply portfolio to ensure a long-term, verifiable, reliable and sustainable water supply to meet current and future agricultural, municipal, commercial, industrial, and environmental demands. In this vein, IID should continue to pursue various means by which to provide for adequate water supplies for existing and future demands without adversely impacting existing users. The following are mitigation measures to achieve adequacy for water service facilities and services:

- W-1** Continue to implement projects, or programs, that will provide a firm, verifiable, and sustainable supply of 50 to 100 thousand acre-feet per year (KAFY) for municipal, commercial or industrial demands by 2025.
- W-2** Ensure equitable and appropriate cost sharing among water users who would receive benefits from any proposed water management project.
- W-3** Continue to protect surface water rights in trust for its water users.

¹⁰ An Agreement between State of Arizona, the Palo Verde Irrigation District, the IID, the City of Needles, the Coachella Valley Water District, the Metropolitan Water district of Southern California, the southern Nevada Water Authority and the Colorado River Commission of Nevada to encourage efficient use and management of Colorado River water, help avoid shortages in the Lower Basin, and benefit Lake Mead and Lake Powell.



- W-4** Optimize and sustain use of Colorado River entitlements through development of water banking and storage projects via groundwater banking and reservoir storage projects.

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B. IRRIGATION DRAINAGE FACILITIES

Irrigation drainage facilities in the Imperial Valley are within the jurisdiction of the IID. The district operates and maintains an agricultural drainage system consisting of more than 1,450 miles of surface drains. The primary purpose of planning, designing, constructing and maintaining drainage facilities is to control flooding from irrigation water. Water entering the IID drainage system can originate from the following five sources: 1) irrigation system seepage from canals and laterals and is intercepted by IID drains; 2) operational discharge (which is unused water that travels through the delivery system); and 3) on-farm tailwater (water passing tile drains for the purpose of leaching), on-farm tailwater runoff (surface water runoff that exceeds infiltration), and storm water runoff which is surface storm water that exceeds soil infiltration rate or storage capacity. IID's drains, as a matter of necessity, also collect treated wastewater discharge, and surface runoff from non-agricultural uses.

Highly contaminated waters from Mexico (five-year average of 150,000 acre-feet annually) also enter the Imperial Valley via the New River. All drainage flows ultimately discharge into the Salton Sea and can contribute to the degradation of water quality both within IID drains and within the Salton Sea. IID initiated a voluntary TMDL Compliance Program to monitor the levels of pollutants within Imperial Valley watersheds.

1. Performance Standard for Drainage Facilities

Water Quality Standard- IID has a Drain Water Quality Improvement Plan (DWQIP) that was prepared in 1994. The Plan was last updated in 2016 to address Total Maximum Daily Loads (TMDLs) per the Federal Clean Water Act in order to improve the water quality of impaired surface waters (i.e. streams, rivers, lakes, etc) that do not meet water quality objectives. A TMDL is the amount of a particular material that a water body can absorb while remaining safe for people and wildlife. A Conditional Waiver¹¹ of the discharge requirements was issued in 2015 by the Regional Water Quality Control Board for agricultural dischargers and drain maintenance operators in the Imperial Valley. The waiver, however, requires IID to implement a water quality monitoring program to satisfy the additional requirements under the waiver (please refer to the [IID Drain Water Quality Improvement Plan](#) for more detailed information.) Although minimal TMDLs are enforced at this time, it is anticipated that additional pollutant goals for various constituents will be established by the Regional Board by 2019 for the IID, for enforcement by 2020. The final Sediment TMDL Numeric Target is 200 mg/L.

¹¹ In January 2015, the Regional Water Quality Control Board adopted [Order R7-2015-0008](#), a "Conditional Waiver of Waste Discharge Requirements for Agricultural Wastewater Discharges and Discharges of Wastes from Drain Operation and Maintenance Activities within the Imperial Valley, Imperial County, California". The waiver is good for five years; however, being conditional, means that the water board can revoke the waiver at any time.





Drainage Facility Standard-For the purpose of collecting and conveying agricultural discharge, the district is obligated to provide drains at a sufficient depth, generally four to ten feet, to accept subsurface discharge from over 32,000 miles of tile drains underlying nearly 475,000 acres of farmland. Where a drain cannot be maintained at sufficient depth, the district provides and maintains a sump and pump.

The limit on drainage received by IID facilities is set at five percent of the total volume of water received within a billing period. The maximum allowable flow rate is to be ten percent of the maximum flow rate of the water received, but shall not exceed 672 gallons per minute (1.5 cfs). These limitations are set as guidelines and individual contracts may be written with a water customer.

For non-agricultural discharges into IID drains, the requirements of the Colorado River Basin Water Quality Control Plan, Federal Emergency Management Agency and requirements established by the Imperial Irrigation District for storm water runoff are applicable. As authorized by the Clean Water Act (CWA), the NPDES Permit Program controls water pollution by regulating point sources that discharge pollutants into waters of the United States through Best Management Practices. All new development is required to comply with these standards and to retain storm water on site for a minimum of 72 hours prior to releasing it into an approved storm water conveyance system. Conveyance out of the retention basins is restricted by IID via the use of 12" diameter pipes. The outflow restriction into IID drains can result in detention times in excess of 72 hours (three days). Detention for longer than three days requires the implementation of a mosquito abatement program in order to comply with the County Health Department standard.

2. Irrigation Drainage Facility Planning and Adequacy Analysis

Water flows from the irrigation distribution system to the drainage system. IID's agricultural drainage facilities were not designed for, and are not managed for, non-agricultural discharges, flood, or storm water management purposes. As previously noted, all non-agricultural urban areas in the Imperial Valley, through a permit process, may be allowed to discharge into IID drains when sufficient capacity exists. Discharge may drain into the New River or Alamo River, both of which are tributaries to the Salton Sea and where strict regulations would apply.

a) Inventory of Existing Irrigation Drainage Facilities

IID operates and maintains an agricultural drainage system consisting of more than 1,450 miles of surface, gravity flow drains as referenced in **Table D-1 IID Drainage System**. The drainage system is designed to collect IID's operational discharge, agricultural tilewater and tilewater from thousands of miles of subsurface (tile) drains that growers have installed and operate independently. To that end, 750 surface and subsurface drainage pumps, and approximately 430 control structures are installed along the drainage system.

**Table D-1
IID Drainage System**

System	Earthen	Concrete Lined	Piped	Total Length in Miles
All-American Drains	37.410	0.000	12.700	50.110
Drains	1,295.912	1.180	108.848	1,405.940
Total Drains	1,333.322	1.180	121.548	1,456.050

Source: 2016 Water Conservation Plan

The All-American drains initiated construction in 1947 as part of a seepage recovery program. The program returns seepage water with sufficiently low salinity levels back into the respective main canals. The East Highline Canal began this program in 1967 and are further discussed under Conservation Programs of this Service Area Plan.

Personnel and Vehicles- The Water Department personnel and vehicles (excluding the Water Resources & Grant Management Section, the Farm Unit Program Section, and Environmental Mitigation Section) support all irrigation drainage system operation and maintenance.



b) Adequacy of Existing Irrigation Drainage Facilities

Drain Capacity Adequacy-The current IID drain facilities are adequate and able to satisfy the service demand from existing agricultural farmland. Since IID has no intention of expanding raw water territories beyond the existing agricultural service footprint, IID has no plans for additional drainage facilities to meet the current and projected services demands. Under conservation, there are plans for additional drainage facilities to expand upon the seepage recovery projects.

IID has further communicated to local jurisdictions an interest in abandoning all facilities within incorporated urban areas which do not actively provide a service to agricultural operations. Under these circumstances each city would take over the respective drain systems. Compliance with the regulatory requirements of new development discharge and storm water facilities are solely borne to the developer/permittee in order to ensure new urban development provides for adequate on-site retention of storm water to mitigate against storm water impacts to properties and the IID system.

Drain Water Quality- From 2004 through 2015, IID monitoring occurred at fixed sampling sites on seven major and 18 minor Imperial Valley drains (Please refer to **Figure 6**). Field measurements were collected (water temperature, pH, dissolved oxygen, electrical conductivity, and turbidity), and water samples collected and analyzed for general chemistry (TSS, turbidity, hardness, and alkalinity), as well as chemical species of nutrients (nitrogen, phosphorus, sulfur). This monitoring program and the data generated from it is utilized to verify that individual drains meet water quality standards, identify problematic areas, and to model and calculate the concentration of various chemical species. Table D-2 summarizes IID's monitoring practices as of 2018.

Table D-2
IID Drain Monitoring Practices

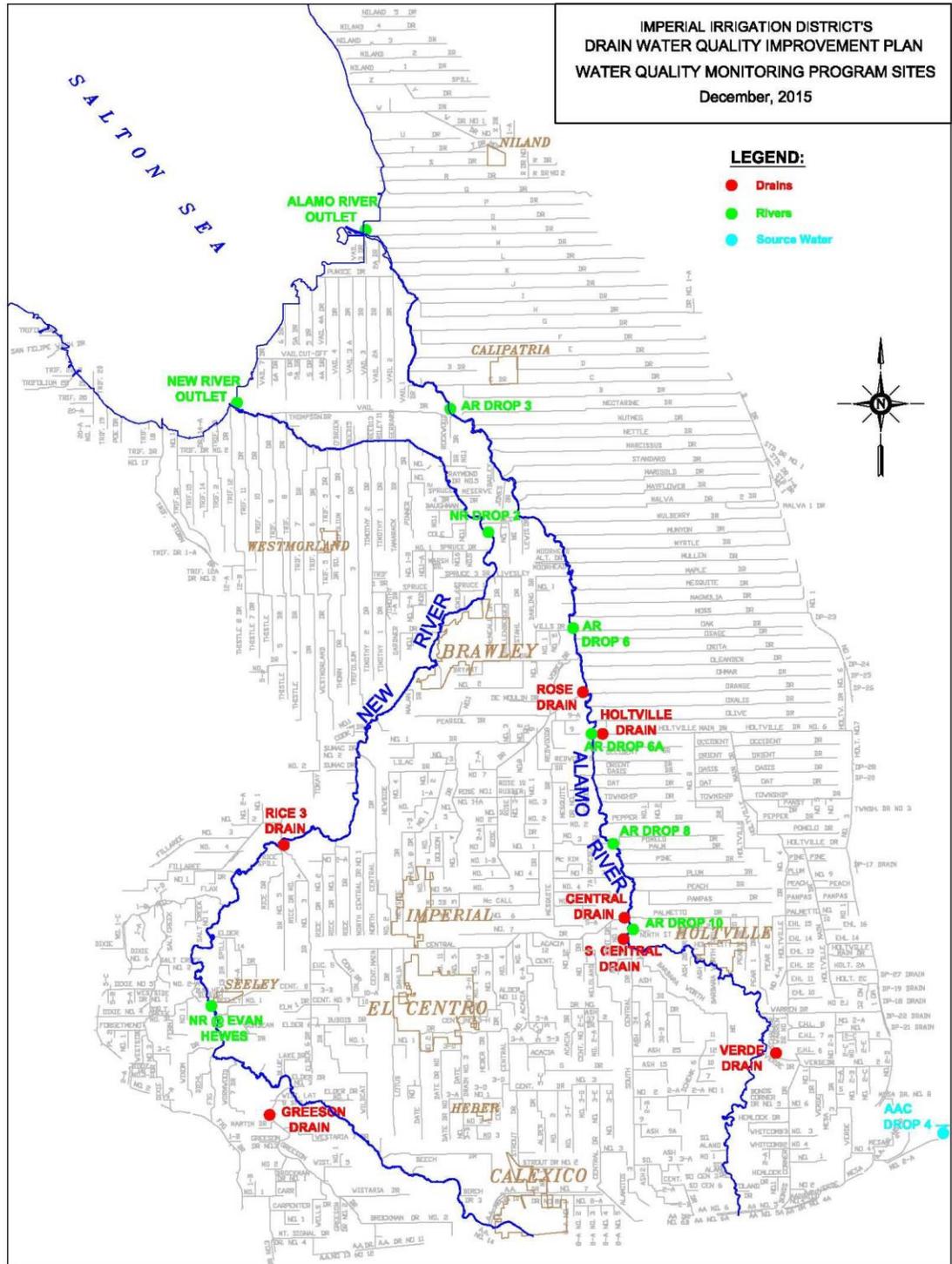
Drain Water Location ¹	Practice	Frequency
Alamo River Outlet at Salton Sea New River Outlet at Salton Sea	TDS, pH, Ca+, Mg, Na+K, CO ₃ , HCO ₃ , SO ₄ , Cl, Temp	Monthly
TMDL Drain Water Location ²	Practice	Frequency
7 major drains: 5 to Alamo River 2 to New River 9 river locations: 6 in Alamo River 3 in New River	DO, EC, pH, selenium, TSS, NH ₃ ⁻ , NO ₂ ⁻ , NO ₃ , Kjeldahl-N, Total N, Total P, Total Hardness, Ca+, Mg, Total Alkalinity, HCO ₃ +CO ₃ , Cl ⁻ , SO ₄ , E. Coli, BOD, TDS	Monthly

¹ Collected by IID; analysis by ATS Labs, Inc. Brawley, CA; Alamo River at US/Mexico Border WERE discontinued Jan 2008 due to low flow (estimated as 1142 AF in 2014)

² Collected by IID; analysis by BABCOCK Labs, Inc., Riverside, CA.



Figure 6
Water Quality Monitoring Program Sites



The 2017 Annual Monitoring Report for Total Suspended Solids (TSS) Levels showed that eight of sixteen drain sites achieved the target goals. Five of the seven monitored main drains discharging into the New or Alamo Rivers achieved the 200 mg/l goal. The exceptions were the Rose Drain, which averaged 237.5 mg/l, and South Central Drain, which averaged 287.5 mg/l. Monitored sites within the Alamo River achieved the final 200 mg/l goal in two of six locations. One of the four locations missing the goal, Alamo River Drop No. 8, exceeded the goal by only 0.8 mg/l. The other three locations narrowly missing the goal were Alamo River Drop No. 3, Alamo River Drop No. 6, and Alamo River Outlet, with concentrations of 217.5 mg/l and 227.3 mg/l, and 223.3 mg/l, respectively. Of the three monitored sites within the New River, only one achieved the final 200 mg/l goal. The two locations exceeding the goal (again, narrowly) were New River Drop No. 2 and the New River Outlet, with concentrations of 235.8 mg/l and 218.3 mg/l, respectively.

c) Future Demand for Irrigation Drainage Facilities and Planned Facilities

Urban sprawl may result in a net decrease of IID owned and operated drainage facilities designed to capture irrigation runoff. As future urban development occurs, storm water drainage systems must be installed and constructed into the project area by the developer/permittee to ensure adequate collection and conveyance of runoff. The type and extent of the development proposed will affect the demand of facilities. A significant increase in the amount of impervious surfaces will result in a greater amount of surface runoff. The exact size and location of future facilities will be determined at the time development is proposed and processed through each respective city or the county. All future development must continue to comply with IID policies regarding temporary retention of storm water to reduce the impacts to the IID drains.

Storm water runoff as well as other contributing factors has degraded both the New River and Alamo River. The recently updated Water Quality Control Plan for the Colorado River Basin Region prepared by the California Regional Water Quality Control Board contains strict requirements for the water quality conveyed into these rivers. Future facilities must be designed to adhere to the latest pollution control devices and NPDES requirements.

According to the Water Department Five-Year Capital Improvement Plan (last revised on July 2018), IID had the following Drainage Capital Improvements programmed through 2023 with an estimated total of \$9.5 million:



- Northend Moorhead Drain Pipeline
- Northend Control Structures, Inlets, Outlets
- Northend Trifolium Storm Drain
- Southend Control Structures, Inlets, Outlets

d) Opportunities for Shared Irrigation Drainage Facilities

The IID drainage system provides a drainage outlet for each governmental subdivision of approximately 160 acres, but is not designed to convey all storm water runoff from urbanization. The Imperial Irrigation District will continue to maintain all drain facilities that have a dual purpose of serving the agricultural community and collecting storm-water discharge from permitted entities. At this time, the management of these shared drainage facilities is effective and is not expected to change in the near future.

e) Phasing of Irrigation Drainage Facilities

The Imperial Irrigation District has no plans of expanding its irrigation service area thus there is no need for new drainage facilities. IID, however, does plan on rehabilitating, or replacing, some of its existing drainage facilities, control structures, inlets, and outlets on a continuous basis.

Short Term Improvements (Under 5 Years)

- Northend Moorhead Drain Pipeline
- Northend Control Structures, Inlets, Outlets
- Northend Trifolium Storm Drain
- Southend Control Structures, Inlets, Outlets

5-10 Year Improvements

- Northend Control Structures, Inlets, Outlets
- Southend Control Structures, Inlets, Outlets

10-15 Year Improvements

- Northend Control Structures, Inlets, Outlets
- Southend Control Structures, Inlets, Outlets

3. Mitigation for Irrigation Drainage Facilities

The Imperial will continually monitor the existing irrigation drainage facilities to ensure the facilities are operating at an adequate level. The Imperial Irrigation District should further implement the following mitigation measures for drainage facilities:



- D-1** All future non-agricultural development shall be required to construct storm drain facilities in accordance with the design standards of the respective jurisdiction and the Engineering Section of the IID Water Department and obtain an encroachment permit from IID before it is allowed to convey storm water into existing irrigation drains owned and managed by IID.
- D-2** All future non-agricultural development shall retain storm water on-site, or within existing retention basins, to restrict storm water flow for a minimum period of 72 hours before discharging into IID facilities.
- D-3** All future non-agricultural development shall ensure compliance with all local, state and federal rules and regulations related to the discharge of storm water.
- D-4** All future non-agricultural development shall provide improvements constructed pursuant to best management practices as referenced in the *California Storm Water Best Management Practices Handbook*.
- D-5** IID shall continue to implement the Drain Maintenance Checklist prior to scheduling drain maintenance to reduce unnecessary drain cleaning which contribute to re-suspension of the drain's bottom sediments.
- D-6** Continue to enforce the Vegetation Management Plan developed to train equipment operators and weed spray contractors on the proper control of vegetation within drains to help maintain drain bank stability, reduce suspended sediment, and reduce unnecessary cleaning.
- D-7** Encourage excavator-mounted GPS Units which allow excavator operators to conduct drain cleaning operations from upstream to downstream to filter nuisance vegetation before the vegetation is removed and help eliminate over-excavation.
- D-8** Actively enforce Regulation No. 39 requiring that water users maintain a properly functioning tailwater box to prevent erosion at the tail end of their field and in the receiving drain.
- D-9** Continue to monitor delivery and tailwater under the On-Farm Conservation Verification Program to ensure that excessive tailwater discharge does not occur during irrigation events and that tailwater boxes are in good condition.



C. ENERGY FACILITIES

IID entered into the electrical power business in 1936 to utilize the hydroelectric generation potential on the All-American Canal. By 1943, the district had acquired the electrical system and certain properties of the California Electric Company in Imperial County and parts of Riverside County becoming the source of electric energy for a 6,898 square-mile service area, including all of the Imperial Valley, parts of the Coachella Valley in Riverside County and a small portion of San Diego County as an emergency response partner. IID's Energy Department, as of January 2019, provides electric power to more than 154,465 accounts. As the sixth largest utility in California, IID Energy controls more than 1,100 megawatts of energy derived from a diverse resource portfolio that includes its own generation, as well as long- and short-term power purchases.

As previously noted, IID was certified by the North American Electric Reliability Corporation (NERC) as one of 38 Balancing Authorities in the Western United States. As a Balancing Authority, IID must ensure the reliability of the electric system within its geographical boundaries by, among other requirements, maintaining a continual balance between electric resources and electricity demands. IID is subject to the reliability, safety and security regulations promulgated by the Federal Energy Regulatory Commission (FERC) and enforced by the Western Electricity Coordinating Council (WECC).

As a consumer-owned utility, IID Energy works to efficiently and effectively meet customers' demands at the best possible rates, tying the IID area's low-cost of living directly with low-cost utilities. This must be met while making regulatory compliance-based decisions and strategic expansion-based decisions, currently and in the future, with system reliability as a foundational driving factor.

Due to the nature of the organization and interdependency of IID as a local organization along with numerous federal, state and local agencies and business entities, IID is cognizant and sensitive to the various and often differing goals of these external entities. There are four equally important drivers that must be successfully integrated into every goal and objective. These drivers are noted in the proceeding diagram which are further detailed under IID's 2018 Integrated Resource Plan.





1. Performance Standards for Energy Facilities

Complying with energy efficiency laws and environmentally related requirements is an important objective for IID and a factor on the performance standards for energy generation, transmission and distribution facilities. Detailed discussion on energy conservation and emission reduction standards, however, are not discussed in this chapter, but rather located under the Conservation Programs chapter of this Service Area Plan.

