CITIZENS ENTERPRISES CORPORATION

WATER SUPPLY ASSESSMENT

CALIFORNIA SB-610

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COUNTY OF IMPERIAL, CALIFORNIA
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TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

ACRONYMS

AC	Alternating Current
AAC	All-American Canal
AF	Acre-Foot or Acre-Feet
AFY	Acre-Feet per Year
AOP	Annual Operations Plan
APN	Assessor's Parcel Number
A-3	Heavy Agriculture
BMPs	Best Management Plans
CAP	Central Arizona Project
CDCR	California Department of Corrections and Rehabilitation
CDPH	California Department of Public Health
CDWR	California Department of Water Resources
CEQA	California Environmental Quality Act
CIS	Citizens Imperial Solar
CRWDA	Colorado River Water Delivery Agreement: Federal QSA
CUP	Conditional Use Permits
CU	Consumptive Use
CVWD	Coachella Valley Water District
CWC	California Water Code
DC	Direct Current
EDP	IID Equitable Distribution Plan
EIS	Environmental Impact Statement
ERP	Emergency Response Plan
ET	Evapotranspiration
GHG	Green House Gases
HMMP	Hazardous Materials Management Plan
ICPDS	Imperial County Planning and Development Services
ICS	Intentionally Created Surplus
IID	Imperial Irrigation District
In	Inches
IOPP	Inadvertent Overrun Payback Policy
ISG	Interim Surplus Guidelines
ISU	Inverter Step-Up
IRWMP	Integrated Regional Water Management Plan
IWSP	Interim Water Supply Policy
KAF	Thousand Acre-Feet
KAFY	Thousand Acre-Feet Per Year
kV	Kilovolt
kW	Kilowatt
LAFCO	Local Agency Formation Commission
LCR	Lower Colorado Region

MAF	Million Acre-Feet
MAFY	Million Acre-Feet per Year
MCI	Municipal, Commercial & Industrial
MGD	Million Gallons per Day
MW	Megawatt
MWAC	Megawatt per Acre
MWD	Metropolitan Water District of Southern California
NAF	Naval Air Facility
NEC	National Electrical Code
O&M	Operation and Maintenance
PCS	Power Conversion Station
POE	Point of Entry
PPA	Power Purchase Agreement
PPR	Present Perfected Right
PV	Photo Voltaic
PVID	Palo Verde Irrigation District
QSA/Transfer Agreements	Quantification Settlement Agreement and Related Agreements
RE	Renewable Energy
RPS	Renewable Portfolio Standards
SB	Senate Bill
Schedule 7	IID Water Rate Schedule 7. For General Industrial Use
SDCWA	San Diego County Water Authority
SDG&E	San Diego Gas & Electric
SNWA	Southern Nevada Water Authority
SPCC	Spill Prevention Control and Countermeasures
SQFT	Square Feet
SWPPP	Stormwater Pollution Prevention Plan
TLCFP	Temporary Land Conversion Fallowing Program
US	United States
USBR	United States Bureau of Reclamation
USD	United States Dollar
USEPA	United States Environmental Protection Agency
WSA	Water Supply Assessment

PURPOSE OF WATER SUPPLY ASSESSMENT

This Water Supply Assessment (WSA) was prepared for the Imperial County Planning and Development Services (ICPDS) and Citizens Enterprise Corporation (the "Applicants") by water supply experts at DuBose Design Group, Inc. (DDG), as the consultant, regarding the proposed Citizens Imperial Solar, LLC Project (the "Project"). This study is a requirement of California law, specifically Senate Bill 610 (referred to as SB 610).[1] SB 610 is an act that amended Section 21151.9 of the Public Resources Code, and Sections 10631, 10656, 10910, 10911, 10912, and 10915 of the California Water Code (CWC).

Senate Bill 221 is an act that amended Section 11010 of the Business and Professions Code, while amending Section 65867.5 and adding Sections 66455.3 and 66473.7 to the Government Code. SB 610, which was approved by the Governor and filed with the Secretary of State on October 9, 2001, and became effective January 1, 2002, requires a lead agency, to determine that a project (as defined in CWC Section 10912) subject to CEQA, to identify any public water system that may supply water for the project and to request the Applicants to prepare a specified water supply assessment. Citizens Enterprise Corporation seeks approval of a Conditional Use Permit (CUP) for the up to 30 megawatt-AC (MW) Citizens Imperial Solar, LLC Project.