Since IID is not a part of the CAISO, IID has the responsibility to provide reliable power to all of its customers, even in extreme events. This is a challenge, since IID is interconnected to several other Balancing Authorities, and this has an impact on the physical flow of electricity within the IID service area. IID works conscientiously to assure that the system operates properly under all conditions to the best of its ability. The effectiveness of the power system reliability is disturbed by many operational characteristics of generation facilities, transmission/ distribution interconnection strategies and other uncontrollable factors, thus system reliability is a foundational driving factor for all decisions made by IID. As a BA, the district has the obligation to:

- Match generation to load;
- Maintain scheduled interchanges with other Balancing Authorities;
- Maintain the frequency in real-time of the power system;
- Help/cooperate interconnection regulate and stabilize alternating current frequency;
- Avoid overloading transmission segments;
- Avoid inadvertent exchange of energy.

Reliability Standards- Reliability Standards are the planning and operating rules that IID follows to ensure the most reliable system possible. These standards are developed by the industry using a balanced, open, fair and inclusive process managed by the NERC Standards Committee. NERC develops and enforces reliability standards; assesses adequacy annually via a 10-year forecast, and summer and winter forecasts; monitors the bulk power system; and educates, trains and certifies industry personnel. IID's ability to balance its load and resources in the current environment with the solar resources on-line must be compliant with NERC balancing reliability standards. Specifically, Control Performance Standard No 1 and 2 (CPS1 and CPS2) measures¹².

Energy Generation Facilities- IID produces power supply locally, using efficient, low-cost hydroelectric facilities, steam-generation facilities, as well as several natural-gas turbines. The design life of a typical energy generation facility is 30 years. The desired performance standard for IID is to match its generation level to its service load. IID does not have any planned generation targeted for export as all energy export is for reliability or emergency purposes and is developer driven.

As a balancing authority, the IID is required to have generation resources providing spinning reserves, non-spinning reserves, operating reserves and planning reserves, totaling about 15 percent of the forecasted load. In 2017, IID had energy requirements of 3,738 GWh. These energy requirements consisted of sales to end use customers (3,441 GWh) and make-up energy for system losses (296,375 MWh).

Energy Storage Facilities- AB 2514 requires local publicly owned electric utilities, such as IID, to determine targets for procurement of viable and cost-effective energy storage. The statute requires local publicly owned electric utilities to adopt procurement targets through their boards by October 1, 2014, to be met by December 31, 2016, and December 31, 2020.

¹² CPS is a frequency-sensitive evaluation of how well a Balancing Authority's demand requirements were met for all control areas in an interconnection. CPS1 is based on a 12-month rolling average and should not be less than 100 percent. CPS2 takes over a clock ten minute period (six non-overlapping periods per hour) and should not be less than 90%.



Energy Transmission Facilities- The Federal Energy Regulatory Commission (FERC) requires each public utility transmission provider to offer intra-hourly transmission scheduling to ensure charges for energy imbalance services are just and reasonable. The intra-hour scheduling provisions provide opportunity for variable energy resources to align the energy schedules with forecasted production as conditions change within the hour.

Energy Distribution Facilities- Power distribution facilities standards are based on reliability and ability to support future load growth from new development. A system's effectiveness, stability and reliability in providing power services is critical as a balancing authority. Reliability is the consistency of a measure of service when it produces similar results/uninterrupted services under consistent conditions.

2. Energy Facility Planning and Adequacy Analysis

In an effort to align the Energy Department in a manner that more efficiently accomplishes the goals of the Strategic Plan, the Energy Department went under major reorganization in 2018 which resulted in the reallocation of resources and numerous positions to various units across separate energy sections. As of 2019, the Energy Department contained eight (8) sections, and multiple units, with responsibilities as follows:

- **Energy Administration Section** is responsible for the oversight and management of all operations, maintenance, engineering services, reliability and accountability for the Energy Department. This section interfaces with the Board of Directors, general manager, and the public to ensure effective communication and proper administration of policies and procedures and oversees the energy Department Strategic Plan.
- **System Operations Section** is responsible for the safe and reliable operation and dispatch of the district's generation, transmission, and distribution systems. This section consists of five units: 1) System Operations Engineering, 2) Transmission System Operations, 3) Distribution System Operations, 4) Outage Coordination, and 5) Reliability Compliance Unit.
- **Energy Optimization Section** is responsible for aligning the Energy Department's financial goals with its customer and system operations requirements. Amongst other responsibilities, this section is responsible for developing creative pricing structures, in a competitive manner, while providing a forum where IID's customers participate in environmental stewardship by reducing greenhouse gas emissions.



- **Energy Production Section** is responsible for providing cost competitive, reliable, and environmentally compliant bulk electricity. Activities are focused on high reliability at reasonable costs among the three production groups: 1) El Centro Generating Station, 2) Other production Units for peak and emergency services, and 3) Hydro Production Unit, generating electricity as a by-product.
- **Power Construction & Maintenance Section** is responsible for maintaining the integrity and reliability of existing transmission and distribution facilities and construction of new overhead and underground assets including customer projects. The section is comprised of four units: 1) Construction & Maintenance, 2) Power Troubleshooting, 3) Meter Shop, and 4) Construction & Maintenance Safety and Compliance.
- **Planning & Engineering Section** ensures the availability of reliable transmission and distribution resources by planning/identifying the need for new facilities and completing their design. They are to carry out the customer Project Development Services for the planning, design, estimation, inspection, scheduling of metering, construction and service department, and overall coordination of customer projects. This section has the following units: 1) Business Development Support, 2) Materials Management, and 3) Transmission Planning.
- **Energy Business, Regulatory & Transactions Section** is responsible for the development of strategic business relationships to promote growth, change and support renewable energy development and protect the balancing authority by leveraging existing assets. This section designs and implements programs to encourage customer conservation as a cost effective alternative.
- **Substation Operations & Maintenance Section** is responsible for the SCADA and data communications for substations, generation facilities and interconnections. The section is comprised of two major units: 1) Substation Construction & Maintenance & Repair and 2) Substation Protection & Automation.

a) Inventory of Existing Energy Facilities

The district owns and operates the electrical system, which includes generation, storage, transmission and distribution facilities. Substations and transformer components are also an integral part of the energy system.

Energy Generation Facilities- IID maintains a steady focus on diversifying its portfolio of resources to serve load, including purchases and internal generation. The following subsections are a brief overview of IID's generation resource portfolio, which is in excess of 1,100 MW:



- **AAC Hydroelectric Resources-** IID has a number of small hydroelectric facilities located on the All-American Canal and nearby branches. The hydroelectric units have a combined rating of about 85MW, although, due to seasonal water flows the summer capacity rating is around 32MW as they are directly dependent upon the needs of the local area agricultural crops. Therefore, production will vary from season to season, but over the course of the year, the average hourly output from the hydroelectric facilities is about 32MW. IID's hydroelectric projects are considered green resources and annual energy production from these units is approximately 270,000-280,000 MWh.
- **Palo Verde Nuclear Generating Station-** IID has a small entitlement of capacity in each of three units at the Palo Verde Nuclear Generating Station (PVNGS). IID's total (delivered) capacity is 14MW (5MW from each of the three PVNGS units less losses). One of the greatest benefits of nuclear generation is the lack of any greenhouse gas emissions. Energy from PVNGS is expensive compared to current market prices although the reduction in greenhouse gas emissions helps the IID's efforts to meet GHG emission levels.
- **Western Area Power Administration (Western) Parker-Davis Dam-** IID has an entitlement of 32.6MW (summer) in the Parker-Davis Hydroelectric Project (Parker-Davis) in western Arizona. Energy from Parker-Davis is provided by Western at the rate of 3,679 MWh per MW of capacity per month. Parker-Davis energy can be primarily used during the on-peak periods, although a small portion of the energy must be scheduled during the off-peak periods due to water management requirements of the Parker and Davis dams by Western. While Parker-Davis is a hydroelectric project, it is not considered a renewable project by the state for RPS requirements. Hydroelectric projects must be less than 30MW to qualify as renewable projects. Parker-Davis capacity is a source of inexpensive capacity and energy.
- **Yucca Steam Plant** -One of IID's most important units is the Yucca Plant in Yuma, Arizona. This steam unit has a nominal rating of 75MW (an operational rating of 70MW) and is used for energy and ancillary services, including regulation, on the IID's system. There is also an associated gas-fired turbine (19.7MW) at Yuma that is seldom used due to the poor heat rate of the unit. The Arizona Public Service electric company operates the Yucca Plant under an operating agreement with IID.



- **Internal Thermal Generation-** IID owns thirteen thermal generation units within its service territory, the Yucca generation facility in Yuma and also nine multi-unit hydroelectric facilities. The unit names, technology and performance are summarized in **Table E-1 IID Thermal Generation Plants/Units**. The Units produce over 855 MW of base energy.

Table E-1
IID Thermal Generation Plants/Units

Name	Commercial Operation	Generator Nameplate (MVA)	Power Factor	Gross Generator Nameplate (MW)
ECGS Unit 2-1	6/19/1993	HP 0.2 psig=35.294 MVA HP 15 psig=40.588 MVA	85%	HP 0.5 psig=30 MW HP 15 psig=34.5 MW
ECGS Unit 2-2	6/19/1993	105.77	85%	89.90
ECGS Unit 4	8/14/1968	96.00	85%	81.6
ECGS Unit 30	10/5/2012	77.50	85%	65.88
ECGS Unit 31	10/5/2012	54.00	80%	43.20
ECGS Unit 32	10/5/2012	54.00	80%	43.20
Niland Unit 1	5/29/2008	71.18	85%	60.50
Niland Unit 2	5/29/2008	71.18	85%	60.50
Rockwood Unit 1	6/7/1979	Base=37 MVA Peak=39.880 MVA	85%	Base=31.45 MW Peak=33.898 MW
Rockwood Unit 2	6/7/1979	Base=37 MVA Peak= 39.880 MVA	85%	Base=31.45 MW Peak= 33.898 MW
Coachella Unit 1	6/8/1979	Base=29.6 MVA Peak=32 MVA	90%	Base=26.64 MW Peak=28.8 MW
Coachella Unit 2	6/11/1973	Base=29.6 MVA Peak= 32 MVA	90%	Base=26.64 MW Peak= 28.8 MW
Coachella Unit 3	4/17/1974	Base=29.6 MVA Peak=32 MVA	90%	Base=26.64 MW Peak=28.8 MW
Coachella Unit 4	5/28/1976	Not Listed	Not Listed	Base=28 MW Peak= 30 MW
Yucca CT 21	12/28/1978	Base=26.033 MVA Peak=28.144 MVA	90%	Base=26.64 MW Peak=28.8 MW
Yucca Steam	3/4/1959	75	85%	63.75
Drop 1 Unit 1	11/16/1984	Not Listed	80%	1.95
Drop 1 Unit 2	10/23/1984	Not Listed	80%	1.95
Drop 1 Unit 3	10/19/1984	Not Listed	80%	1.95
Drop 2 Unit 1	12/5/1953	6.25	80%	5
Drop 2 Unit 2	12/30/1953	6.25	80%	5
Drop 3 Unit 1	2/20/1941	6.00	80%	4.8
Drop 3 Unit 2	11/23/1966	5.5	80%	4.4
Drop 4 Unit 1	8/9/1950	12.5	80%	10
Drop 4 Unit 2	3/30/2006	12.5	80%	9.6
Drop 5 Unit 1	3/1/1982	2.5	80%	2
Drop 5 Unit 2	3/9/1982	2.5	80%	2
East Highline Unit 1	9/12/1984	3.019	80%	2.4152
Pilot Knob Unit 1	1/31/1957	20	82.5%	16.5
Pilot Know Unit 2	1/31/1957	20	82.5%	16.5
Double Weir Unit 1	3/20/2006	0.226	80%	0.18
Double Weir Unit 2	3/20/2006	0.226	80%	0.18
Turnip Unit 1	10/1/1964	Not Listed	Not Listed	0.42

Source: IID Integrated Resource Plan 2014



Energy Storage Facilities- IID has installed a Battery Energy Storage System (BESS). The BESS facility is located on the outskirts of El Centro on the site of IID's El Centro Generating Station and the adjacent Sol Orchard Solar Farm. BESS is a high power, low energy resource rated at 33 MVA of power and 20 MWh of energy and consists of the following components:

- 30 separate battery banks made up of 16 strings of battery modules and components containing 5,760 Samsung lithium ion battery trays, and associated battery management system controls and monitoring equipment.
- 30 GE Brilliance inverters rated at 1.25 MVA up to 45 degrees centigrade and 1.1 MVA up to 55 degrees centigrade, with a rated power factor of +/-0.93.
- 30 GE Prolec1.25 MVA isolation transformers
- GE Mark VIe controllers.
- 8 Trane, 30 ton heat pumps and 4 Trane, 25 ton air conditioning units.
- Four zone fire suppression system.
- 34.5kV/92kV substation that interconnects the BESS to IID's transmission grid.
- BESS building that houses the lithium batteries.



El Centro Battery Energy Storage System Facility.

Energy Transmission Facilities- The Imperial Irrigation District transmission and sub transmission system includes approximately 1,800 miles of overhead transmission lines. IID's transmission system consists of 500kV, 230kV, 161kV and 92kV transmission lines. Whenever IID purchases energy from outside its service territory, it may be required to purchase transmission capacity. The transmission system is used to wheel bulk power supplies into the IID's balancing authority.

- **500kV Transmission system-** IID owns a portion of the Southwest Power Link 500kV line that connects the Palo Verde Substation to the North Gila 500kV-69kV substation near Yuma, Arizona. The line continues from North Gila to the Imperial Valley 500kV-230kV Substation in El Centro. IID also owns a portion of the 500kV HANG2 line that connects Hassayampa to North Gila 500kV substations.
- **230kV Transmission system-**There are two major components that comprise IID's 230kV transmission system. The first is a single circuit line between IID's El Centro Switching Station in El Centro and the Imperial Valley Substation that is jointly owned by IID and SDG&E (the "S" line). The second is a double-circuit transmission line that runs south to north through the IID's service territory and with SCE at the Devers and Mirage substations (KN/KS lines).
- **230kV Collector system-** Also known as KN/KS and runs south to north across the IID's service area to SCE's Mirage Substation. The lines were constructed in 1983 for the primary purpose of delivering over 500MW of "power generating facilities," mostly consisting of renewable resources in the IID system and contracted to SCE at that time.
- **161kV Transmission System -**The 161kV transmission system consists of two separate lines across the IID service area that interconnects several 161kV/92kV transmission stations. It also provides interconnection to Western through two 161kV transmission lines, from IID's Niland Substation to Western's Blythe substation and from IID's Pilot Knob Substation to Western's Knob Substation and one interconnection from IID's Pilot Knob to the APS Yucca Substations.
- **92kV Transmission System-**The 92kV transmission/subtransmission system consists of multiple transmission lines that provide interconnection to the distribution substations (92kV/13.2kV) that are constantly constructed and upgraded to provide transformation capacity to the distribution system.

Substations- IID operated 128 substations in 2018 to serve a 6,898 square mile electric service territory. The substations transform voltage from high to low, or the reverse, or perform any of several other important functions for efficient operation.

Energy Distribution Facilities- The IID distribution system includes 4,404.3 miles of overhead lines and 1,744.1 miles of underground lines.



Energy Department Personnel 2018 (480 Total FTE):

- Energy Administration Section (10 FTE)
- Business Development Support Unit (5 FTE)
- Energy Materials Management (4 FTE)
- System Operations (65 FTE)
- Energy Optimization (16 FTE)
- Energy Production (85 FTE)
- Power Construction & Maintenance (138 FTE)
- Energy Planning & Engineering (101 FTE)
- Substation Operation & Maintenance (56 FTE)

Energy Department 2018 (271 Total Vehicles):

- Energy Administration Section (12 Vehicles)
- Business Development Support Unit (1 Vehicle)
- System Operations (8 Vehicles)
- Energy Production (27 Vehicles)
- Power Construction & Maintenance (141 Vehicles)
- Energy Planning & Engineering (39 Vehicles)
- Substation Operation & Maintenance (43 Vehicles)

a) Adequacy of Existing Energy Facilities & Planned Facilities

Reliability Standards- IID's ability to balance its load and resources in the current environment with the solar resources on-line is compliant with NERC balancing reliability standards. IID is highly compliant based on Control Performance Standard No 1 and 2 (CPS1 and CPS2) measures. With the expectation that IID will add additional solar resources to its portfolio, IID's ability to comply with NERC balancing standards may be more of a challenge in the future.

Energy Generation Facilities – IID's energy generation of 1,223,929 MWhr and purchase of 2,629,994 in 2018 matched the service demand for that year. IID Generation Hydroelectric and thermal assets are maintained and operated according to the original equipment manufacturers recommendations. Improvements are made to each unit based on an identified need for improved safety, environmental and regulatory compliance, reliability, or efficiency. While IID has made significant investments in recent years to upgrade its generation assets, three IID Automatic Generation Control capable units (Yucca Steam Unit, El Centro Unit 4 and El Centro Unit 2) are 55 years old, 46 years old and 21 years old, respectively. With a typical plant design life of 30 years and the five plus years to design, develop and construct a new plant more than 100MW, consideration of future generation assets seems warranted at this time.



With the exception of the Niland Units, El Centro Generation Station Unit 2 and the newly repowered El Centro Generation Station Unit 3, most of IID's thermal resources are inefficient. However, IID's existing resources and power purchase agreements were sufficient to meet the load for 2018, but for 2019, the IID is short capacity to meet forecasted load requirements during the summer months mainly due to the natural load growth projected in the load forecast. Such shortages are regularly caused by seasonal peeks and satisfied by seasonal purchases. Identifying the right mix of new resources to meet IID's 2019 resource deficit and future demand is critical. IID must balance with a correct resource mix to maintain compliance with regulatory requirements and attempting to minimize annual costs. Any needed facilities would be constructed within IID's existing Balancing Authority service area.

Energy Storage Facilities- The installed 20MWH/33MVA battery storage facility (BESS) has greatly reduced the volatility of impact from intermittent resources. IID's ability to balance its load and resources in the current environment with the solar resources on-line is compliant with NERC balancing reliability standards. In fact, IID is highly compliant based on Control Performance Standard No 1 and 2 (CPS1 and CPS2) measures. With the expectation that IID will add additional solar resources to its portfolio, IID's ability to comply with NERC balancing standards may be more of a challenge in the future. The battery has an efficiency ratio of 1:0.85, so the dispatch price must be at least 15 percent better when strategically dispatching the battery to address system needs.

Energy Transmission Facilities- Consistent with NERC/WECC planning standards, IID performed an IID Transmission Assessment. This five year and 10-year assessment of the IID's electric system was performed to ensure IID has enough generation and transmission resources to serve its load reliably and to ensure grid reliability at all demand levels over a 10-year planning horizon under normal and contingency operating conditions.

- **92kV Transmission System-**The 92kV transmission/subtransmission system consists of multiple transmission lines that are constantly constructed and upgraded to provide transformation capacity to the distribution system. These continue to be ongoing improvement efforts.
- **161kV Transmission System -**This 161kV system has met the load serving requirements of the IID for over 50 years. However, as the load continues to grow in all regions of the IID service area, planning for necessary system upgrades has been ongoing. The existing system has also experienced additional stresses due to generating resources constructed near the edge of the IID service territory.



- **500kV Transmission System-** It is highly likely that a major new transmission line will be constructed in the Imperial Valley with a number of new 500kV transmission lines proposed by private and public entities. IID will work with the various project sponsors to develop a line that maximizes the benefits to IID and its ratepayers. IID will oppose any new lines that threaten its balancing authority rights, or which could result in stranding the IID’s investment in transmission resources.

Energy Distribution Facilities – IID faces some challenges on the horizon that include the impact of distributed generation on system losses. IID continues to manage and identify losses found in its power system. Reduction of these losses allows IID to provide a more efficient, more reliable and higher quality electric service. The distribution assessment that was prepared and part of the Integrated Resource Plan for the Energy Department included three categories of need: 1) *Reliability*-Projects that are needed to maintain system reliability; 2) *Cannabis*-Projects that are based on customer interconnections for large industrial producers of cannabis located in the IID power system; and 3) *New Development*-Projects that depend on load growth. The planned IID System area distribution of project cost is broken down in **Figure 7**.

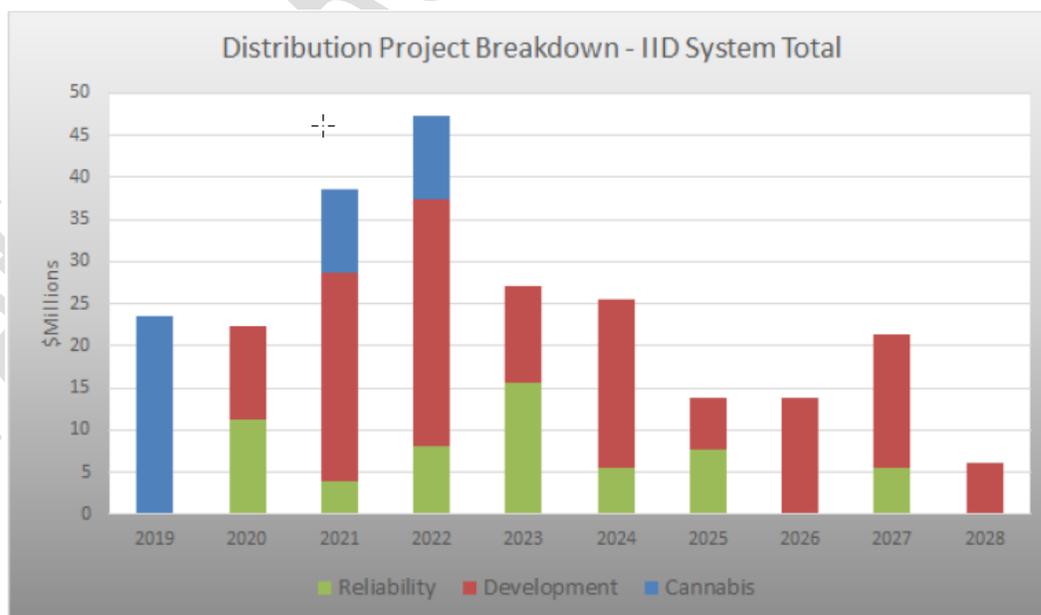


Figure 7-Energy Distribution Projects for total IID System (2019 IRP).



b) Future Demand for Energy Facilities & Planned Improvements

The 2017 energy load for IID was 3,441,631 MWh. As previously noted under the Growth Projections chapter of this Service Area Plan, the energy load forecast was determined via an econometric approach to forecast IID's total retail sales. The Net Energy for Load (NEL) forecast was derived from the total retail sales forecast and the average difference of NEL and retail sales in historical years; Coincident Peak (CP) forecast was derived from NEL forecast and historical representative load factors. The gross result of the energy load forecast expected in both expected and severe weather conditions is shown in **Table E-2 2018 Load Forecast Expected Case for CP and NEL** (excluding any energy conservation savings).

Table E-2
2018 Energy Load Forecast Expected Case Gross CP and NEL

Year	LF Projected Case (<i>expected weather</i>)		LF Projected Case (<i>severe weather</i>)	
	Gross CP (MW)	Gross NEL (MWh)	Gross CP (MW)	Gross NEL (MWh)
2019	1,139.70	3,981,267	1,199.30	4,189,437
2020	1,152.00	4,035,339	1,212.30	4,246,598
2021	1,168.20	4,081,084	1,229.30	4,294,454
2022	1,183.20	4,133,184	1,245.10	4,349,672
2023	1,199.70	4,190,873	1,262.60	4,410,674
2024	1,212.00	4,245,549	1,275.70	4,468,523
2025	1,231.00	4,300,459	1,295.80	4,526,503
2026	1,246.70	4,355,303	1,312.30	4,584,406
2027	1,262.90	4,411,860	1,329.50	4,644,229
2028	1,275.80	4,468,148	1,343.10	4,704,805
2029	1,295.70	4,526,350	1,364.10	4,765,285
2030	1,312.10	4,583,747	1,381.50	4,825,976
2031	1,328.60	4,641,267	1,398.90	4,886,819
2032	1,341.50	4,699,019	1,412.50	4,947,928
2033	1,361.70	4,757,006	1,434.00	5,009,279
2034	1,378.40	4,815,224	1,451.60	5,070,861
2035	1,395.20	4,873,768	1,469.30	5,132,781
2036	1,408.30	4,933,023	1,483.20	5,195,460
2037	1,429.10	4,992,362	1,505.20	5,258,250

Source: 2018 Draft Energy Integrated Resource Plan

Planned Energy Generation Facilities- IID has been exploring the currently existing infrastructure to develop small hydroelectric facilities. IID is considering the construction of two low head hydroelectric plants at the West Side Main Check No. 8 and at the Foxglove canal heading.



IID is also investigating several local geothermal projects, both existing facilities and to be newly developed generating facilities. IID has abundant opportunities to explore currently existing geothermal projects that have expiring contracts with SCE between 2018 and 2023. Additionally, IID is investigating the possibility of a public-private partnership with geothermal developers to develop IID-owned lands with a geothermal potential located near the Salton Sea.

Substations- There are no immediate plans for electrical substations. If substantial new development is proposed, it may create a need for new substations. Any substation and/or related facilities resulting from growth demand would be constructed within the service area of the IID and within the balancing authority boundaries.

Planned Energy Transmission Lines- A major new transmission line needs to be constructed in the Imperial Valley with a number of new 500kV transmission lines proposed by private and public entities. IID will work with a merchant project sponsor to develop a line that maximizes the benefits to the IID and its ratepayers. IID will oppose any new lines that threaten its balancing authority rights, or which could result in stranding the IID's investment in transmission resources.

On a regional level, IID has established plans with state and regional transmission planning agencies with the recent proposal of the Strategic Transmission Expansion Plan (STEP). The transmission expansion plans aim to provide plans to achieve diversity, sustainability and resilience to the bulk transmission system, distribution system and local communities while improving reliability.

Planned Energy Distribution Facilities - As previously noted, project needs were identified for system reliability, customer interconnections associated with potential cannabis industry growth, and new development. Some of the distribution projects identified by IID within a five-year time frame for the Riverside County Service area include the following:

- Avenue 52 Substation 2nd Bank Coachella – New Circuit
- Cannabis No. 1 Two 40 MVA Transformer Bank at Date Palm Business Park
- Bermuda Dunes 25 MVA Transformer Bank at Fred Waring Drive
- CannaNevada 40 MVA Transformer at Avenue 54
- North Gate 25 MVA Transformer at S/S Indio Boulevard
- Marshall Substation 3rd Bank
- New Dillon 25 MVA Transformer/Distribution Breakers in Riverside County
- Carreon 2nd Transformer Bank/25 MVA
- La Entrada West 25 MVA Transformer Bank in City of Coachella
- Cannabis No. 2 300 MVA; two 40 MVA Transformers along Harrison Avenue



- Travertine 25 MVA Transformer Bank at Avenue 62nd and Madison Street
- Avenue 44 25 MVA Transformer Bank between Golf Center Parkway & Dillon
- Mecca 2nd Bank 25 MVA at Avenue 68 and Johnson Street in Mecca
- Frances Way 2nd Transformer Bank; 25 MVA in City of Palm Desert
- Rancho Mirage 25 MVA Transformer; 4 Distribution Breakers
- Paradise Valley two 25 MV Transformer Bank
- CannaNevada 2nd Bank serving Coachella Industrial Park
- Jefferson 3rd Transformer Bank; 25 MVA at Avenue 52
- Santa Rosa (Avenue 60 Development) 25 MVA Transformer
- New Oasis two 25 MVA Transformers; eight Distribution Breakers

Some of the distribution projects identified by IID within a five-year time frame for the Imperial County Service area include the following:

- New Kloke Distribution Substation; two 25 MVA in City of Calexico
- Victoria Ranch Distribution Substation 25 MVA on Dogwood Road
- Lucky Ranch Distribution Substation 25 MVA near Brawley
- Diamante Distribution Substation 25 MVA near City of Calexico
- Anderson Distribution Substation 25 MVA near McCabe/City of El Centro
- New Euclid Distribution Substation two 25 MVA Replacement

c) Opportunities for Shared Energy Facilities

The Imperial Irrigation District utilizes interregional partnerships in efforts to plan for extreme events. This includes shared transmission projects that provide access to various energy markets. IID has a share of the Hassayampa – North Gila 500 kV line No. 2 (HANG2) in Arizona which terminates at North Gila (N.Gila) substation. This share can provide access to the Palo Verde market. IID is currently exploring the possibilities of participating in the North Gila – Imperial Valley 2 project. This project would allow IID to take advantage of its 20% share on the HANG2 line as well as provide additional reliability benefits. This project would most likely increase the allowable flow on HANG2 from 500MW to over 1000MW which would allow IID to move over 200MW through HANG2.

At a macro-scale, California policy makers have, are debating the benefits of operating the Western regional grid as a single entity. The intent of regionalization in the form of an integrated western regional energy market is to facilitate grid operators' abilities to more easily and efficiently share resources throughout the western states. The decision to join a regional transmission organization is left to the individual entity based on its preference. Should a bill similar to AB813 progress and retain its optional language, IID will perform a detailed evaluation of the benefits and the costs prior to making a final decision on whether to participate.



IID is also able to participate in Southern California Public Power Authority (SCPPA) projects. The SCPPA acts as a funding entity for transmission, generation, fuel and energy efficiency projects. The SCPPA will issue debt for the construction of new resources and then secure this debt with take-or-pay contracts with project participants. When IID is a party in a transaction with SCPPA and member utilities, the debt falls on SCPPA and therefore there are minimal impacts to the IID's credit ratings (an unequivocal advantage of being a member of SCPPA). Another advantage is that joint action entities like SCPPA allow small entities the opportunity to participate in larger, cost-effective generation resources.

One of the listed IID facilities, the Palo Verde Nuclear Generating Station, is under a SCPPA contract. IID has not participated in the majority of SCPPA's projects, primarily due to geographical issues. The majority of SCPPA's members have transmission access to the north and east, but IID does not have the transmission resources necessary to access many of SCPPA's projects.

d) Phasing of Energy Facilities

In order to maintain an adequate energy supply to IID customers, IID analyzed and evaluated all of the relevant supply-side and demand-side resource impacts to the current and future financial health of the district. The following projects are anticipated to be implemented during the twenty-year planning period:

Short Term Improvements (Under 5 Years)

- Midway to Devers 500kV Transmission Project (90 miles)
- North Gila-Highline Transmission Project.
- 30 MW of Energy Storage
- Multiple Distribution Projects in Riverside County (20 sites)
- Multiple Distribution Projects in Imperial County (6 sites)

Mid-Term 5-10 Year Improvements

- Southwest Loop Project (Upgrades to L-Transmission Line)
- Imperial Valley-Banister Substations Transmission Line Project
- Riverside County Multiple Distribution Sites
 - Kohl Ranch 300 MVA; 40 MVA Transformer
 - Sky Valley 2nd Bank 25 MVA
 - New Thermal two 25 MVA
 - Avenue 54 two 25 MVA (Ave 54 and Monroe Street)
 - La Entrada two 25 MVA Transformer Bank in City of Coachella
 - No La Quinta 3rd Transformer Bank 25 MVA



- Multiple Distribution Projects in Imperial County (5 sites)
 - La Paloma Distribution Substation 25 MVA near Brawley
 - Holtville Distribution Substation 25 MVA, south of Holtville
 - Keystone Distribution Substation 25 MVA near Keystone Road
 - Barioni Lakes Distribution Substation 25 MVA near City of Imperial

Long Term 10-15 Year Improvements

- IID Comisión Federal de Electricidad 230kV Transmission Project

3. Mitigation of Energy Facilities

IID has a comprehensive Integrated Resource Plan (IRP) prepared for the Energy Department. The goals in the IRP provide the Energy Department an integrated approach to identifying the generation and power system resources needed to sustain IID's service to the communities in a fiscally responsible, reliable, efficient and affordable manner. The IRP should be reviewed for more detailed information, however, the following are summary recommendations to achieve adequacy of energy service facilities:

- E-1** Continue to implement the goals identified under the IID Integrated Resource Plan regarding Cost and Operation, Efficiency, Regulatory Compliance and Regional Development.
- E-2** Explore and implement potential energy loss reduction strategies such as installing additional distribution capacitor banks, extending existing transmission lines to improve service to concentrated loads, and establish a distribution line re-conductor program.
- E-3** Complete all necessary distribution system upgrades.
- E-4** IID should diversity its generation resource mix in all things and all approaches thus reducing various risks.
- E-5** Continue to invest in IID-based and region-wide transmission infrastructure.
- E-6** Study and explore the location and technology type of a peaking generator to be installed and operating in the near-term to provide the necessary support the IID system needs to maintain reliability in the wake of a heavy influx of intermittent renewable resource integration.
- E-7** IID shall work on the development of a capital replacement plan to address the aging fleet of thermal generation units.



D. CONSERVATION PROGRAMS AND SERVICES

IID is located at the heart of many available natural resources to develop renewable generation facilities as well as energy efficiency and conservation. This drives IID's decision-making process since many of the laws that have been developed over the past several years change the entire dynamic of strategic resource planning and the integration of resources. Under the water side, challenges presented by new in-valley water demands and land use changes are intensified by the annual cap on Imperial Region's Colorado River water supply and the uncertainty associated with varying annual demands and competing uses within the Imperial Region. The Imperial Integrated Regional Water Management Plan (IRWMP) is the result of stakeholders, who represent a wide array of interests, working together to formulate and support implementation of long-term water management solutions many of which are represented under IID's water conservation programs described under this Service Area Plan. These programs enable the district to be a party to the nation's largest agriculture-to-urban water conservation and transfer agreement, implementing efficiency-based conservation programs in coordination with its agricultural water users that create just under 500,000 acre-feet annually of conserved water (from 2003 baseline year) for use by its funding partners under the Quantification Settlement Agreement. Only water conserved through efficiency practices would be transferred out of the Imperial Region under Water Transfer Agreements in place, thus having no adverse impact on historic levels of agricultural production.

Under the energy side, IID implements a comprehensive energy conservation portfolio similar to California which leads the nation in energy efficiency and renewable energy programs. Assembly Bill (AB) 2021 requires each publicly owned utility to identify all potentially achievable cost effective electricity efficiency savings and to establish annual targets for energy efficiency savings and demand reduction for the next 10-year period. IID has joined California Municipal Utilities Association (CMUA) in partnership with Northern California Power Agency (NCPA) and the Southern California Public Power Authority (SCPPA) to collaborate on the development of individual utility energy efficiency and demand-reduction targets. IID implements an aggressive energy-efficiency portfolio with the goal of reducing both energy consumption and peak demand. Energy-efficiency programs may be classified as either conservation programs, or demand-side management (DSM) programs. Conservation programs attempt to reduce the total amount of energy required by consumers while DSM programs attempt to change the timing of energy use.

Senate Bill 350, the Clean Energy and Pollution Reduction Act, passed in the 2015 California Legislative Session, further requires IID compliance with renewable portfolio standards laws and emissions laws. Greenhouse Gas Emission reductions, under SB100, are also planned for by IID in order to avoid having to purchase emission credits.



1. Performance Standards for Water & Energy Conservation

Water Conservation Standard- The Imperial Irrigation District does not have any performance standards adopted for water conservation, however, the district's Water Department, consistent with the Imperial Integrated Regional Water Management Plan (2012) and IID's Water Conservation Plan (2016), does implement several strategies to reduce in-valley water demand. The performance standard is therefore established as performing the same water using activity, but more efficiently and with less water than historic totals. The minimum conservation target shall be conservation yields consistent with the Quantification Settlement Agreement (QSA). The QSA specified 487,200 AFY of water will need to be conserved by 2026 by the IID considering all IID Quantification and Transfers. The target water conservation level is 450,200 AFY by 2020 and through 2024.

Energy Conservation Standards- Consistent with Senate Bill 350, the Clean Energy and Pollution Reduction Act, passed in the 2015 California Legislative Session, the IID Energy Department has adopted energy efficiency standards under its 2018 Integrated Resource Plan. The new IID adopted Energy Savings Target for 2018-2027 contains the two categories MWh from Market Potential from Programs and MWh from Codes and Standards. The district must increase energy efficiency achievement in buildings by 50 percent (with special emphasis on participation from low-income communities).

Renewable Energy Standards-The district must also meet Renewable Portfolio Standards which are targeted to reach 50 percent of total retail energy sales by 2030. This is equivalent to 50-75 MW of baseload energy and around 100-150MW of solar generation, or some other intermittent resource such as wind, with an annual capacity factor around 30 percent.

Emission Reduction Standards-The Global Warming Solutions Act (AB 32) mandates public utilities, such as IID, to reduce total company wide emissions to 1990 levels by 2020 and an 80 percent of 1990 levels reduction by 2050 – a state reduction of about 30 percent and a reduction of about 7-10 percent for IID. Greenhouse Gas Emission (GHG) standards also have to be complied with by the IID. The district has adopted the target goal of GHG emission reduction to 40 percent below the 1990 levels. To meet this goal, IID must reduce GHG emissions to 1,100 lbs./MWh, on average. In the case of the IID, the reduction of overall organizational emissions will be mainly rendered through a rigorous renewable portfolio program already in progress by the IID Energy Resource Planning Unit.



2. Water Conservation Program Planning and Adequacy Analysis

Water Department Conservation Programs

IID established water conservation programs are designed on best management practices for efficient use of resources addressed herein, but may not be all inclusive. Additional water conservation efficiency strategies are identified in IID's *Efficiency Conservation Definite Plan* (Definite Plan) (Davids Engineering 2007) and *System Conservation Plan and Delivery Measurement Description* (System Conservation Plan) (IID 2009).

Water conservation efforts are managed and delivered through IID's Water Department. The Water Department is comprised of five sections, however, only two sections are primarily dedicated to Water Conservation efforts and Water Conservation Program implementation. A description of the primary duties of each respective section follows:

- **Water Resources & Grant Management Section** is comprised of three units which include Administration, Water Quality/ Total Maximum Daily Loads (TMDL) and Quantitative Settlement Agreement Mitigation. This section is responsible for activities involved in planning and management of water resource programs of interest to the district. This section is responsible for compliance of several state water quality mandates including TMDL, agricultural water runoff targets and represents the district in regional water use coordination efforts and projects involving Salton Sea environmental mitigation.
- **Farm Unit Programs Section** is the Water Conservation Programs section and is responsible for long-term implementation of water conservation and transfer programs between IID and other agencies. Areas of responsibility include following, apportionment, agricultural water clearinghouse and on-farm conservation programs. Staff sets program objectives, develops budgets, provides short and long-term planning and implements the work developed for each program.
- **Environmental Mitigation Section** is comprised of Environmental Mitigation and Biological Control units. This section is responsible for Water Department and QSA water transfer environmental mitigation implementation. It performs wildlife species monitoring and conservation, managed marsh complex construction, operation and maintenance, desert pupfish refugium construction, and Salton Sea air quality mitigation. This section is responsible for compliance with QSA EIR/EIS, biological opinion, ITP 2081 and other environmental permits for various projects. This section is also responsible for the biological control of invasive species within the IID canal system by use of grown and raised grass carp.



a) Inventory of Existing Water Conservation Programs & Resources

Water Conservation Programs & Resources- Water Resource Management under the Water Department are focused on three areas of efficiency: 1) Agricultural Water use Efficiency, 2) Renewable Energy Water Use Efficiency, and 3) Urban Water Use Efficiency. A brief overview of the existing programs and services is described under each focus area below.

1) **Agricultural Water Use Efficiency-** Improving water use efficiency in close collaboration with the agricultural industry has been an important goal for the Imperial Irrigation District and Imperial Valley farming community. IID and Imperial Valley growers have worked aggressively to implement system-wide and on-farm water conservation measures since the 1940's. The 1988 Agreement with the Metropolitan Water District identified a 15 Point Water Conservation Program. Conservation projects have evolved over the years resulting in some project/program elimination, completion and/or new program implementation. The following is a list of some of the projects and programs currently in place and implemented under the district's continuing 1988 and 2003 water conservation efforts, both On-Farm and System to meet all water transfer agreements and water conservation goals:

- On-Farm conservation program (incentives for on-farm efficiencies)
- All-American Canal Seepage Recovery Projects
- East Highline Seepage Recovery Projects
- Concrete Lining of key Canals and Laterals (complete)
- Irrigation Scheduling and 12-Hour Water Delivery Program
- Tailwater Education Program
- Irrigation Water Management Evaluation Program
- Systemwide Conservation Monitoring and Verification Program
- System Interceptor Projects
- Operational Reservoirs
- Discharge Reduction Program (communication/automation)
- Lateral Intertie Projects
- Main Canal Seepage Recovery Program

2) **Renewable Energy Water Use Efficiency-** The renewable energy industry represents a significant economic development opportunity within the IID Service Area and has the largest forecasted increase in future water demand, requiring a reliable long-term supply that does not impact agricultural productivity. The Imperial County General Plan (Imperial County, 2003) established a future water



demand from geothermal and solar thermal generation at 180,000 AFY while the Imperial IRWMP forecasted future renewable energy water demands, with conservation, at 146,000 AFY. This constitutes a 20 percent water conservation savings, consistent with the California Department of Water Resources' goal by the year 2020. IID's Plans and Programs influence how much water is available in a year's supply and demand imbalance, and how water is to be apportioned to new renewable energy projects. The 2009 IID Interim Water Supply Policy (IWSP) provides for an apportionment of up to 25,000 AFY for development of renewable energy industries within an established pricing structure. The following are Best Management Practices that IID considers when reviewing new renewable energy projects or expansions:

- Support the use of dry or hybrid cooling.
- Consider use of recycled municipal water for cooling.
- Consider use of desalinated brackish water for cooling.
- Consider groundwater bank as a water supply.
- Require appropriate water use efficiency BMP's per the California Urban Water Conservation Council, California Energy Commission, and those adopted by IID.