This study has been prepared pursuant to the requirements of CWC Section 10910, as amended by SB 610 (Costa, Chapter 643, Stats. 2001). The purpose of SB 610 is to advance water supply planning efforts in the State of California; therefore, SB 610 requires the lead agency (ICPDS) to identify any public water system or water purveyor that may supply water for the Project and to prepare the WSA after a consultation. Once the water supply system is identified and water usage is established for construction and operations for the life of the Project, the lead agency is then able to coordinate with the local water supplier the Imperial Irrigation District (IID) and make informed land use decisions to help provide California's cities, farms and rural communities with adequate water supplies.

Under SB 610, water supply assessments must be furnished to local governments for inclusion in any environmental documentation for certain Projects (as defined in CWC

[1] SB 610 amended Section 21151.9 of the California Public Resources Code, and amended Sections 10631, 10656, 10910, 10911, 10912, and 10915, repealed Section 10913, and added and amended Section 10657 of the Water Code. SB 610 was approved by California Governor Gray Davis and filed with the Secretary of State on October 9, 2001.

Section 10912 [a]) that are subject to the California Environmental Quality Act (CEQA). Due to increased water demands statewide, this water bill seeks to improve the link between information on water availability and certain land use decisions made by cities and counties. This bill takes a significant step toward managing the demand placed on California's water supply. It provides further regulations and incentives to preserve and protect future water needs. Ultimately, this bill will coordinate local water supply and land use decisions to help provide California's cities, farms, rural communities and industrial developments with adequate long-term water the WSA will allow the lead agency to determine whether water supplies will be sufficient to satisfy the demands of the Project, in addition to existing and planned future uses.

Project Determination According to SB 610 - Water Supply Assessment

With the introduction of SB 610, any project under the California Environmental Quality Act (CEQA) shall provide a Water Supply Assessment (WSA) if the Project meets the definition of CWC Section 10912.2. After review of CWC Section 10912(a) and Section 10912 (a)(5)(B), it was determined that a WSA is required because the Project is a renewable energy large-scale utility farm use that will occupy more than 40 acres (Project will occupy 223 acres).

EXECUTIVE SUMMARY

ICPDS, the lead agency has requested a Water Supply Assessment (WSA) as part of the environmental review for the proposed Citizens Imperial Solar, LLC Project. This study is intended for use by ICPDS in its evaluation of water supplies for existing and future land uses.

The WSA evaluation examines the following water elements:

- Water availability during a normal year
- Water availability during a single dry, and multiple dry water years
- Water availability during a 20-year projection to meet existing demands
- Expected 30-year water demand of the Project
- Reasonable foreseeable planned future water demands to be served by the water supplier

The Project location lies within IID's Imperial Unit and as such is eligible to receive water service. IID has adopted an Interim Water Supply Policy for Non-Agricultural Project (IWSP) from which water supplies can be contracted to serve new non-agricultural developments within IID's water service area in the event industrial supplies are not available. For applications processed under the IWSP, applicants shall be required to pay a processing fee and, after IID board approval of the corresponding agreement, will be required to pay a reservation fee(s) and annual water supply development fees.