3) **Urban Water Use Efficiency**—The California Water Plan addresses the importance of reducing demand and improving water use efficiency as an important statewide strategy. The State has set aggressive water conservation goals with an increased emphasis on water conservation for areas like the Imperial Region. The Water Conservation Act of 2009 (SB 7X) and the Governor's 20 X 2020 Conservation Plan (CDWR et al. 2010d) require a 20 percent water use reduction by urban users by the year 2020. As required by statute, several cities within the IID service area submitted to the California Department of Water Resources their 2010 Urban Water Management Plan (the Cities of Brawley, Calexico, El Centro and Imperial). The Imperial Integrated Regional Water Management Plan (IRWMP) goals and objectives are consistent with these initiatives. In this vein, Imperial Valley Cities, the County and IID have agreed to work together, and/or separately, to achieve the following:

- Ensure measureable savings when agricultural land is converted to urban uses consistent with existing land use plans.
- Ensure that water conservation Best Management Practices and Demand Management Measures are implemented at the time of project development and project approval.



- Streamline development review and permitting processes for land use projects requiring SB 610 Water Supply Assessments and SB 221 Written Verifications of Water Supply to better integrate water and land use planning.
- Implement the California 2010 Plumbing Code, effective January 2011, as a standard for new development and for development or update of local ordinances in Imperial IRWMP updates.

To compliment urban water use efficiency, the IID Board adopted the Interim Water Supply Policy (IWSP) for Non-Agricultural Projects on September 29, 2009. The IWSP ensures sufficient water will be available for new development, in particular, anticipated renewable energy projects, until the IID Board selects and implements capital development projects for improved water conservation.

In order to advance all of these water conservation programs, objectives and measures, the Imperial Irrigation District has allocated the following resources within the two sections in the Water Department implementing water conservation efforts:

Water Conservation On-Farm Financial Incentives

- Incentive of \$285/AF of Delivered Water Reduction

Water Conservation Program Personnel 2018 (47 Total FTE):

- Ag Water Management Section (17 FTE)
- Farm Unit Program Section (16 FTE)
- Environmental Mitigation Section (14 FTE)

Water Conservation Program Department Vehicles 2018 (29 Vehicles):

- Ag Water Management Section (11 Vehicles)
- Farm Unit Program Section (8 Vehicles)
- Environmental Mitigation Section (10 Vehicles)

b) Adequacy of Existing Water Conservation Programs

To enable IID to meet its water transfer obligations pursuant to the agreements, IID and its agricultural water customers need to develop a total of 303,000 acre-feet of water annually through an integrated program of on-farm and delivery system conservation. The numerous conservation projects and programs that have been implemented by the district have resulted in quantifiable water conservation. The following is a brief summary of program results.

System Conservation Programs – IID has implemented numerous system conservations programs under the 1988 IID/Metropolitan Water District of Southern California (MWD) Water Conservation Agreement. Since implementation of the IID/MWD Conservation Program the associated water savings has fluctuated between 97,150 AFY to 113,000 AFY. In 2003, IID amended the agreement to align



the agreement end date with the Quantification Settlement Agreement and a 2014 Letter of Agreement provides that effective January 2016, the total amount of conserved water for transfer to MWD is fixed at 105,000 AFY. IID continues to perform numerous system upgrades to meet the additional needs of the QSA Water Transfers by making water efficiency improvements in its delivery system. Components of the System Conservation Program include:

- Discharge Reduction Program
 - Communication upgrades
 - Installation of automated lateral headings
 - Design and installation of monitored discharge sites
 - Laptop computers for Zanjeros
 - SCADA integration and monitoring
- Large operational reservoirs
- Mid-Lateral off line operational reservoirs
- Existing operational reservoir up grades
- Main canal and lateral inerties
- Main canal seepage recovery program

In addition to the 1988 IID/MWD Water Conservation Agreement, IID system efficiency conservation measures are expected to generate an additional 103,000 AFY by 2026 to meet the QSA obligations. Monitoring results for System Conservation have demonstrated increasing annual conservation yields. **Table CW-1** identifies the conservation yields that IID has conserved over the last five years under system efficiency conservation projects/programs.

Table CW-1
System Conservation Program Historic Conservation Yields

System Conservation Program	2014 AFY	2015 AFY	2016 AFY	2017 AFY	2018 AFY
Seepage Recovery	31,343	33,792	34,922	34,723	36,542
Interties	*	1,430	3,491	8,626	5,952
Discharge Reduction	*	0	0	6,524	10,224
1988 IID/MWD Conservation	113,780	113,430	116,290	117,830	116,480
TOTAL SYSTEM CONSERVATION	113,780	148,652	154,703	167,703	169,198

Source: IID Internal Water Accounting Records from WIS/Historical Verified Savings. *Program Not In Place



Temporary Land Conversion Following Program- The IID Board adopted a Temporary Land Conversion Following Policy (TLCFP) on May 8, 2012, and revised on March 29, 2016. Following is the practice of temporarily taking active farmland out of production. Water, which under normal circumstances would have gone to the land to produce crops, is considered conserved under the following program. Conserved water from following is transferred to the San Diego County Water Authority, used for delivery to the Salton Sea (through 2017) to mitigate the environmental impacts of these transfers, and for payback or storage purposes. The water transfer schedules call for the district to generate 150,000 acre-feet annually through following from 2013 through 2017 for these mitigation and transfer needs, after which IID's required following would be completed.

The following program was revised on March 29, 2016, to provide a framework for a temporary, long-term following program to work in concert with the IWSP and IID's coordinated land use/water supply strategy. IID concluded that certain lower water use projects, such as renewable energy facilities (i.e. solar), could still provide benefits to local water users, albeit temporary. Water demands for certain non-agricultural projects are typically less than that required for agricultural production; this reduced demand allows water to be made available for other users under IID's annual consumptive use cap. **Table CW-2** identifies the solar following conservation yields.

Table CW-2
TLCFP Historic Conservation Yields

Implementation Year	Participating Acres	Documented AF Conservation Yield
2012	1,386	5,545
2013	6,859	31,372
2014	6,912	36,265
2015	7,104	37,320
2016	7,864	38,717
2017	10,146	48,040
2018	12,354	66,034

Source: Provisional Past Following Conservation Reports at IID TLCFP. Volumes in table reflect acre-feet at Imperial Dam

These water conservation yields allow the district to avail itself of the ability during the term of the QSA/Transfer Agreements under to create conserved water through projects such as temporary land following conservation measures. This conserved water can then be used to satisfy the district's conserved water transfer obligation and for environmental mitigation purposes.



On-Farm Efficiency Conservation Program - One of the most successful programs is the On-Farm Conservation Program which is designed for maximum implementation flexibility. The On-Farm Conservation Program allows for broad farmer participation on a variety of crops and growing seasons. Landowners and tenants voluntarily propose conservation measures, delivery reduction volume, contract duration, and a cropping plan for IID consideration. After review and consultation, IID accepts proposals until conservation obligations are fulfilled. Water conservation is measured relative to a ten-year historical baseline specific to each field and crop participating. IID has an on-farm conservation target of 200,000 AFY. Monitoring results have demonstrated increasing annual conservation yields as noted in **Table CW-3**.

Table CW-3
On-Farm Efficiency Conservation Program Historic Conservation Yields

Implementation Year	Participating Acres	Documented Conservation Yield
2013	26,955	17,276 AF
2014	54,345	44,371 AF
2015	115,173	87,721 AF
2016	189,823	138,585 AF
2017	250,022	151,750 AF
2018	318,193	190,969 AF

NOTE: Participating Acres includes all acres enrolled in the program for the applicable year the crop was harvested including acres without water savings.

IID maintains annual water accounting summaries. The Annual Implementation Report under the Quantification Settlement Agreement provides water accounting for conservation efficiency relative to the transfer obligations and system efficiency. Table CW-4 provides a summary of the reported conservation volumes, demonstrating water conservation adequacy for water transfers. The target was 377.2 KAF for 2018.

Table CW-4
Water Efficiency Programs Historic Conservation Yields

Purpose	2014 AFY	2015 AFY	2016 AFY	2017 AFY	2018 AFY
1988 IID/MWD Transfer	104,100	107,820	105,000	105,000	105,000
SDCWA Transfer	100,000	100,000	100,000	100,000	130,000
CVWD Transfer	31,000	36,000	41,000	45,000	63,000
Inadvertent Overrun Payback	117,391	0	0	0	0
Intentionally Created Surplus	37,735	45,477	70,077	80,937	130,197
AAC Lining Project	67,700	67,700	67,700	67,700	67,700
TOTAL CONSERVATION	248,402	305,676	361,932	341,255	495,897

QSA Annual Reports 2014-2018; Excludes Following Program for purpose of Salton Sea Mitigation.



c) Future Demand for Water Conservation Facilities & Improvements

As the Imperial Valley grows, and as its economy diversifies, so do the functions and role of IID's Water Department. By implementing extraordinary conservation projects, developing innovative efficiency measures and utilizing progressive management tools, the Water Department is working to ensure both the long-term viability of agriculture and the continued protection of water resources within its water service area.

Water Conservation Targets - By 2026, IID will need to conserve 487,200 to satisfy the water transfer agreements in place and is expected to continue at this target level of water conservation for the remainder of the Service Area Plan planning period. The planned water conservation targets for the Imperial Valley service area are noted in **Table CW-5 Water Conservation Targets**.

**Table CW-5
Total Water Conservation Targets**

Year	Quantified Amount AFY	Conservation Targets AFY	IID Net For Consumptive Use AFY
2018	3,100,000	377,200	2,722,800
2020	3,100,000	450,200	2,649,800
2025	3,100,000	482,200	2,617,800
2030	3,100,000	487,200	2,612,800
2040	3,100,000	487,200	2,612,800

Source: CRWDA Exhibit B.

As previously noted, IID has a system conservation target of 103,000 AFY. An additional 105,000 AFY from the IID/MWD Water Conservation Program (MWD investment into construction, operation and maintenance projects that conserve water) and 67,600 AFY from All-American Canal Lining which has already been completed and thus not included in future projects. The remaining reduction 11,500 AFY is not required to be from conservation and is for miscellaneous and Indian present perfected rights. IID has several projects planned to help meet the water conservation goals over a five year plan period.

Planned Water Conservation Projects (district-wide)

- Operational Reservoirs (5 total)
- Mid-lateral Operational Reservoir/Intertie Projects (2 total)
- Lateral Intertie Projects (18 total)
- New Seepage Recovery Sites
- Nine (9) Deep Wells (South Side of All-American Canal)
- East Mesa Groundwater Storage



Large Operational Reservoir Projects-The planned large operational reservoirs are all on IID’s main canal system. These projects are expected to result in district-wide water conservation. **Table CW-6** identifies the planned reservoir expected to be completed within a five-year time frame and the estimated conservation yield annually.

**Table CW-6
Planned Operational Main Canal
Reservoirs & Estimated Conservation Yields**

Operational Reservoir	Timeframe	Reservoir Maximum AF Capacity	Estimated Conservation Yield (AFY)
Central Main Reservoir	Near-term	500	3,000
East Highline & AAC	Near-term	2,900	16,000
East Highline North	Near-term	250	1,500
Trifolium 10	Near-term	150	1,500
West Side Main	Near-term	500	3,000
TOTAL		4,300 AF	25,000 AFY

NOTE: Near-term is under five years; Mid-term is 5-10 years, and; Long term is over 10 years

Mid Lateral Reservoirs & Intertie Projects -IID has two planned mid-lateral reservoir projects that incorporate an intertie component (the East Highline and the E Lateral). An intertie is a connection between two existing canals/laterals to prevent one of them from continuing into an operational discharge, or drain system. Interties may be lined canals or pipelines.



Planned inter-tie projects are constructed as piped connections to facilitate metering and monitoring of conserved water. Although there are over forty intertie opportunities, only the near-term projects with a completion date of under five years are listed in **Table CW-7**. The table identifies the planned mid-lateral reservoirs and/or intertie projects and the estimated conservation yield annually.

**Table CW-7
Planned Operational Mid-Lateral Reservoir & Intertie Project
Conservation Yields**

Mid-Lateral Reservoir	Intertie Lateral	Reservoir Maximum AF Capacity	Estimated Conservation Yield (AFY)
East Highline Lateral 1	NA	45	1,190
E Lateral	NA	48	1,130
Rose Lateral	To Rockwood Canal	250	14,000
Trifolium	Bail System	TBD	4,010
Pampas	To Rositas Canal	None	730
Pear Lateral 1	To Rositas Canal	None	410
East Highline Lateral 7	To Pair Main Canal	None	420
East Highline Lateral 8	To Pair Main Canal	None	400
TOTAL		343	22,290 AFY

Source: IID Water Department, System Conservation

Seepage Recovery Projects - In some cases where the main canal is not lined and soils are permeable, seepage may occur. Through a process of seepage recovery, a vertical pump recovers the water and injects it back in to the main canal. IID targeted a total of 26 sites for main canal seepage recovery.



Main canal seepage contributes a large portion of the estimated 86,000 AFY of total canal seepage from the IID delivery system. Main canal seepage recovery was the first efficiency conservation program IID undertook to meet its QSA/Transfer Agreements water transfer obligations, with delivery of 4,000 AF to Coachella Valley Water District in 2008. By 2014, 24 seepage recovery sites were operational, producing 32,231 AF of conservation efficiency savings. IID is planning for six (6) additional projects with an estimated conservation yield of close to 5,000 AFY.

IID has identified additional areas of seepage recovery opportunities that are emanating from some earthen sections of the All-American Canal. The project development started with IID drilling and installing 2 multiple nested monitoring wells, and the information gathered from these installations were the basis for the overall project design and the ensuing seepage model that was developed for the region. Overall, the quality and amount of data that was provided indicated that there was potential for up to an additional 35,000 acre-feet of additional seepage in the project area that could possibly be conserved. Additional investigation will clarify more fully the conservation estimate from the project as a whole.

East Mesa Groundwater Storage-As previously noted, water storage improves efficiency and facilitates conservation. In 1975, the California Department of Water Resources Bulletin 118 reported that the 1,870 square-mile Imperial Valley groundwater basin (number 7-30 shown in **Figure 8**). The basin consists of younger and older alluvium with a groundwater storage capacity of 14 MAF. IID monitors and assesses feasibility investigations continuously.

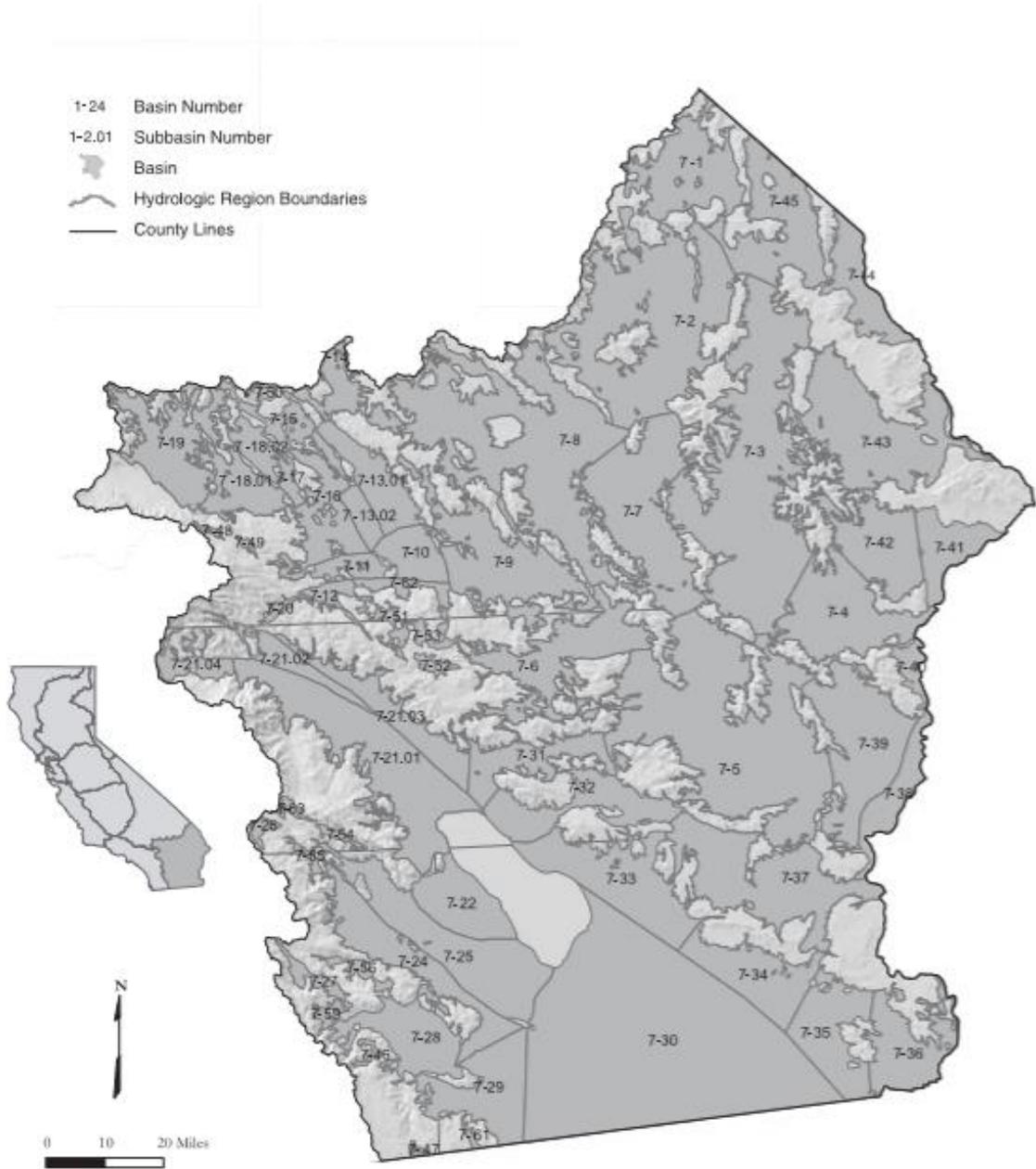
d) Opportunities for Joint Water Conservation Programs/Services

The Imperial Irrigation District is an integral stakeholder and lead in the Water Forum that developed the Imperial Integrated Regional Water Management Plan, and is an active member of the Regional Water Management Group charged with implementing the plan. The Imperial IRWMP is an important mechanism in defining regional opportunities for water conservation efforts, which are of benefit to multiple cities and agencies.

The Imperial Irrigation District is also a Resource Conservation District, which was formed in 1947 within the same legal district boundaries. Under the October 1988 memorandum of understanding between IID, the State of California (acting as a Resource Conservation District) and the Imperial County Agricultural Stabilization Conservation Committee (authorized by the U.S. Department of Agriculture). The district and the committee have the common objectives of helping to bring about conservation, development and the wise use of natural resources.



Figure- 8
CDWR Colorado Hydrologic Region Groundwater Basins



e) Phasing of Water Conservation Projects/Programs

All of the district's conservation projects are included in the Capital Improvement Plan which spans over a five-year period.

3. Energy Conservation Program Planning and Adequacy Analysis

Energy Department Conservation Program

The 2003 SB 1037 requires public and private gas and electric utilities to first acquire all available energy efficiency and demand reduction resources that are cost effective, reliable and feasible before conventional generation, or other resources. IID offers a variety of energy conservation and design side management (DSM) programs intended, in part, to alleviate electric generation requirements and avoid expensive peak purchases of power on the market. Energy conservation programs are designed to reduce the total amount of energy used while DSM programs are designed to shift energy use from high cost periods to low cost periods and reduce the cost of supplying customers.

Most programs within IID's portfolio are conservation programs with the goal of reducing the customer's consumption and cost of energy. However, future programs may be designed to shift customer on-peak use to off-peak hours. Energy conservation efforts are managed and delivered through IID's energy Department. The Energy Department is comprised of eight sections, however, none of them are exclusive to energy efficiency and/or conservation. The following sections actively support energy efficiency, conservation and greenhouse gas emission reductions.

- **Energy Optimization Section** is responsible, amongst other responsibilities, for developing creative pricing structures, in a competitive manner, while providing a forum where IID's customers participate in environmental stewardship by reducing greenhouse gas emissions.
- **Energy Business, Regulatory & Transactions Section** is responsible for the development of strategic business relationships to promote growth, change and support renewable energy development and protect the balancing authority by leveraging existing assets. This section designs and implements programs to encourage customer conservation as a cost effective alternative.

a) Inventory of Existing Energy Conservation Programs & Resources

Conservation programs are designed to reduce the total amount of energy used while design side management programs are designed to shift energy use from high cost periods to low cost periods and reduce the cost of supplying customers. A brief overview of the existing programs and services is described under each focus area follows.



- 1) **Energy Efficiency Programs-** Improving energy use efficiency has been an important goal for the Imperial Irrigation District and in line with Statewide objectives. IID has worked aggressively to implement system-wide energy conservation measures to meet the needs of all client categories. The following is a list of some of the energy efficiency programs currently in place under the district's overall energy Conservation and Energy Efficiency Programs:

Residential Programs

- **Residential Energy Audits-** This program allows residential customers to quantify energy consumption and to determine measures that can be applied to make the customer's home more energy efficient.
- **Energy Rewards Rebate Programs-** This program offers residential prescriptive rebates for qualified energy efficient measures such as air conditioners, ENERGY STAR® refrigerators, windows, attic insulation and pool pumps. New to the 2016 program is the ENERGY STAR® clothes washer incentive.
- **Refrigerator Recycling-** IID offers a \$50 incentive and free refrigerator pickup with proper recycling services to our customers. This program targets older, less efficient units and those kept in basements or garages.
- **Quality AC Tune Up-** This program provides maintenance services designed to improve the operating efficiency of existing central air conditioners or heat pumps. The most recent program design included the addition of an efficient fan controller measure.

Commercial Programs

- **Customer Energy solutions Program (CESP)-** CESP offers financial incentives to commercial customers intended to offset the cost to purchase and install qualifying energy efficiency measures. The measures must retrofit, replace, or upgrade, old equipment with new, energy-efficient technologies that exceed the applicable Title 24 energy efficiency requirements.
- **New Construction energy Efficiency Program (NCEEP)-** NCEEP is a non-residential new construction and renovation energy efficiency program that combines an integrated design process with financial incentives for energy-saving design at least 10 percent above the current Title 24 requirements.



- **Commercial Energy Audits**- This program allows commercial customers to meet with an energy specialist to evaluate their business' current energy use and identify ways in which to reduce their consumption, making their facility more energy efficient.
- **Energy Rewards Rebate Program**- IID offers nonresidential customers prescriptive rebates for qualified energy-efficient measures. Measures must retrofit, replace, or upgrade, old equipment with new, energy-efficient technologies that meet and exceed the Title 24 standards. Qualifying product categories include programmable thermostats, HVAC equipment and motors.

Large Commercial Rate Programs

- **Key Customer Demand Response Program (Interruption Loan Program)**- This program has a target participation of 25MW within three years. Program guidelines require enrolled large commercial and individual customers with on-site back up generation to curtail a minimum of 500kW upon timed notice by IID. Failure to curtail contracted reductions will result in a financial penalty. This generation can be used to reduce load during times of system stress either due to transmission, or generation curtailments, or if load exceeds forecasted demand.
 - **High voltage Rate Discount Program**- Under this program, customers take electric services at 34.5 kilovolts, or above at a single point of interconnection. The customer maintains all necessary step-down transformation and facilities beyond the transformer, which IID would normally own. In return, IID will provide a discount on the maximum demand energy charge and energy cost adjustment charge. The reduced electric rate offsets some of the customer's costs for the facilities, maintenance and necessary substation equipment.
- 2) **Renewable Energy Program** - The renewable energy industry represents a significant economic development opportunity within the IID service area. The bulk availability of renewable energy generation comes from intermittent resources such as solar and wind-based generation. Since IID's service territory has sufficient supply of available land, transmission, and sunshine, solar-based generation facilities are expected to increase over the next 10-20 years. **Figure 9** is a breakdown of IID's current renewable resources:



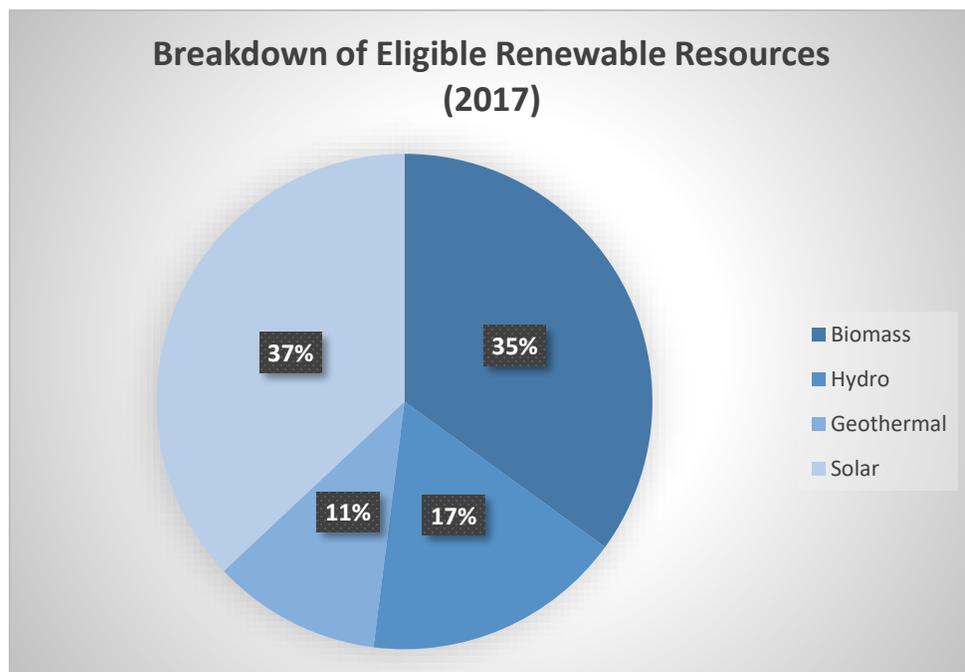


Figure 9-Renewable Energy Resources 2017 Breakdown (2018 Integrated Resource Plan).

To help customers fully benefit from investments in various renewable options, IID offers the following retail renewable programs for customers interested in meeting all, or a portion, of their load with a renewable resource:

- **Green Energy Rate Program-** The Green Energy Rate Program will allow customers to designate how much renewable energy they wish to be served with. Any customers (with exception of those who have installed on-site renewable systems, or wholesale power customers receiving standby service) who elect participation in the new Green Energy Rate Program, can choose to be served with an even greater percentage of renewables, up to 100 percent. The program will have a full year of operation by end of 2019. It is estimated that the program will increase customers' per kilowatt-hour rate by \$0.013 to \$0.02. The monthly rate will fluctuate based on IID's cost to procure renewable resources.
- **Net Energy Metering Program-** Net Energy Metering (NEM) is a program that was designed to benefit IID customers who generate their own electricity using solar, wind, biogas, fuel cell, or a hybrid of these technologies. The program included generating facilities up to 1MW and was offered on a first-come, first-served basis. IID's NEM program capacity is 50.2MW, five percent of IID's peak demand.

- **Net Billing Program-** The Net Billing Program, successor to the Net Metering Program, extended the Net Metering Program by an estimated 9.6MW to allow for additional customer participation. The program paves the way for new solar development while at the same time reducing cross-customer subsidization between those with and without solar.
 - **Feed-In Tariff Program-** The tariff provides a simple mechanism for small renewable generators (less than 3MW) to sell power to the utility at predefined terms and conditions, without engaging in contract negotiations. The Program cap is estimated at approximately 13 MW; Generating Facilities participating in the Feed-in Tariff program may not offset load at the site/facility nor are they eligible for any other IID for renewable technologies program (i.e., net metering rate, virtual net metering rate, etc.).
- 3) **Emission Reduction Program-**The proposed Cap-and-Trade Program establishes a declining annual aggregate emissions limit for regulated sources and provides rules for the sale of emission allowances. The Program then allows utilities, manufacturers and other emitters to “trade” pollution permits, or allowances, among themselves. IID’s amount of allowed emissions is not decreasing. This is mainly due to the methodology that was used by the state and Southern California Public Power Authority (SCPPA) members. The SCPPA is a joint action agency comprised of the cities of Los Angeles, Glendale, Burbank, Cerritos, Vernon, Pasadena, Anaheim, Riverside, Azusa, Banning and Colton and the IID (the only non-municipal member of SCPPA). The distribution of allowances factors in growth and utility resource portfolio trends. Therefore, IID’s allowances are fairly flat and this is mainly due to IID’s higher than normal forecasted load growth rate and the associated resources that are in place to supply the energy for that growth. The following are some emission reduction programs in place:
- **E-Green Program-** The IID initiated a process to bring inexpensive utility scale solar to its low-income residents and the ability to “go-green” to individual households. The eGreen Program was customized to bring solar energy to low-income families while benefiting from IID’s ability to acquire attractive energy pricing. eGreen allows IID’s customers to reap the benefits of clean, renewable solar power without the need for on-site installation. The eGreen Program will allow all IID customers to benefit from solar without concern of property ownership, structural integrity, or financial ability. It enhances the ability for all IID customers to benefit from solar. IID entered into a 23-year power purchase agreement with Citizens Energy Corporation for 30 Megawatt’s of



solar energy to serve approximately 15,000 low-income electric customers with a beginning cost of \$29.75 per MWhr and a start date of June 2019. Citizens Solar is contributing approximately 10 additional MWhrs to IID under a Low Income solar Contribution Agreement, bringing the blended cost of the 30MW to approximately \$20 per MWhr.

b) Adequacy of Energy Conservation & Emission Reduction Programs

Energy Conservation Program Adequacy- Through the IID's energy efficiency efforts, from 2009 through 2017, the district has reported saving over 165,996 megawatt hours saved. Since 2007 and 2014, the IID reported energy savings in excess of 78,000 MWh and a reduction in peak demand of over 23,000 MWh. From 2015 through 2017, conservation programs implemented by the IID saved participating customers approximately 52,562.43 MWh in energy savings and 17.74 in peak MW savings. The most successful programs, in terms of energy saved, has been the Custom Energy Solutions Program (CESP). Overall reported savings were a result of various measures within the residential and commercial sectors.

Renewable Energy Program- IID is mandated to achieve California's RPS target of 33 percent of delivered energy coming from renewable resources by 2020 and 2030 and beyond as required under SB350. This is equivalent to 50-75 MW of baseload energy and around 100-150MW of solar generation, or some other intermittent resource such as wind. As of 2018, 35 percent of IID's overall energy generation delivered to customers comes from renewable energy sources. IID has met its Feed-in Tariff program requirements.

Emission Reduction program Adequacy-The primary reason that IID may have exceeded annual GHG emission standards is its ownership in San Juan Generating Station, Unit 4 (SJGS). This is a coal-fired plant in New Mexico that has relatively high GHG per MWh of generation, approximately 2,400 lbs. per 1MWh compared to the legislated standard of 1,100 lbs./MWh. IID exited the San Juan project at the end of 2017. The 106 MW baseload capacity from San Juan has been fully replaced with renewable generation.

c) Future Demand for Energy Conservation Facilities & Improvements

Energy Conservation Targets - By 2027, IID expects to reach new energy efficiency targets of 22,435 MWh. The planned energy efficiency targets for the nine years area are noted in **Table CE-1 Energy Savings Targets**.



Table CE-1
IID Board Adopted Energy Savings Targets

Year	MWh (Market Potential Programs)	MWh (Codes & Standards)	New EE Targets (MWh)
2018	15674	17801	33475
2019	16075	17685	33760
2020	17209	16743	33952
2021	18051	14181	32232
2022	18225	12669	30894
2023	17917	10751	28668
2024	17432	10253	27685
2025	16930	9778	26708
2026	15703	9324	25027
2027	15658	6777	22435

Source: 2018 Draft Energy Integrated Resource Plan.

IID has been exploring the currently existing water transmission system infrastructure to develop small hydroelectric facilities. Across the hundreds of miles of canal systems that IID owns and operates, a preliminary analysis has determined that there are about 12-14 sites worth of further hydroelectric facility development exploration and analysis. The third party preliminary analysis reveals that a total of up to 30MW is possible when aggregating all 14 sites. IID is exploring the potential for self-development on these projects since the analysis shows a lower cost when IID manages the development of these projects. These projects contain much of the already needed infrastructure and would provide state qualifying eligible renewable resource production, at a minimal cost in comparison to other renewable technologies, if the IID moves forward on all, or any combination of these projects. IID has approved a number of energy efficiency projects to be implemented during the planning period.

Planned Energy Conservation Projects

- Citizens Energy E-Green 30 MW Solar Generation Facility
- Salton Sea Restoration and Renewable Energy Initiative
- Strategic Renewable Energy Transmission Expansion Plan
- Path 42 Transmission Project
- Geothermal Resource Assessment
- West side Main Check No. 8 Hydroelectric Plant Feasibility
- Foxglove Hydroelectric Plant Feasibility



d) Opportunities for Joint Energy Conservation Programs/Services

IID has previously proposed a multiregional strategic transmission expansion alternative to the California Independent System Operator and WestConnect. The Alternative, as proposed, would expand the export of renewable energy to the state and the Southwest region while ensuring that the district maintains its balancing authority, meets federal and state regulations and replaces generation lost by the retirement of the San Onofre Nuclear Generating Station. The plan proposes the construction of a 2,200 megawatt 230 kV collector system in the IID service territory. IID proposes to finance, construct and upgrade its internal transmission network, creating an internal collector system that would facilitate the export of 1,100 megawatts to the CAISO and simultaneously another 1,100 megawatts to the WestConnect. As the need for additional renewable energy generation occurs, IID would be able to add a 500 kV collector system to the 230 kV system, upgrade the Path 42 line from 230 kV to 500 kV and add a second circuit on the DC line towers. These future upgrades would increase export from 2,200 megawatts to 4,100 megawatts.

IID's Path 42 Transmission Line Rebuild Project will rebuild two existing 20.6 mile transmission lines in the Coachella Valley. The rebuild of the Coachella Valley-Ramon transmission line, in conjunction with neighboring Southern California Edison's upgrade of its portion of Path 42, will address the "most restrictive" element in transmission in renewable energy-rich Southern California. By upgrading from single to double conductor per phase, the increased transmission capacity will reduce congestion and enable the efficient flow of green energy to and from IID's service area.

The Salton Sea Restoration and Renewable Energy Initiative will produce renewable energy while doubling as groundcover to mitigate air emissions. The Initiative will first focus on developing up to 1,700 megawatts of new geothermal energy at the Sea – enough to power more than one million homes. Geothermal energy can be produced with minimal impact on landscape and habitat. It also provides a steady, reliable source of energy to the state electricity grid that is not subject to weather, or seasonal fluctuations.

e) Phasing of Energy Conservation Projects/Programs**Short Term Improvements (Under 5 Years)**

- West Side Main Check No. 8 Low-Head Hydroelectric Plant
- Path 42 Transmission project



Mid-Term 5-10 Year Improvements

- Invest in Electric Vehicles
- Geothermal Resource Assessment
- Citizens Energy e-Green Project Feasibility
- Foxglove Low-Head Hydroelectric Plant Feasibility

Long Term 10-15 Year Improvements

- Salton Sea Restoration and Renewable Energy Initiative

4. Mitigation for All Conservation Efforts

The Imperial Irrigation District should continue to pursue various means by which to maximize conservation benefits while maintaining adequate water and energy services to the IID Service Area as a priority. The following mitigation measures are recommended for both Water Conservation (CW) and Energy Conservation (CE):

- CW-1** Continue to implement key elements of the Definite Plan and System Conservation Plan actions planned as part of the Quantification Settlement Agreement/Transfer Agreements.
- CW-2** Explore financing mechanisms to construct the “not built” Quantification Settlement Agreement projects as a near-to-mid-term solution to provide up to 8,000 AFY for future non-agricultural uses.
- CW-3** Review development of an in-valley, voluntary fallowing program that expands on, or modifies the Fallowing Program that ended in 2017.
- CW-4** IID should continue to provide support to municipal purveyors responsible for developing their urban water conservation programs and coordinating regional efforts when resources are provided for this purpose.
- CE-5** Explore seasonally based resources, especially renewable resources as much as possible.
- CE-6** Continue to implement conservation and demand-side energy management activities.
- CE-7** IID should further investigate the option of self-managing a “build and own” structure for a solar plant and other generation facility technologies on IID-owned land as opposed to paying a developer to manage the project development.



- CE-8** Continue to implement IID's hedging program to mitigate risks anticipated from expected natural rise of energy and gas costs as well as emissions and renewable costs.
- CE-9** Develop a program for emissions trading and renewable energy products under the Risk Management Policy to empower IID to further ensure budgetary certainty and stabilize consumer rates.
- CE-10** Continue to enter into power supply agreements from geothermal generation and solar generation to meet Renewable Portfolio Standards and Green House Gas emission goals.

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E. ADMINISTRATION SERVICE AND SUPPORT FACILITIES

As previously noted, the Imperial Irrigation District has two primary departments, the Water Department and the Energy Department. IID operates five additional support service departments: Executive, General Services, Information Technology, Finance and Human Resources. IID administrative facilities include all office buildings that house administrative staff and provide general administrative and support services for the efficient delivery of water services and energy services to its client base. Examples of administrative services include management staff, clerk services, promotions of special events, management and direction of planning and development services, utility billing and collection, procurement and contract administration and other administrative functions of the district described under these five support departments as summarized below along with their corresponding business sections:

Executive Department-The Executive Department supports internal and external public relations and contains nine executive sections, each with numerous administrative responsibilities as noted below:

- **Board of Directors Section** performs major district functions such as defining IID goals and objectives, acting as the custodian of IID property and resources, establishing IID policies, reviewing all IID operations and employing IID executive management.
- **Internal Audit Section** is in charge of the district's audit and at times the investigation functions. The audit schedule is prepared by the Chief Internal Auditor during the fourth quarter for the following year. Audits can also be requested at any time by the Board of Directors.
- **General Manager's Section** operates under the direction of the Board of Directors. This section develops and implements overall goals, objectives, plans, policies and organization of the Imperial Irrigation District.
- **General Counsel's Office Section** serves as the General legal Counsel for the district and directs and controls all legal functions, claims and litigation activities, and activities of retained outside counsel.
- **Governmental Affairs & Communications Section** works under the guidance of the general manager's office to ensure the district's policy priorities and programs are communicated to its customers and key stakeholders and local, state and federal elected officials as well as membership associations.
- **Reliability Compliance Section** is responsible for monitoring North American Electric Reliability Corporation (NERC) and Western Electricity Coordinating Council (WECC) reporting requirements as they relate to the district.



- **Portfolio Project Management Section** is responsible for assisting with the management and oversight of all major capital projects, assisting departments with strategic planning development and initiatives in order to meet schedules, costs, and quality of deliverables. The section assists with major Work Authorizations (MWA's), Customer Service Projects, Open Access Transmission Tariff and system reliability compliance coordination.
- **Enterprise Risk Management Section** is responsible for the administration of a comprehensive risk management program, including risk identification and evaluation and the design and implementation of appropriate risk mitigation strategies. This section has risk oversight for projects, operations, the merchant function, insurance, and new initiatives. It also provides redundancy for the treasury function.
- **Real Estate Section** is responsible for the administration of all district real estate activity. Functions consist of the acquisition, disposition, and maintenance of sustainable activities of district lands and facilities, including Western Farm Lands. Services include right-of-way and easements, building leases and agreements, encroachments and permissions, quitclaims and deeds and Salton Sea issues. This Section is also responsible for ownership records as well as maintaining records of the district boundary and service area.

General Services Department-The General Services Department provides numerous support services, primarily to internal staff, and contains nine sections, each with responsibilities as noted below.

- **GS Administration Section** provides overall support and management of the activities of General Services' Department; Facilities Management, Fleet Services, General Services Asset Management, and Supply Chain Management: Purchasing, Contracts and Materials and Stores. General Services provides management and maintenance of district physical and rolling assets, and is responsible in accordance with policy for the central procurement of goods and services in addition to the storage and distribution of materials which support all IID operations.
- **Fleet Services Section** consists of four support units: Machine/Welding Shop, Heavy Equipment Shop, Auto Shop, and Service Station. They provide the services that support the company's transportation needs for the rolling stock of fleet vehicles, off-road heavy equipment, sump pumps, generators, compressors, portable pumps, utility and equipment trailers and tools.