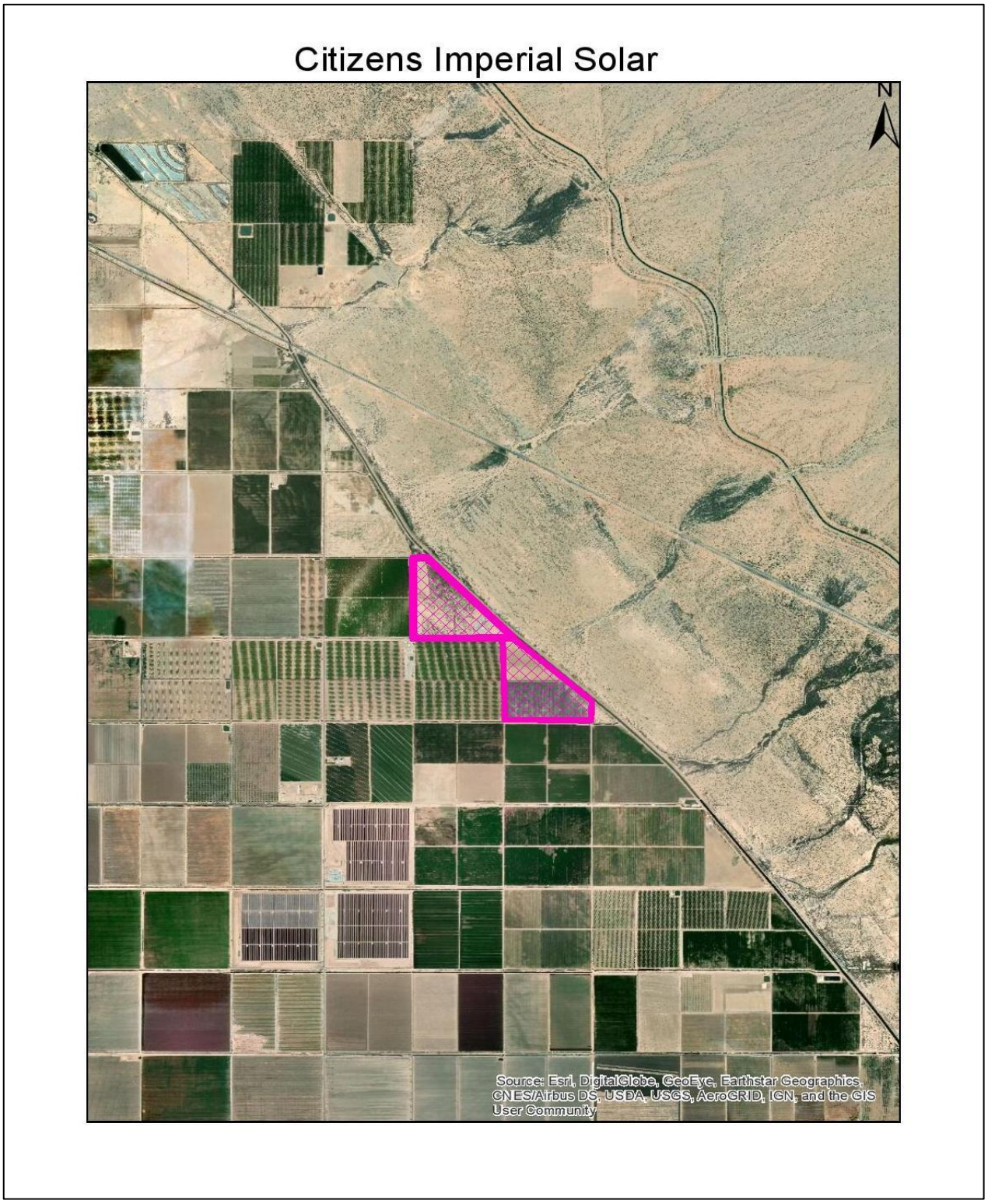
The IWSP sets aside 25,000 acre-feet per year (AFY) of IID's Colorado River water supply to serve new non-agricultural projects. To date, a balance of 23,800 AFY remains available under the IWSP ensuring reasonably sufficient supplies for such projects. The Project's operational water estimated demand of 80 AF during construction, 80 AF during decommissioning and 10 AFY over the 30-year life of the project, for a amortized total of 15.3 AFY over the 30-year life of the Project, represent 0.065 percent (0.065%) of the unallocated supply set aside for new nonagricultural projects. Thus the Project's demand would not affect IID's ability to provide water to other users in IID's water supply area (Imperial Unit).

PROJECT OVERVIEW

Citizens Enterprises Corporation proposes to develop and construct a 30-megawatt (MW) alternating current (AC) solar photovoltaic (PV) energy generating facility (the Project). The Applicants' parent company, Citizens Energy Corporation, is a non-profit energy company whose mission is to provide lower cost energy to low-income residents. The Project will provide the lower-cost energy to low income customers through the eGreen program administered by Imperial Irrigation District (IID).

The Project will utilize tracking technology organized in solar arrays. Each array will include direct current (DC) collector systems and an alternating current (AC) inverter station with a medium-voltage transformer. Project facilities will include an onsite substation, access driveways, and electrical interconnection. All facilities will be on approximately 223 acres of land owned by the IID in unincorporated Imperial County, California, five (5) miles southeast of Niland, a census-designated place, in IID's North End Division, adjacent to the East Highline Canal and Laterals L, M and N (see **Figure 1**).

Figure 1 Project Location



The Project will connect to IID's electric grid at IID Midway Substation, which is located on the Project site. The Applicants have a Power Purchase Agreement (PPA) with IID for the sale of power from the Project. The lifespan of the Project is expected to be 30 years. The generating facility, access roads, and substation interconnection will be used year-round.

The decision to approve Project construction and operation will be partly based on an evaluation of the Project's potential environmental effects through the California Environmental Quality Act (CEQA) review process and the requirements of the ICPDS Department. The Project's expected environmental impacts and mitigation measures to avoid or minimize identified impacts will be detailed in an Environmental Impact Report (EIR), prepared in compliance with CEQA.