- **Facilities Management Section** is responsible for the administration, engineering, planning, maintenance, construction and repair of over 700,000 SF of gross building space which includes offices, shops, warehouses, service stations and other use buildings throughout the district. The section is responsible for all levels of logistics including HVAC, plumbing, construction, fire protection system, doors, keys, locks and network cat 5 installations. This Section is also responsible for janitorial and landscape services throughout district facilities.
- **Purchasing Section** procures the district's materials and outside service needs directed by the Purchasing Policy. This Section processes requisitions and reservation needs for Imperial and La Quinta network projects, maintenance orders and overhead expense cost centers. They create, standardize, disseminate and administer formal bids, requests for quotations/proposals, and informal quotes consistent with established solicitation process, purchasing policy and IID procedures and applicable laws.
- **Contract Administration Section** provides services to departmental personnel in drafting, negotiating, and administering resource contract needs, professional service agreements, and construction contracts. They assist departments in assembling and evaluating formal solicitation packages, performing project risk assessment and ensuring all requirements are met in accordance with IID policies and procedures.
- **Asset Management Section** is responsible for managing the General Services Asset Management Program, primarily for Facilities Management and Fleet Services section. This section provides strategic direction, reporting on program initiatives and manages the department's capital projects, facilities and equipment by promoting proactive maintenance and capital renewal.
- **Materials Resources and Dispersal Section** is responsible for the receipt, issuance and storage of all materials purchased by the district. Material Resources staff are responsible for "first responder" hazmat responses, and dispose of all obsolete, scrap and other materials that are deemed to be of no further use to the district.
- **Regulatory and Environmental Compliance Section** provides regulatory compliance development, implementation and monitoring services that meets the expected goals of complying with mandated regulatory agency requirements. This Section provides environmental assessment and permitting for all district projects and reviews external environmental documents for potential impacts to the district and consults with outside agencies on behalf of the district.



- **Hazmat Section** provides regulatory compliance services for all district departments. These services include regulatory assessments, oversight and auditing for all district facilities and projects, consultation with regulatory and resource agencies, hazardous materials and waste identification, including handling, storage and disposal, emergency response and regulatory training.

Information Technology Department-The Information Technology Department contains twelve sections, all in support of IID operations and each with responsibilities as noted below.

- **IT Management Administration Section** is responsible for the management of the department's resources and to provide strategic direction, report on department initiatives and manage the district's Information Technology Systems.
- **Networks and PC Support Section** provides IID technology users support services for desktop PCs, laptops, tablets, IP telephones, multifunction printers, smartphones and projectors along with network connection and protection services. The information specialist provide design, configuration, administration, maintenance and support of Local Area networks (LAN), Wide Area Networks (WAN), Wireless Local Area Networks (WLAN) and other system networks support.
- **GIS Section** is responsible for developing and adhering to consistent business practices and processes throughout the organization to meet customers' needs by providing a robust and high quality geographic information system that empowers users to efficiently access, manage, maintain and share accurate reliable and consistent geographic data.
- **Customer Support Center Section** is responsible for providing a single point of contact for the organizations information technology needs.
- **Customer Applications Section** provides management support, standards, methods, coordination and software engineering development to specifically support all customer Applications operations. This section diagnoses, fixes, maintains, designs, installs, tests, and develops computer applications, documents management and thirds party computer applications, which support over 20,000 different database tables of information.
- **Development & Portals Support Section** provides management support, standards, methods, and coordination of application development to help improve, or automate business processes. This sections works to enhance applications and design application improvements and also diagnoses, fixes, maintains, designs, installs, tests, and develops computer applications.



- **Corporate Infrastructure Engineering Section** is responsible for the engineering design, strategic alignment, lifecycle management, security and administration of all server-based computing and network systems. This Section is also responsible for the management of the data center and for the delivery of technical support to IID technology users and to certain contracted partners utilizing IID's technology infrastructure. They also provide technical, network engineering and systems engineering support to the Energy Systems Operations Center and associated facilities.
- **Work and Asset Management Applications Section** provides management support, standards, methods and coordination to support related applications for work and asset management. This section also diagnoses, fixes, maintains, designs, installs, tests, and develops computer applications.
- **Enterprise Applications Section** manages the definition, design, configuration, development, testing, implementation and on-going support of new, or improved, existing enterprise applications and systems. It provides functional solutions, recommendations, training and change management to support the design and implementation of application and/or process improvements to enhance productivity.
- **Finance & Applications Section** provides management support, business analysis, operational assessments, process documentation, technological and functional solutions recommendations, training and change management to support the design and implementation of applications and/or process improvements to enhance productivity.
- **Telecommunications Section** provides SCADA and data communications for substations, generation facilities and interconnections; provides communication networks for system protection circuits; installs and maintains generation and interconnect meters; upgrades and maintains the two-way radio system, telephone, video surveillance and substation security systems.
- **Records Management Section** is responsible for the administration of company-wide records management activities, mail services and electronic document management services and provides efficient services to internal and external customers.

Finance Department- The Finance Department contains six sections, providing services for IID operations as well as internal and external customers. The responsibilities of each section are noted as follows:



- **Chief Financial Office Administration Section** is responsible for the administration of the Finance Department including controlling, accounting, treasury, financing, budgeting and enterprise risk management.
- **Business Systems & Support Section** provides business analysis, operational assessments, process documentation, technological and functional solutions recommendations, training and change management to support the design and implementation of applications and for process improvements to enhance productivity to the Finance Department.
- **Treasury Section** is responsible for IID's cash management and investment and objectives include investing IID's cash safely and in conformance with IID's investment policy and Government code through monitoring, managing, projecting and reporting the district's operating cash requirements to ensure the district's liquidity needs are met.
- **General Accounting Section** is responsible for IID's general accounting, payroll, accounts payable and objectives include creating, maintaining, balancing and reporting the district's general ledger and financial statements, disbursing accounts payable and payroll funds accurately and in a timely manner.
- **Enterprise Budget, Financial Performance & Rates Section** is responsible for budgeting, financial and economic analysis, controlling and process analysis and rates and contracts functions. All study findings and recommendations are made to the Board of Directors and public.
- **Customer Service Section** is responsible for the meter to cash processes, including bill print, mail, call center, credit and collections. This section also handles court subpoenas, liens, bankruptcies, bad debt, works with agencies for customer funding and monitors/contacts delinquent commercial accounts for payment or disconnect.

Human Resources Department- The Human Resources Department contains nine sections, primarily with internal support services. The Human Resource responsibilities are noted below for each section.

- **HR Administration Section** manages functions, activities and personnel engaged in employment and compensation, training and employee development, employee benefits and workers' compensation, human resource records and employee relations, conducts human resources research studies and directs the maintenance of personnel files.



- **Employee Relations Section** is responsible to provide professional human resources services to both internal and external customers. In addition to employment relations and training they are responsible for compensation management, Affirmative Action and labor compliance with state and federal regulations. The section is responsible for payroll records, statistical reporting, mandated reports and surveys and responding to discrimination complaints and assisting legal with litigation and responding to unemployment insurance claims.
- **Recruitment and Selection Section** is responsible for the administration of all recruitment and selection activities including screening applications, reviewing personnel files, administering tests, interviews, reference checks and detailed background checks to all initial hires.
- **Employee Benefits and Disability Services Section** is responsible for the administration of all district health, retirement and benefit plans along with the Integrated Disability Management Program. The staff works with plan administrators, carriers, consultants, advisory groups, management, the Board of Directors, employees, supervisors, retirees, dependents, legal counsel and others to provide information and services.
- **Personnel Development Section** administers and coordinates all personnel development functions for the district. The section is responsible for tuition reimbursement, software instruction, apprentice programs, academic and career counseling and planning and similar services.
- **Safety Services Section** is responsible for workplace safety, minimizing district liability as it relates to accidents, illnesses and injuries and reducing accidents and injuries. This section assists and trains supervisor in performance of their safety related duties and coordinates Safety committee activities and over 100 mandated programs and over 100 certifications.
- **Risk Management/Security, Claims and Investigations Section** ensures the district meets physical security portions of the applicable policies and regulations, it investigates all incidents involving property damage, theft, vandalism, or any other activity requiring investigations, and oversees and maintains drug and alcohol testing programs. It also emphasizes the Revenue Protection program on meter tampering/energy theft.
- **Occupational Health Nurse Section** provides health services to employees who are injured, or become ill on the job, works to minimize the district's liability as it relates to accidents, illness and injuries and assists in developing and administering wellness programs, including employee physicals.



- **Office of Emergency Planning Section** provides emergency and disaster preparedness services for all district departments. This section is also responsible for the Underwater Recovery Dive Team responsible for maintenance of water conveyance systems/structures, removal/recovery of foreign objects within the system and assistance to support law enforcement agencies and first responders.

1. Performance Standards for Administration Services & Facilities

Administrative Personnel-Most public agencies/jurisdictions adopt administration service standards based on personnel (full-time employee or FTE) per population served. The performance standard for providing administrative personnel is generally established at a range of 0.50 to .75 FTE per 1,000 in population served. IID's performance standard for administrative personnel is hereby established at a minimum of .75 FTE per 1,000 residents served since the district has not previously adopted a standard for administrative staff. Based on the current population of 429,744, a total of 322 FTE are required in order for IID to meet this performance standard, calculated as follows:

$$\begin{array}{rclcl}
 .75 \text{ FTE} & \times & \text{Population Served /1,000} & = & \text{Total FTE Demand} \\
 .75 \text{ FTE} & \times & 429,744/1,000 & = & 322 \text{ FTE}
 \end{array}$$

Administrative Facility Space-Generally, a performance standard for administrative facilities ranges from 500-600 square feet per 1,000 in population served. No official standard has been previously adopted by IID which has a large service area that covers two counties. Management has determined that the current facility space is adequate to serve the existing populations and therefore, the performance standard for administrative facilities for IID is hereby established at 450 square feet of building space per every 1,000 of population served. Based on this standard, the current demand for administrative facilities would be 193,385 SF as calculated below.

$$\begin{array}{rclcl}
 450 \text{ SF} & \times & \text{Population Served/1,000} & = & \text{Total Admin Space Demand} \\
 450 \text{ SF} & \times & 429,744/1,000 & = & 193,385 \text{ SF}
 \end{array}$$

The building area available per full-time employee must also be adequate. The general rule of thumb is to allow anywhere between 125 and 225 square feet of usable office space per person. IID completed an assessment of space requirements in July of 2012¹³ which recommends a range of space between 120 and 360 square feet of usable office space per employee that varies by position and/or title.

¹³ Final Report of Space Requirements HQ Facilities Development Program Management Project by Griffin-Lyon Program and Construction Managers, LLC., July 18, 2012.



The Standard for IID administrative staff is hereby established at 125 SF of usable office space per administrative/support FTE which includes all of staff within the Executive, Human Resources, Information Technology, Finance and General Services Departments. This performance ratio will be applied when examining each of the departments independently, but not to the section levels.

$$125 \text{ SF} \times \text{Admin FTE} = \text{Building Space Demand/Department}$$

2. Administration/Support Facility Planning and Adequacy Analysis

An inventory of the existing IID Administrative and Support Facilities owned, or leased, by the Imperial Irrigation District is presented herein, as well as the future demand for administrative facilities and their projected phasing schedule. The purpose of this analysis is to determine if the existing facilities are adequate in size for the existing and projected future demand. The condition of the existing facilities is not examined in this Service Area Plan as that detail of assessment can be found under the 2004 IID Facilities Master Plan.

a) Inventory of Existing Administrative/Support Facilities

IID Administrative and Support Facilities are located in numerous communities throughout Imperial and Riverside Counties. The administrative facilities in 2018 consisted of a total of 189,912 square feet as noted in **Table A-1** and support a total of 463 full-time equivalent employees as of 2018. There are additional common areas that are shared with the Water and/or Energy Departments and those are excluded from assessment.

Table A-1
Administration and Support Facilities Inventory

Department	Total Space Square Feet	Total Usable Office Space
Executive	13,484	11,167
General Services	19,575	19,098
Information Technology	25,264	24,469
Finance	16,195	15,398
Human Resources	17,164	15,421
Total SF	91,682	85,553
Exclusive Admin Common Areas	98,230	0
Total Administration SF	189,912	85,553

Source: IID General Services staff, Building Inventory 2017 and Dedicated Office Space 2018.



Total Administrative Personnel per 2018 Budget by Department (463 FTE)**Executive Department Personnel 2018 (48 Total Positions):**

- Board of Directors (5 positions)
- Internal Audit Section (4 FTE)
- General Manager's Section (5 FTE)
- General Counsel's Office Section (7 FTE)
- Government Affairs & Communication Section (10 FTE)
- Reliability Compliance Section (4 FTE)
- Project Portfolio Management Section (2 FTE)
- Enterprise Risk Management (1 FTE)
- Real Estate Section (10 FTE)

General Services Department Personnel 2018 (140 Total Positions):

- Administration Section (3 FTE)
- Fleet Services (49 FTE)
- Facilities Management Section (38 FTE)
- Purchasing Section (13 FTE)
- Contract Administration Section (6 FTE)
- Asset Management Section (4 FTE)
- Materials Resources and Disposal Section (18 FTE)
- Regulatory & Environmental Compliance Section (4 FTE)
- Hazmat Section (5 FTE)

Information Technology Department Personnel 2018 (91 Total Positions):

- Management Administration Section (4 FTE)
- Networks & PC Support Section (5 FTE)
- GIS Section (13 FTE)
- Customer Support Center Section (9 FTE)
- Customer Applications Section (4 FTE)
- Development & Portal Support Section (7 FTE)
- Corporate Infrastructure Engineering Section (13 FTE)
- Work and Asset Management Applications Section (6 FTE)
- Enterprise Applications Section (3 FTE)
- Finance & HR Applications Section (4 FTE)
- Telecommunications Section (11 FTE)
- Records Management Section (13 FTE)

Finance Department Personnel 2018 (138 Total Positions):

- Chief Finance Office Administration Section (3 FTE)
- Business System Support Section (3 FTE)
- Treasury Section (1 FTE)
- General Accounting Section (12 FTE)
- Enterprise Budget, Financial Performance & Rates (13 FTE)
- Customer Service Section (106 FTE)

Human Resources Department Personnel 2018 (46 Total Positions):

- Administration Section (3 FTE)
- Employee Relations Section (6 FTE)
- Recruitment and Selection Section (5 FTE)



- Employee Benefits & Disability Section (6 FTE)
- Personnel Development Section (4 FTE)
- Safety Services Section (6 FTE)
- Risk Management/Security, Claims and Investigations Section (10 FTE)
- Occupational Health Nurse (1 FTE)
- Office of Emergency Planning (5 FTE)

Total Admin/Support Vehicles per 2018 Budget (179 Total Vehicles):

- Executive Department - 9 Total Vehicles
- General Services Department - 92 Total Vehicles
- Information Technology Department - 20 Total Vehicles
- Finance Department - 32 Total Vehicles
- Human Resources Department - 26 Total Vehicles

b) Adequacy of Existing Administrative/Support Facilities

Administrative Personnel- The performance standard for providing administrative personnel was established at a minimum of .75 FTE per 1,000 in population served. Evaluation of this standard would then be based on the current level of administrative staff (463 FTE) per population served by the district (429,744), divided by 1,000. The total population within the Imperial Irrigation District Service areas (water and energy service areas) was calculated using Department of Finance data and discounted proportional share of Coachella Valley communities not entirely served by the IID. Per 2018 conditions, IID exceeded the established performance standard for administrative personnel of .75 FTE per 1,000 in population served as noted below:

Total Admin Staff	÷	Population Served/1000	=	Performance Level
463 FTE		429,744/1,000		1.08 FTE

Administrative Facility Space-The performance standard for administrative facility space was established at 450 square feet of building space per every 1,000 of population served. The existing and dedicated administrative space of 189,912 SF coupled with an additional 166,700 square feet of common areas that are shared by administrative staff is adequate. Common areas were not accounted for under this assessment (energy department and water department administration facilities) because they are not exclusive to administration/support departments.

Total Building Area	÷	Population Served/1,000	=	Below Performance Level
189,912		429,744/1,000		442 SF



Office Space per Full-Time Employee- Adequacy of building area is supported by the level of usable office space per full-time employee. The usable office space available per full-time employee was assessed against the 125 SF per FTE standard, district-wide for administrative facilities. It was determined that the office space available for the 463 administrative support employees was adequate in 2018 providing an average of 185 SF per FTE. The findings were determined by taking all Administrative/Support Services Department office space in 2018¹⁴, excluding all common areas, and dividing it by the full tally of administrative/support staff for the respective year:

$$\begin{array}{rcl}
 \text{Total Usable Office Space} & \div & \text{Total Admin Staff} & = & \text{Space Per FTE} \\
 85,553 \text{ SF} & & 463 \text{ FTE} & & 185 \text{ SF/FTE}
 \end{array}$$

The available office space per employee standard was applied to each independent administrative department, and its respective staff level, to identify the adequacy of office space within each given unit. The Finance Department is the only unit demonstrating a deficiency at an average of 112 SF per employee. The 2018 findings are summarized in **Table A-2** and in the narrative that follows.

Table A-2
Office Space Adequacy for Administrative and Support Staff

Department	Total SF of Usable Office Space	Total Department FTE	SF of Space Available Per FTE
Executive	11,167	48	233
General Services	19,098	140	136
Information Technology	24,469	91	268
Finance	15,398	138	112
Human Resources	15,421	46	335
Total SF	85,553	463	

Source: IID General Services staff, Building Inventory 2017 and Dedicated Office Space 2018 and FTE Data from Adopted 2018 Budget.

Executive Department (48 Total Positions):

There are 48 Full Time Equivalent Employees in the Executive Department operating under 13,484 SF of administrative facilities. Of this space, only 11,167 SF is usable

¹⁴ Office Space was provided by General Service Staff after discounting unusable space and storage facilities from total building area. The feasibility of future space conversion is not taken into account at this time.



office space, which is the equivalent of 233 SF of office space per employee. Using the performance formula established of 125 SF of office space per FTE, the Executive Department facilities are adequate containing a modest surplus of administrative office space to accommodate future growth.

Existing Executive Department Office Space – Current Demand = Adequacy

$$11,167 \text{ SF} - 6,000 \text{ SF} = 5,167 \text{ SF Surplus}$$

General Services Department (140 Total Positions):

There are 140 Full Time Equivalent Employees operating in the General Services Department under 19,575 SF of administrative facilities. Of this space, only 19,098 SF is dedicated office space which is the equivalent of 136 SF of building space per employee. Using the performance standard of 125 SF of usable office space per FTE, the existing demand for General Services administrative office space is satisfactorily being met and demonstrated a 2018 surplus of 1,598 square feet. This department also shares over 29,000 SF of common areas exclusive to administrative services.

Existing Office Space – Current Demand = Adequacy

$$19,098 \text{ SF} - 17,500 \text{ SF} = 1,598 \text{ SF Surplus}$$

Information Technology Department (91 Total Positions):

There are 91 Full Time Equivalent Employees operating in the Information Technology Department under 25,264 SF of administrative facilities. Of this space, only 24,469 SF is dedicated office space which is the equivalent of 269 SF of office space per employee. Using the performance standard of 125 SF of office space per FTE, the existing demand for administrative office space in the IT Department is being satisfied and has a surplus that may accommodate future growth.

Existing Office Space – Current Demand = Adequacy

$$24,469 \text{ SF} - 11,375 \text{ SF} = 13,094 \text{ SF Surplus}$$

Finance Department (138 Total Positions):

There are 138 Full Time Equivalent Employees operating in the Finance Department under 16,195 SF of administrative facilities. Of this space, only 15,398 SF is usable office space, which is the equivalent of 112 SF of office space per employee. Applying the performance standard of 125 SF/FTE, results in modest office space deficiencies for the Finance Department as follows.



Existing Office Space – Current Demand = Adequacy

15,398 SF – 17,250 SF = -1,852 SF Deficiency

There are almost 14,000 SF of common areas, exclusive for administrative services, shared with Finance staff and other support services departments. These findings suggest expansion and/or relocation should be planned during the plan period.

Human Resources Department (46 Total Positions):

There are a total of 46 Full Time Equivalent Employees operating in the Human Resources Department under 17,164 SF of administrative facilities. Of this space, only 15,421 SF is usable office space which is the equivalent of 335 SF of building space per employee. Using the performance formula of 125 SF of office space per FTE as calculated below, the existing demand for administrative facilities is 5,750 square feet resulting in a 2018 surplus of office space for the Human Resources Department.

Existing Office Space – Current Demand = Adequacy

15,421 SF – 5,750 SF = 9,671 SF Surplus

c) Future Demand for Administrative Facilities & Planned Facilities

Future Demand-For the purpose of calculating future demand, and as previously noted, historic growth rates are applied to current population estimates to project population demand. Using the existing performance standard formula of 450 SF per 1,000 in population served, IID will need 328,063 square feet of administrative space by the year 2040. Facilities can be expanded and/or planned for as new hires are projected, or as noted under Table A-3 Administrative Facilities Demand.

**Table A-3
Administrative Facilities Demand**

Year	Population Projections All Service Areas	Administrative Space Demand
2020	468,998	211,049 SF
2025	523,890	235,890 SF
2030	584,260	262,917 SF
2035	643,749	289,687 SF
2040	729,028	328,063 SF



The total amount of space available for administrative facilities in 2018 was 189,912 square feet and 374,040 when all common areas available to administrative staff are taken into account (not just those exclusive to administration). As the served population increases, there will be an inherent need for additional administrative facilities. As of the date of this 2019 Service Area Plan, there were no planned capital improvements projects for Administrative Facilities.

Planned Administrative Facilities- All of the district's construction projects and major capital purchases are included in the Capital Improvement Plan which is incorporated into the district's annual budget as a two year plan. An estimated \$2.4 million of capital improvements in the form of building upgrades are projected for 2019.

d) Opportunities for Shared Administrative Facilities & Services

The Imperial Irrigation District building facilities are shared by multiple departments internally and inclusively have an estimated 587,706 square feet of common areas. While only 98,230 are common areas exclusive to administration and support departments, there are over 400,000 square feet of common areas that are shared facilities with other departments besides administration. This space can be evaluated and considered for reconfiguration in the future to accommodate additional need for space or exclusive office use.

IID provides for all of its administrative needs using full-time, part-time and contract workers. Cross-utilization of services within the District Departments and Service Sections is facilitated throughout the organization. Senior staff members in the water department and energy department provide their expertise for administrative functions and services. For example, the Water Department Manager and several other employees of the Water Department will complete tasks that are administrative in nature, and indirectly related to the needs of various water facilities and services. These tasks are funded through the respective section budgets of the various departments from which the tasks are being completed. This method of cross-utilization is an efficient use of existing resources.

IID will often provide administrative services to regional groups and organizations that will provide a beneficial service to the communities it serves. For example, IID provides administrative oversight and technical support to the Regional Water Management Group (RWMG) which has the primary purpose to support implementation of the Imperial Integrated Regional Water Management Plan. The RWMG is comprised of designated representatives from public agencies and organized stakeholder groups (e.g., non-governmental organizations). IID provides the following administrative services and functions when the RWMG is active:



1) Takes Water Forum and RWMG meeting notes for review and approval, 2) Serves as a clearinghouse for information, 3) Develops publicity and public affairs materials and maintains the Imperial IRWMP website, 4) Coordinates production of draft and final work products, and 5) Transmits findings and makes them available to the public, as appropriate.

e) Phasing of Administrative Facilities

IID does not currently have any planned facilities for administrative support services, however there is ample building space within all district facilities to explore the possibilities of reorganization and relocation, if necessary. As the IID service population grows and economic conditions improve, IID will likely increase staff and expansion, or construction, of new administrative service facilities will be needed.

3. Mitigation for Administrative Facilities

Imperial Irrigation District will continue to review the personnel level and facility space available against the demand for facilities based on the established performance standards. Additional facilities will be planned for and provided on an as needed basis. The following are mitigation measures for administrative facilities:

- A-1** IID should consider updating the Headquarters Space Assessment & Strategic Business Plan Summary last modified in May 28, 2013.
- A-2** By the year 2030 (10 year time period), a minimum of 102,218 additional square feet of administrative facilities should be planned for, or reconfigured, in order to meet the projected service demand through 2030.



V. FINANCING PLAN

The most current available Financial Statement for the Imperial Irrigation District was reviewed for 2017 and 2016 calendar years. The Financial Statement shows that the Imperial Irrigation District reported positive balances in net position of which approximately 90 percent were in capital assets. The district's total 2017 net position had a slight (0.2 percent) increase from prior year ending at \$1,625,332,801 and included over \$9 million in capital contributions. The district's total outstanding debt from Revenue Bonds, Pension Obligation Bonds, and Capital Leases, as long-term debt, was \$668,571,657 as of December 31, 2017. This data represents a snapshot of the district's overall financial health. A complete copy of the December 31, 2017 and 2016 Audited Financial Report is included as **Appendix A**.

This Financing Plan section of the Service Area Plan lists and describes existing and potential revenue sources and various financing mechanisms available to the Imperial Irrigation District in efforts to continue to meet the projected service and facility demands identified earlier in this document. This section also describes how each existing facility and service is currently financed and how future financial demands for these facilities and services may be secured.

A. EXISTING REVENUE SOURCES

This section provides a summary of the existing revenue sources available to finance the necessary public facilities and services within the Imperial Irrigation District service area. The following list presents sources of revenue that are currently utilized by the Water Department and the Energy Department in order to accumulate finances necessary to develop and operate the various facilities and services discussed within the Service Area Plan. For context, it shall be noted that the Energy Department has an annual revenue budget of over \$586,490,900, which is more than double of the Water Department's annual revenue budget of \$280,447,600, as per the adopted 2019 Budget. Complete budgetary information for financing mechanisms currently utilized is available on-line for viewing at the Imperial Irrigation District under their most current adopted 2019 Budget Plan.

Water Department Revenue Sources

The Water Department is expected to see a modest increase of 1 percent (1 percent) in revenues due to higher water transfer sales of 35,000 AF in 2019. Revenues for the Water Department continue to come from the following sources:

- 1. Water Sales-** Water sales accounts for an estimated 18 percent of the Water Department Budget as projected for 2019. Direct water sales to service area customers had an average cost of \$46.03 per acre-foot, generating over \$51 million in water sales revenue, \$21.08 per acre-foot for 2018 and projected at \$50 million for 2019, \$20.82 per acre-foot for 2019.



- 2. Water Transfer Revenues-** The primary sources (47 percent) of revenue for the Water Department are the water transfer sales which are anticipated to increase in volume and value during the next eight years and peak at year 2026. These revenues are generated from water transfers to the Sand Diego County Water Authority (SDWA), the Metropolitan Water District (MWD) and the Coachella Valley Water District (CVWD).
- 3. All-American Canal Reimbursements-** The Water Department receives an estimated 4 percent of its annual revenue from All-American Canal Reimbursements. Imperial Irrigation District is projected to receive over \$10 million in reimbursements for the costs of construction and annual charges for operation and maintenance of the canal.
- 4. Water Availability Fees-** The Water Department receives approximately 1 percent of its revenue from Water Availability Fees. The Water Availability fee is a \$4 per acre fee charged to all water customers. The Water Availability Fee is charged annually and is projected to generate just under \$2 million for 2019.
- 5. Rental Income (Trust Lands)-** An estimated .5 percent of all Water Department revenues come from Rental Income. The district purchased 41,761 acres of land in 2004 in order to facilitate the district's ability to perform transfer obligations. In 2015, 185.4 acres were sold and the remaining acreage is leased. The district is anticipated to receive \$1 million from Western Farm Lands Revenue from rent in 2019.
- 6. Capital Contribution Proceeds-**As part of the water transfer agreements, there are a number of capital projects that have been prioritized and paid for by the SDCWA. This amount was over \$44 million in 2018, representing over 16 percent of the Water Department revenue. For 2019, it was \$32 million and just under 12 percent of the Water Department budget. Other capital contributions come from customers projects.
- 7. Lost Water Sales-** Approximately 1.2 percent of the annual revenue is from Lost Water Sales. Reduced water sales (attributed to water transfers) result in IID's operation and maintenance costs being spread over a smaller sales base. Normally, this would result in an increase in water rates. However, rather than allow rates to rise to the detriment of the local agricultural economy, lost water sales revenues attributable to water transfers are allocated to the general Water Department operations from water transfer revenues.
- 8. Quantification Settlement Agreement/JPA Revenues-** IID receives an estimated five percent of Water Department Revenue from the Joint Powers Agreement under the QSA. These revenues are reimbursements for costs incurred for Environmental Mitigation for Salton Sea Restoration beyond IID's stipulated share between the Coachella Valley Water District, IID and San Diego County Water Authority. Any costs beyond the JPA limitations would be satisfied by the State (Department of Fish and Wildlife). The 2019 projected revenue is over \$14 million.



- 9. Water Supply Development Fees-** The Water Department receives less than 1 percent of its revenue from Water Supply Development Fees which are developer driven and thus not a projected revenue source, but a potential revenue source depending on the building market. The Water Supply Development Fee is an annual fee calculated by AF demand, for non-agricultural projects as established under the Interim Water Supply Policy. A project is subject to the Development fee when 1) the water demand for the municipal use project is in excess of the project's estimated population multiplied by the district-wide per capita usage; 2) a project will require water for an industrial use in an unincorporated area of the County of Imperial; or 3) mixed use projects. The calculation is based on a tiered fee schedule as noted below, charged per acre-foot, annually.

Table F-1
2019 Interim Water Supply Policy Development Fee

Annual Demand (Acre-Feet)	Development Fee*
0-500	\$292.62
501-1000	\$412.00
1001-2500	\$517.34
2501-5000	\$639.07

*To be adjusted annually in accordance with the consumer Price Index (CPI)

- 10. Water Reservation Fees-** The Water Reservation Fee is also a developer driven fee that is a non-refundable fee charged by the district when an application for water supply for a non-agricultural project is deemed complete and approved. This fee sets aside the projected water supply up to start-up of construction, for a maximum period of two years (renewable for another two years subject to an additional fee per renewal). The Water Department receives a nominal amount of revenue from Water Reservation Fees and is typically not a projected income. The following table depicts the applicable reservation fee calculated per acre-foot demand annually.

Table F-2
2019 Interim Water Supply Policy Reservation Fee

Annual Demand (Acre-Feet)	Reservation Fee*
0-500	\$73.15
501-1000	\$103.00
1001-2500	\$129.34
2501-5000	\$159.77

*To be adjusted annually in accordance with the Consumer Price Index (CPI)



- 11. Federal and State Grant Programs-** IID is eligible to apply for some grant funding programs to augment and supplement local revenues earmarked for capital improvements or special programs. IID has been historically successful in obtaining some level of grant funding for Water Department projects. Grant revenues are unpredictable and it is estimated that a very small percentage of IID's budget is from grant sources.
- 12. Other Miscellaneous Revenues-** Miscellaneous revenues of less than 1 percent are received by the Water Department from sources such Interest Income, Local Entity Revenue, Grant Mitigation (non JPA), etc.

Energy Department Revenue Sources

As a consumer-owned utility, IID works to efficiently, and effectively, meet its customers' demands at the best possible rates, tying the area's low-cost of living directly with low-cost utilities. The Energy Department utilizes the following sources for revenues:

- 1. Energy Sales**— IID has adopted energy rates for a number of energy service classifications such as general, agricultural, residential, municipal, etc. Energy sales accounts for over 82 percent of the Energy Department Budget.
- 2. General/CSP Capital Contributions-** Customer Service Proposal (CSP) revenues account for an estimated five percent of the Energy Budget. IID has an adopted SCP pricing sheet for construction, material, inspection, metering and installation services requested. CSP contribution were an estimated five percent of the 2019 budget.
- 3. Energy Cost Adjustment Revenues-**The Energy Cost Adjustment (ECA) is applicable to all electric customers served by the district and applied to all kilowatt-hours (kWh) billed under all rate schedules and applicable special contracts. The ECA recovers the costs of, fuel, energy, capacity, transmission, purchased power and transmission costs, and revenues from wholesale sales not recovered in the base energy charge of the district. The district maintains a minimum level of \$15 million in the rate stabilization fund to be utilized as an emergency fund to mitigate, or partially offset, unexpected fuel and purchased power costs.
- 4. Dispatching and Wheeling Charges-** Fees for the third party transportation of energy (wheeling) on the IID transmission system are also collected by the district. IID Energy Department may average up to four percent of its annual revenue in dispatching and wheeling charges.
- 5. Certificates of Participation Proceeds-** A Certificate of Participation (COP) is a financial instrument (a form of financing), used by IID, which allows an individual to buy a share of the lease revenue (unlike a bond) of an agreement entered by IID. COP Proceeds account for an estimated three percent of the projected Energy Department Budget.



6. **Wholesale Power and Gas Sales-** Wholesale rates are established for industrial, commercial and agricultural purpose subject to special conditions such as standby or breakdown service where the entire electric power requirements are not regularly supplied by the district. That Energy Department receives approximately two percent, or \$10 million, from wholesale power and gas sales.
7. **Public Benefit Fund Revenues-** The district charges a surcharge of 2.8 percent to the monthly rate under the applicable energy rate schedule, or special contract, to be used to fund public benefits programs as mandated by Assembly Bill 1890.
8. **Capital Loans (Support Services)-** Over \$17 million was budgeted in 2019 from capital loans representing an estimated 3 percent of total revenues for the Energy Department.
9. **Capital Contribution Proceeds-** Over \$31 million was budgeted for customer funded projects representing 6 percent of total revenues and funding for the Energy Department.
10. **Public Benefit Charge (PBC) Fund-**The PBC charge is an adjustment amount (2.8 percent) applicable to all rate schedules and special contracts to be used to fund public benefits programs as mandated by Assembly Bill 1890.
11. **Interest Income-** IID may earn interest on investments, savings accounts, bonds, etc. Interest income averages an estimated ½ percent of the total annual energy revenues.

B. CURRENT FACILITY FINANCING AND RECOMMENDATIONS

1. Water Facility Financing

a) Current Water Facilities Funding Sources

The Water Department is anticipated to generate over \$280 million in total revenue during the 2019 calendar year from all revenue sources. The primary sources (47 percent) of revenue for the Water Department are the water transfer sales which are anticipated to increase in volume and value during the next eight years and peak at year 2026. Over 47 percent was budgeted in 2019 from water transfer revenue. By far, the largest water transfer revenue comes from water transfers to the Sand Diego County Water Authority which is anticipated to generate over \$105 million in 2019 (an average of \$662.13 per acre-foot). Water transfers to the Metropolitan Water District are expected to generate over \$17 million in revenue in 2019 and over \$7 million in revenue is expected from the Coachella Valley Water District.

Direct water sales to service area customers generate an estimated 18 percent of the Water Department revenue. Water sale revenues are collected for the continued operation and maintenance of the water distribution and drainage system. The last comprehensive update of fees was in 2009. The current water sale costs, as adopted



by the IID Board, are shown in the following table. Please refer to the respective full schedule for detailed conditions under each respective service.

**Table F-3
Adopted 2018 Water Rate Schedule**

Customer Classification	Flat Rate	Water Rates Per AF	Tiered Water Rates Applicable		
			6 AFY/ ACRE	6-8AFY/ ACRE	>8AFY/ ACRE
General Agricultural¹		\$20.00			
Mesa Agricultural²			\$20.00	\$40.00	\$80.00
Pump Service³			\$20.00		
Pipe & Small Parcel Tier 1⁴	\$250.00/YR				
Pipe & Small parcel Tier 2⁴			\$100/YR	\$100/YR	\$100/YR
Wholesale Service Tier 1		\$20.00			
Wholesale Service Tier 2⁵			\$105/YR	\$105/YR	\$105/YR
General Industrial⁶		\$85.00			
Municipal Service		\$20.00			
Stand-by-Service⁷	\$4.00/AC				
Penalty for Gate Adjustment⁸	\$100.00/EA				
Conserved Water⁹		\$542.85/AF			

NOTE: In a year where a supply demand imbalance (SDI) has been declared, this rate schedule shall be adjusted as defined by the "Regulations for Equitable Distribution Plan." All service fees are applicable for water use by lands located within the Imperial Unit, unless expressly noted otherwise.

¹ For properties within Imperial Unit. There is a Stock Water Charge of \$10/day minimum.

² Mesa lands are all lands located above the 1030 foot contour line with Mean Sea Level being referenced at the 1,000 foot elevation. There is a Stock Water Charge of \$10/day minimum.

³ Up to \$120/Year.

⁴ Tier 1 for diameter \leq 2 inch and Tier 2 is for diameters over 2 inch but $<$ 6 inch (2 acre minimum)

⁵ Annual Rate Based on Gross Acreage: Where customer facilities make it impractical for IID to install measuring equipment, annual charge per acre shall apply (2 acre minimum)

⁶ Temporary Water Service has a minimum charge of \$425/Year and excess discharge into IID will also have a \$258/AF charge.

⁷ Applicable to all lands within Imperial Unit that are entitled to water whether water was used or not. (After 5% allowance for any right-of-way, net charge is \$3.80/AC)

⁸ Applicable to anyone who adjusts a delivery gate which results in a change in the amount of water delivered, without prior authorization from IID.

⁹ Applicable to water delivered outside of the district boundary but inside the Imperial County. To be adjusted annually after 1988 in accordance with the Consumer Price Index (CPI)



b) Planned Capital Water Project Costs

IID has several planned water capital projects under the approved 2019 Budget Plan estimated at over \$29 million. **Table F-4** has a summary of the approved budget allocation for 2019 and projected capital amounts through 2023. These figures are higher than historic allocations and anticipated to remain comparable in 2020 and beyond to support the planned capital water projects discussed under Water Services to meet projected demand from service area, but exclude projected demand from water transfers.

Table F-4
Planned Water Capital Project Costs

	Year 2019	Year 2020	Year 2021	Year 2022	Year 2023
Imperial Dam	\$6,075,777	\$17,849,750	\$16,510,350	\$16,900,350	\$2,528,450
Automation	\$275,815	\$200,000	\$200,000	\$200,000	\$200,000
Lateral Canals	\$2,851,786	\$3,026,524	\$3,087,054	\$3,148,796	\$3,211,772
Concrete Lining	\$3,783,949	\$4,175,000	\$4,375,000	\$4,350,000	\$3,525,000
Special Projects	\$16,494,777	\$17,849,750	\$16,510,350	\$16,900,350	\$2,528,450
TOTAL	\$29,482,104	\$43,101,024	\$40,682,754	\$41,499,496	\$11,993,672

Source: 2019 Budget Plan & Water Department Five Year Improvement Plan for years 2020-2023. Operational Reservoirs & Water Transfer Projects are excluded from this table and discussed under Conservation.

Capital projects that are under conservation programs such as Operational Reservoirs are paid strictly from water transfer revenues and presented under the Conservation section of this Finance Chapter. Other capital improvements strictly paid from water transfer revenues include SCADA Upgrades, Operational Discharge Monitoring Sites, Lateral Headings and Interties required to effectively accommodate water transfers.

The Imperial Irrigation District also has an additional, estimated \$9,900,000 budgeted annually from 2019 to 2022 for pipelining and customer projects within the district service area. These projects are also 100 percent paid by private customers or the requesting public agency. These includes projects such as those requested by solar operations, geothermal operations, and similar non-agricultural uses.

c) Cost Avoidance Opportunities for Water Facilities

IID requires all developers, private, or public, that require raw water services to construct facilities necessary to adequately convey and meter the water to their respective project site. The proposed development also incurs costs associated with any corresponding engineering services and studies.



d) Recommended Funding for Water Facilities

The Imperial Irrigation District will continue to utilize the funding sources currently in place in addition to searching for other sources to improve the efficiency of the water distribution system and for planned investment in development of additional operational reservoirs.

The water service charge collected by IID is the primary funding source for operation and maintenance costs. These charges are based on actual water usage. Reduced water sales (attributed to water transfers) can result in IID's operation and maintenance costs being spread over a smaller sales base. Normally, this would result in an increase in water rates. However, IID has a structure in place to recapture lost water sales revenues. These impacts should be reviewed periodically.

There are a number of financing mechanisms already applied by the district in order to assist in the funding for capital facilities. There are, however, a number of State and Federal grant and loan programs available for public utility districts through a number of public and private agencies. Further descriptions of these opportunities are provided at the end of this chapter.

2. Irrigation Drainage Facility Financing

a) Current Drainage Facility Funding

The current revenue sources for drainage facilities also come from Water Department Revenue sources. As previously noted, direct water sales to service area customers generate an estimated 18 percent of the Water Department revenue and applied to the continued operation and maintenance of both the water distribution and drainage system. Approximately \$2 million annually is reserved for the drainage system. In addition to the Water Rates communicated under **Table F-4**, the district has established Drainage Costs as noted in **Table F-5** that follows. Please refer to the respective full schedule for detailed conditions.

Table F-5
Charge for Drainage Service

Customer Classification	Flat Rate	Service Rates Per AF
Drainage Service	NA	\$250.00
Assessment Charge (excess)	NA	\$750.00
Drainage Construction	\$30/AC	

Note: a minimum drainage charge per month is set at \$200 per discharge point.



The limit on drainage is set at five percent of the total volume of water received within a billing period and the maximum allowable flow rate shall be 10 percent of the maximum flow rate for the water received, but shall not exceed 672 gallons per minute (1.5 cfs). Excess water is charged at the \$750 per acre-foot rate. Drainage Construction fees are for drains as part of IID system to provide tile and/or surface drain outlet for each governmental sub-division of approximately 160 acres (for contribution to IID Capital Improvement Account).

b) Planned Capital Project Costs for Drainage Facilities

IID has continuous operation and maintenance costs for the IID drainage system. Planned drainage capital projects under the approved 2019 Budget Plan identify the Moorhead Drain Pipeline and the Trifolium Storm Drain at a cost of \$500,000 and \$300,000 respectfully both for plan year 2019. **Table F-6 Projected Drainage Facilities Costs** has a summary of the approved budget allocations for control structures, inlets and outlets from 2019 through 2023 district-wide.