Citizens Enterprises Corporation will initiate discussions and consultation processes, as needed with permitting and approval agencies as Project development proceeds. These may include other County departments and other agencies (e.g., California Department of Fish and Wildlife) with potential jurisdiction over the Project in conjunction with the County's review process.

Citizens Enterprises Corporation anticipates the permitting schedule to begin in early 2018 and end with granting of a Conditional Use Permit (CUP) in mid-2018. Project construction will begin after all applicable approvals and permits have been obtained. Construction will take approximately 23 weeks and must be completed before June 30, 2019.

Proponent's Project Objectives

Project objectives are used in the CEQA process to define an appropriate range of Project alternatives. The purpose of the proposed Project is to deliver cost-effective, renewable energy that maximizes the use of existing transmission infrastructure and relies on highly-efficient, proven technology to realize federal and State energy goals. All the energy generated by the 30 MW project will be sold under contract to IID in support of reaching 50 percent (50%) renewable energy delivery by 2030.

The specific project objectives for the Project are:

- To provide solar energy for IID's eGreen low-income community solar Project will lower the electricity bills for the district's 15,000 qualified low-income customers from a local source of clean energy…
- To construct and operate a 30 MW solar PV energy facility using high-efficiency PV technology to provide a renewable and reliable source of electrical power to California utilities;
- To locate the Project on private lands with high-solar insulation and relatively flat terrain and to minimize construction of new transmission infrastructure;
- To minimize environmental impacts and land disturbance by locating the Project on fallowed agricultural lands;
- To assist California in meeting the State's Renewable Portfolio Standards (RPS) and greenhouse gas (GHG) emission reduction requirements; and
- To provide economic benefits to Imperial County through new jobs, spending in local businesses and additional sales tax revenues.

Project Location and Zoning

The Project will be located approximately 30 miles northeast of El Centro, CA and five (5) miles southeast of Niland, California. As shown in **Figure 1**, the Project site encompasses two (2) parcels of land. The aggregate area of the parcels is approximately 223 acres with a facility footprint (area within the fence line) of approximately 159 acres.

Table 1 provides the Assessor Parcel Numbers, size and zoning of the project parcels. All facilities and internal access roads will be located on private lands owned by IID.

Table 1 Parcel Description and Zoning

Parcel Description and Zoning				
Assessor's Parcel Number	Acres	Township / Range	Sections	Zoning
025-260-024	106	T11S R15E	SW ¼ of SE ¼ of Section 20	A-3
025-280-003	117	T11S R15E	NE ¼ of Section 29	A-3

Note: A-3 Zoning- Heavy Agriculture

Facility Description and Design

Citizens Enterprise Corporation will create an utility-scale, solar power plant based on the following components:

- **Solar PV panels:** The Project will include approximately 126 acres of tracking solar photovoltaic panels. The panels will be no more than 15 feet high at maximum rotation angle. Fixed-tilt racking could be utilized in areas not suited for tracking equipment; maximum height will still not exceed 15 feet.
- **Tracker Systems:** The Project will utilize single-axis tracking systems in rows running north-south, typical for projects in this region. Each row is mechanically independent allowing for access down each row.
- **Solar Arrays:** The Project will consist of eight (8) arrays, or grouping of trackers that are electrically optimized and located around a central inverter station.
- **Inverter Station:** Central inverters will be enclosed within outdoor rated electrical equipment enclosures. The Project will have eight (8) inverter stations that will be approximately 10 feet tall and 10 feet by 35 feet wide per station. Central inverter stations will generate 3.75 MW/AC on average. Each station includes an inverter step-up (ISU) transformer for connection to a 34.5 kV collection system. The inverters convert DC electricity to AC electricity, which then flows to the transformer where it is stepped up to 34.5 kV.
- **Collection System:** The Project will include 34.5 kV underground cables and overhead, pole mounted conductors to connect each of the eight (8) inverter stations to the Project substation. Overhead sections are typically on wood-poles with heights up to 40 feet and are used most commonly for crossing over roads, canals, and gas lines.
- **Project Substation:** A substation developed and located in close coordination with IID, will be constructed to transform the 34.5 kV power generation to IID transmission system voltage of 230 kV. The substation will include a main power transformer, facility protection equipment, a 45-kW emergency generator for use if the regional transmission system fails and a control enclosure. Substation structure maximum heights will be equal to or less than existing IID facility structures. All interconnection equipment will be installed aboveground and within the footprint of the substation, which is anticipated to be approximately 130 feet by 180 feet and poles up to 50 feet in height. The substation will be surrounded by a barbed wire chain-link fence to comply with electrical codes. The substation must have access to communication systems in the area to comply with utility monitoring and remote-control requirements. Compliance may be accomplished by underground lines, aboveground lines, or wireless solutions such as microwave or satellite.
- **Project Transmission:** The Project may require 2-3 transmission structures to connect the Project substation to IID's existing Midway Substation. Such structures will be designed in cooperation with and per IID's requirements.