Table F-6
Projected Drainage Facilities Costs

Year	Northend Division	Southend Division	Total Drainage Facility Costs
2019	\$1,008,534	\$1,008,534	\$2,017,068
2020	\$1,076,294	\$1,076,294	\$2,152,588
2021	\$1,097,820	\$1,097,820	\$2,195,640
2022	\$1,119,776	\$1,119,776	\$2,239,552
2023	\$0	\$1,142,172	\$1,142,172

Source: 2019 Budget Plan & Water Department Five Year Improvement Plan.

c) Cost Avoidance Opportunities for Drainage Facilities

IID is able to avoid costs resulting from new development that will necessitate new drainage facilities by requiring developers to construct adequate facilities and retention basins for their projects. Additionally, the district may be able to access grant funds when the drain improvements are for projects that will reduce TDML's.

d) Recommended Funding for Drainage Facilities

The Imperial Irrigation District will continue to use the existing funding sources for the maintenance and operation of irrigation drainage facilities. However, the established fees have not been updated since 1987. Considering the emerging challenges on water quality and anticipated TMDL targets there may be an opportunity



to revisit this rate schedule after the monitoring and evaluation program is completed and if, and when, the Regional Water Quality Control Board makes findings on TMDL implementation for open drain systems.

3. Energy Facilities & Services Financing

a) Current Energy Facilities Funding

Energy sales accounts for over 82 percent of the Energy Department Budget. IID maintains a rate schedule that covers over twenty customer classifications from General Wholesale Power Service to Residential Service and a diverse set of categories in between. The following provides a limited overview of some of the more common schedule rates:

Table F-7
Limited Schedule of Energy Rates

Customer Classification	Customer Charge	Demand Charge per kW	Energy Charge per kWh	Tiered Charge per kWh			Energy Cost Adjustment
				First 1,000 kWh	1001-6,000 kWh	>7,000 kWh	
D Residential	\$9.60		11.69¢	12.31¢	12.05¢	11.69¢	X
MH Master Meter Mobile Home	\$9.60		10.93¢				X
GS General	\$12.00			12.31¢	12.05¢	11.69¢	X
GL Large General	\$140.00	\$6.75	9.30¢				X
AG Agricultural General	\$140.00	\$4.75	9.75¢				X
A-2 General Wholesale	\$70.00	\$3.00	9.77¢				X*
PA Agricultural Pumping	\$20.00	\$2.75	9.52¢				X
PM Municipal Service	\$12.00		11.41¢				X

Note: The Energy Cost Adjustment is the amount computed in accordance with Schedule ECA and ECA-R. Please see full schedule for details and special conditions under [IID Energy Rates](#)

*A Power Factor Adjustment is also Applicable-A charge of \$0.26 per kilovar of reactive demand as measured by the incoming kilovar demand meter for each kilovar in excess of .60 times the kilowatt demand measured and supplied by the district.

IID also charges energy costs for outdoor lighting and street and highway lighting, categorized by lamp rating (lumens) and wattage. The IID maintains respective fee schedules for Outdoor Area Lighting, Street and Highway Lighting, State Highway Lighting and Street and Highway Lighting. Services are furnished from dusk to dawn where this service can be supplied from existing secondary overhead facilities of the district of suitable voltage.



b) Planned Capital Energy Project Costs

IID has several planned capital projects under the approved 2019 Budget Plan for Energy Capital Projects of \$101,758,400. **Table F-8 Planned Capital Energy Projects** has a summary of the approved budget allocation for 2019. These figures, in total, are comparable to historic allocations and anticipated to remain comparable in 2020 and beyond to support the planned energy projects.

**Table F-8
Planned Capital Energy Project Costs**

	2018 Actual	2019 Budget	2020 Budget
Generation	\$90,782,800	\$8,091,100	\$10,226,000
Transmission	\$17,214,556	\$55,051,800	\$51,600,000
Distribution	\$24,204,463	\$29,919,500	\$25,215,100
General Plant	\$6,523,700	\$8,696,000	\$4,025,000
Total Capital Budget	\$138,725,519	\$101,758,400	\$91,066,100

Source: 2019 Budget Plan

c) Cost Avoidance Opportunities for Energy Facilities

The district imposes an Energy Cost Adjustment (ECA), applicable to all electric customers served by the district and applied to all kilowatt-hours (kWh) billed under all rate schedules and applicable special contracts. The ECA recovers the costs of, fuel, energy, capacity, transmission, purchased power and transmission costs, and revenues from wholesale sales not recovered in the base energy charge of the district. The district maintains a minimum level of \$15 million in the rate stabilization fund to be utilized as an emergency fund to mitigate, or partially offset, unexpected fuel and purchased power costs.

d) Recommended Funding for Energy Facilities

The Imperial Irrigation District will continue to use the existing funding sources for energy facilities and services. It should be noted, however, that coordinated scheduling with a broader region might bring revenue to California by selling more solar to other states that in turn would save money. To the degree that regionalization benefits California, IID could also benefit due to efficiencies and increased renewable energy contributions to serving load. If IID generation is the lowest cost generation to serve its load, then effectively, IID will continue to serve its



load using its existing generation, and any excess generation beyond IID's load will be offered into the market to serve other's load and IID will be paid the market price for the excess generation, thereby, providing an additional revenue stream for IID.

4. Conservation Program Financing

a) Current Conservation Project Funding

Water Conservation Project Funding- Prioritized, capital projects for Water Conservation Facilities are largely paid by the San Diego County Water Authority (SDCWA) as part of the water transfer agreements. The SDCWA Capital Project contribution was over \$44 million in 2018 and represented over 16 percent of the Water Department revenue. For 2019 these figures are estimated at \$32 million and just under 12 percent of the anticipated 2019 Water Department Budget.

Energy Efficiency Project Funding- IID will sometimes incur debt for large capital projects. IID is a member of the Southern California Public power Authority (SCPPA). The SCPPA is a joint action agency comprised of the cities of Los Angeles, Glendale, Burbank, Cerritos, Vernon, Pasadena, Anaheim, Riverside, Azusa, Banning and Colton and IID (the only non-municipal member of SCPPA). SCPPA acts as a funding entity for transmission, generation, fuel and energy efficiency projects. SCPPA will issue debt for the construction of new resources and then secure this debt with take-or-pay contracts with project participants.

When IID is a party in a transaction with SCPPA and member utilities, the debt falls on SCPPA and therefore minimally impacts the IID's credit ratings. This is an unequivocal advantage of being a member of SCPPA. Joint action entities like SCPPA allow small entities the opportunity to participate in larger, cost-effective generation resources. A publicly-owned utility that is too small to buy an entire project can enter into a take-or-pay contract with SCPPA that will aggregate the needs of all its members. SCPPA will then issue debt to construct, or purchase, the generation resource and recover its debt service costs through take-or-pay contracts with the project participants. This means that the participants pay the cost even if no energy is produced, or they choose not to dispatch the generation project.

b) Planned Capital Conservation Project Costs

Water Conservation Projects-IID has several planned projects to help meet the target water conservation goal of 487,200 AFY. The projects are programmed over a 4-year plan period and include the projects noted in **Table F-9**. There is an additional water conservation grant project for [environmental mitigation from](#) the transfers and an additional \$960,300 in capital equipment budgeted for 2019.



**Table F-9
Planned Water Transfer Capital Project Costs**

	Year 2019	Year 2020	Year 2021	Year 2022
Discharge Monitoring	\$762,600	\$450,000	\$250,000	\$250,000
Lateral Headings	\$3,096,320	\$2,860,000	\$635,000	\$2,860,000
Interties	\$4,159,374	\$2,700,000	\$2,700,000	\$2,700,000
SCADA Upgrades	\$293,660	\$120,000	\$120,000	\$120,000
Operational Reservoirs	\$9,071,688	\$30,290,000	\$18,860,000	\$16,650,000
Seepage Recovery	\$14,250,010	\$1,734,000	\$1,734,000	\$1,834,000
TOTAL	\$31,633,652	\$38,154,000	\$24,299,000	\$24,414,000

Source: Adopted 2019 Budget Plan & Water Department Five Year Improvement Plan for years 2020 to 2022.

Energy Efficiency Projects-IID has \$3.5 million budgeted for Steam energy generation facilities in 2019 and \$2.2 million for Hydroelectric Power projects.

c) Cost Avoidance Opportunities for Conservation Projects

Water Conservation Cost Avoidance- The Imperial Irrigation District has water transfer agreements in place that ensure all capital projects that will result in water conservation for the purpose of water transfer benefits are paid by the benefitting partners.

IID has also adopted an Interim Water Supply Policy for Non-Agricultural Projects. The District's Interim Water Supply Policy for new Non-Agricultural Projects provides a mechanism and process to develop a water supply agreement for any appropriately permitted project in the IID water service area, and establishes the framework and set of fees necessary to ensure that the water supplies used to meet any new water demands do not adversely affect existing users by funding water conservation or augmentation projects. Under the policy, 25,000 acre-feet of IID's annual Colorado River water supply has been made available for these new non-agricultural projects. All new industrial-use projects are subject to a development fee, while new municipal and mixed-use projects may be subject to the fee if the projects' water demands exceed certain district-wide average-per-capita use standards. The applicable reservation fee and development fee are discussed under Water Fees No. 9 and No. 10 of this Finance chapter and although nominal revenue is collected at this time, if and when revenues are collected for the full 25,000 AF, potential IID costs associated with projects to avoid overruns may be avoided.



Energy Efficiency Cost Avoidance- In IID's region, there is an ample supply of local renewable resource generation that can be developed, or is developed, at a reasonable cost and, in turn, sold at a reasonable price to IID customers. Further, if IID chooses, there is an ample supply of renewable resources that qualify as Category 1 renewable resources in and surrounding the state of California. IID is currently going a step further by placing a priority on locally generated resources, since they can directly connect to the IID system and, theoretically, generate a cost savings for both the developer and IID.

d) Recommended Funding for Conservation Efforts

Recommended Funding for Water Conservation-IID will continue to use the same resources for Water Conservation Projects, however, IID should explore numerous opportunities through State and Federal funding agencies that have available resources. A number of potential agencies and funding programs are identified at the end of this chapter.

Recommended Funding for Energy Conservation-Given current funding levels of the energy efficiency portfolio, and absent additional funding, the Energy Department should consider reallocation of a larger portion of the overall energy efficiency public program budget toward the Customs Energy Solutions program to capture savings from a customer segment with the largest potential.

5. Administrative Service and Facilities Financing

a) Current Administrative Facilities Funding

Administrative Facilities and Services are funded by both the Water Department and Energy Department revenues. Approximately \$9 million is budgeted annually for administrative capital needs, within an approximate annual budget of \$80 million for all support service costs. Support Service costs are shared between the Energy and Water Departments. Factors considered for level of contribution include: 1) the level of service demanded by the respective department in the preceding year, and 2) projected service demand as anticipated by management. All of the district's support services are initially accounted and budgeted for in their own departments and then linked to functions of either the Water or Energy (or both) Departments. The percentage share by the two respective departments may vary from year to year. See **Appendix B – 2019 Budget Plan** (Summary of Support Services Expenditures Allocation Assumptions on p. H-9 to H-10). Cost allocation from energy department and water department for support services is based on criteria established by policy. Please see **Appendix C-Policy and Procedures 2450** for a detailed description.



b) Planned Administrative Capital Project Costs

There are a number of Capital Improvement Projects budgeted for administrative/support facilities as noted in **Table F-10**. However it should be noted that none of the capital projects are for expansion of facilities.

Table F-10
Planned Administrative Facilities Capital Project Costs

Department/Unit	2019	2020
Information Technology	\$10,472,000	\$6,430,000
Facility Upgrades	\$2,392,000	\$12,205,000
Vehicles for Support Staff	\$27,227,000	\$11,654,000
Environmental & Equipment	\$2,024,000	\$1,635,000

Source: 2019 Budget Plan

c) Cost Avoidance Opportunities for Administrative Facilities

Administrative service costs may be further reduced by outsourcing some administrative services including planning, legal, engineering, and special project managers. Another successful practice is cross administration between departments.

d) Recommended Funding for Administrative Facilities

Existing funding sources will continue to be used to support administrative services and facilities.

C. POTENTIAL ADDITIONAL REVENUE SOURCES FOR CAPITAL NEEDS**1. Private Financial Institutions Under CRA Objectives**

A financing opportunity for IID may be via competitive revenue bonds through private financial institutions as part of their Community Reinvestment Act (CRA) obligations. The Community Reinvestment Act was enacted by the U.S. Congress in 1977 to encourage depository institutions to help meet the credit needs of the communities in which they operate, with special emphasis on low- and moderate-income neighborhoods, consistent with safe and sound banking operations. The Community Reinvestment Act requires federal financial supervisory agencies to use their authority when examining financial institutions subject to supervision, to assess the institution's record of meeting the credit needs of its entire community, including low- and moderate-income neighborhoods.



Local institutions keep a good standing in order to continue to grow, thus investment opportunities into small community capital improvements are actively sought by responsible financial institutions. Ratings can range from Outstanding, High Satisfactory, Satisfactory and Low Satisfactory. The following lending institutions have local CRA obligations most of which have had their ratings downgraded from Outstanding to now Satisfactory, noting a potential opportunity for local investment:

- Bank of America- Satisfactory rating as of 2015
- Community Valley Bank- Satisfactory Rating as of 2013
- Rabobank- Satisfactory Rating as of 2017
- Union Bank of California- Outstanding Rating as of 2015
- Wells Fargo- Satisfactory Rating as of 2013

2. Public Financial Institutions

California Infrastructure and Economic Development Bank (IBank)- The California Infrastructure and Economic Development Bank (IBank) is the State of California's only general purpose financing authority. The Legislature created IBank in 1994 to finance public infrastructure and private development that promote a healthy climate for jobs, contribute to a strong economy, and improve the quality of life in California communities. IBank offers a Bond Financing Program and an Infrastructure Loan Program. The Infrastructure State Revolving Fund (ISRF) Program provides low-cost financing to public agencies for a wide variety of infrastructure projects. ISRF Program funding is available in amounts ranging from \$250,000 to \$10,000,000, with loan terms of up to 30 years. Interest rates are set on a monthly basis. In addition, IBank created the California Lending for Energy and Environmental Needs Center – CLEEN Center – to help meet the State's Greenhouse Gas Reduction Goals.

North American Development Bank (NADBank)- NADBank is a binational financial institution capitalized and governed equally by the United States and Mexico for the purpose of financing environmental projects and has now merged with the Border Environment Cooperation Commission (BECC). The two institutions work together with communities and project sponsors in both countries to develop and finance infrastructure necessary for a clean and healthy environment for border residents. The team can make grants and loans to public and private borrowers for the implementation of environmental infrastructure projects located in the U.S.-Mexico border region. Funding is available for the implementation of projects in all environmental sectors in which the NADBank operates. See BECC grant program details under Federal Grant Agencies.



3. Federal Funding Agencies

Bureau of Reclamation- The Bureau of Reclamation was established in 1902 and has grown to become a contemporary water management agency with a strategic plan and numerous programs and initiatives that will help the Western States, Native American Tribes and others meet new water needs and balance the multitude of competing uses of water in the West. The Bureau of Reclamation has a number of grant programs in place and has awarded numerous water and energy efficiency grants. Two potential sources of funding for the IID are as follows:

- **Drought Response Program-**The Drought Response Program supports a proactive approach to drought by providing assistance to water managers to develop and update comprehensive drought plans, and implement projects that will build long-term resiliency to drought. Drought Plan Development can receive up to \$200,000 per plan and must be completed in two years with a 50 percent cost-share.

Applications are on a competitive basis and due in February. Help communities prepare for and respond to drought. Typically, these types of projects are referred to as "mitigation actions" in a drought contingency plan. Funding is up to \$750,000 on a 50 percent cost-share and must be completed in no more than three years. Reclamation will fund drought resiliency projects must meet one of the following goals

- 1) Increase the reliability of water supply and sustainability
 - 2) Improve water management and increase operational flexibility
 - 3) Implement systems to facilitate voluntary sale, transfer or exchange of water
 - 4) Provide benefits for fish and wildlife and the environment
 - 5) Mitigate poor water quality caused by drought.
- **WaterSMART Program-**Through the WaterSMART Program, states, tribes, and local entities can plan for and implement actions to increase water supply through investments to modernize existing infrastructure and attention to local water conflicts. The projects funded with these grants include installation of flow measurement devices and automation technology, canal lining, or piping to address seepage, municipal meter upgrades, and other projects to conserve water. Funding is up to \$75,000 on a 50 percent cost-share.



U.S. Environmental Protection Agency (EPA)- USEPA's mission is to protect human health and the environment. Nearly half of their budget goes towards grants to state environmental programs, non-profits, educational institutions, and others. The funds are used for a wide variety of projects, from scientific studies that assist in EPA making decisions to community cleanups. Overall, grants assist EPA in achieving their overall mission: protect human health and the environment. EPA's Border Water Infrastructure Program provides grant assistance to communities along the U.S./Mexico border to develop and construct infrastructure to provide safe drinking water and adequate sanitation, and to improve water quality in shared and trans-boundary waters. EPA funds grant programs through the Border Environmental Cooperation Commission created in 1993 under a side agreement to the North American Free Trade Agreement (NAFTA) for the purpose of enhancing the environmental conditions of the US-Mexico border region. BECC and NADBank work closely with other border stakeholders including federal, state, and local agencies, the private-sector and civil society to identify, develop, finance and implement environmental infrastructure projects on both sides of the US-Mexico border. Three Grant Programs available through BECC are the Community Assistance Program (CAP), the Project Development Assistance Program (PDAP) and Border Environmental Infrastructure Fund (BEIF) as follows:

- **BECC Community Assistance Program (CAP):** The Community Assistance Program is administered through BECC and funds smaller shovel-ready projects up to \$500,000. Funded with NADB's retained earnings, this program offers grant financing to support the implementation of projects sponsored by public entities in all environmental sectors. The objective of this program is to support the implementation of critical environmental infrastructure projects for sponsors with limited capacity to incur debt. Projects must be located within 62 miles of the international border. Eligible projects, include, but are not limited to:
 - 1) Water-potable water supply, wastewater treatment/reuse, water conservation, storm drainage & flood control
 - 2) Clean/renewable energy-Solar, wind biogas, biofuels, hydroelectric, geothermal
- **BECC Project Development Assistance Program (PDAP):** Funding is available for project development activities necessary for certification of potential NADBank funded projects including, but not limited to, planning studies, environmental assessment, final design, financial feasibility, community participation, and development of sustainability elements. Final design grant assistance is limited to 50 percent of the final design costs and cannot exceed \$500,000.



- **BECC/NADBank Border Environmental Infrastructure Fund (BEIF):** Grants are intended to supplement funding from other sources in order to complete a project's financial package. Applicants must seek other sources of funding since BEIF is considered to be the funding of last resort. Actual BEIF participation is considered on a project-by-project basis and determined according to funding availability and based on an affordability analysis to be conducted by BECC/NADBank during project development.

4. State Agencies

State Water Resources Control Board- The mission of the State Water Resources Control Board is to preserve, enhance, and restore the quality of California's water resources. The Division of Financial Assistance (DFA) administers the implementation of the State Water Resources Control Board's (State Water Board) financial assistance programs that include loan and grant funding for construction of public sewage and water recycling facilities, remediation for underground storage tank releases, watershed protection projects, nonpoint source pollution control projects, and other similar projects. An overview of Program information is noted below.

- **Nonpoint Source Pollution (NPS) Control Program-** This Program administers grant money it receives from United States Environmental Protection Agency through Section 319(h) of the Federal Clean Water Act and from the state Timber Regulation and Forest Restoration Fund. These grant funds can be used to implement projects, or programs, that will help to reduce NPS pollution. Projects that qualify for funding must be conducted within the state's NPS priority watersheds. Project proposals that address TMDL implementation and those that address problems in impaired waters are favored in the selection process. The maximum grant amount is \$800,000 and require a minimum 25 percent match.
- **Clean Water State Revolving Fund Program (CWSRF) -** The Clean Water State Revolving Fund Program accepts applications on a continuous basis. The Federal Water Pollution Control Act (Clean Water Act or CWA), as amended in 1987, established the Clean Water State Revolving Fund (CWSRF) program. The CWSRF program offers low interest financing agreements for water quality projects. Annually, the program disburses between \$200 and \$300 million to eligible projects. Using a combination of State and EPA funding, the CWSRF funds projects as follows:
 - 1) control nonpoint sources of pollution,
 - 2) recapture stormwater or subsurface drainage water
 - 3) water conservation, efficiency, and reuse



- 4) create green infrastructure projects,
- 5) energy efficiency, and
- 6) fund other water quality projects.

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