Final structure heights will be determined by IID, but typically will not exceed 120 feet.

- **Access:** The nearest paved road, Wiest Road, is approximately 0.5 miles from the western edge of the proposed Project site. The primary access (all public) or southern access is from Wiest Road, turning east onto Simpson Road. The southern Project parcel will be accessed directly from Simpson Road. Access to the northern parcel will require continuing along Simpson Road, turning north on Highline Canal Road and entering the parcel from the eastern edge. Secondary means of accessing the northern parcel could be achieved with surrounding property owner's permission, by utilizing private roads running east from Wiest Road, along existing canals. For all access to the site, active dust control mitigation measures will be utilized for all un-paved portions during construction of the facility.

Erosion Control and Stormwater Drainage

A Stormwater Pollution Prevention Plan (SWPPP) will be prepared by a qualified engineer or erosion control specialist, and will be implemented before construction starts. The SWPPP will be designed to reduce potential impacts related to erosion and surface water quality during construction activities and throughout the life of the Project. It will include Project information and best management practices (BMP). The BMPs will include erosion and sediment control measures, as needed, to prevent Project related erosion and minimize runoff.

Fire Protection

Aboveground water storage capacity of 10,000-gallons will be installed on site as required by the Imperial County Fire Department. Tank(s) will be sized to meet County requirements for fire suppression water during operations.

Project facilities will be designed, constructed, and operated in accordance with applicable fire protection and other environmental, health, and safety requirements. The following steps will be taken to identify and control fires and similar emergencies:

- Electrical equipment that is part of the Project will only be energized after the necessary inspection and approval, so there is minimal risk of any electrical fire during construction.
- Project staff will monitor fire risks during construction and operation to ensure that prompt measures are taken to mitigate identified risks.

- Transformers located on-site will be equipped with coolant that is non-flammable, biodegradable, and contains no polychlorinated biphenyls or other toxic compounds.

Site Security and Fencing

The boundary of the Project site will be secured by a 6-foot tall chain-link perimeter fence topped by 1-foot high three-strands of barbed wire. Points of ingress/egress will be accessed via locked gates.

Landscaping

Citizens Enterprise Corporation will address landscaping in the final Project design. Given the size of the Project and its location near agricultural properties, the Applicants will work with the County to identify appropriate landscaping, if any, for this Project that meets the intent of County landscaping ordinance requirements.

Project Permit Requirements and Other Approvals

The entire Project site is within the County's Renewable Energy Overlay Zone. This zone allows for renewable energy projects to be developed with an approved CUP. In 2015, the County prepared a Renewable Energy and Transmission Element Update to provide guidance and approaches for the future sitting of renewable energy projects in the County, which addresses the Renewable Energy (RE) Overlay Zone (the zone is adopted in the County's Renewable Energy Resources ordinance). As part of its adoption process, the County prepared a comprehensive Programmatic EIR to evaluate the impacts of implementing the Renewable Energy and Transmission Element Update. As noted in the Programmatic EIR prepared for the Renewable Energy and Transmission Element Update, "The RE Overlay Zone is concentrated in areas that were determined to be the most suitable for the development of renewable energy facilities while minimizing the impact to other established uses."

The Applicants have obtained a Power Purchase Agreement (PPA) with IID for the sale of power from the Project. However, implementation will require approval of a CUP by the County to allow for construction and operation of the Project. Pursuant to Imperial County Land Use Ordinance Title 9, Division 5, Chapter 9, "Solar Energy Plants" is a use that is permitted in the A-3 Zone, subject to approval of a CUP. As noted in **Table 1**, the Project will be located on privately-owned legal parcels zoned A-3 (Heavy Agriculture).

To acquire water delivery service, the Applicants will need to complete an IID-410 Certificate of Ownership and Authorization (Water Card). Water cards are used for Agriculture, Municipal, Industrial and Service Pipe accounts. If water is to be provided under IWSP rather than Schedule 7 General Industrial Use, each of the Applicants will seek to enter into an IWSP Water Supply Agreement.

Additional approvals may include grading and clearing permits, building permits, and encroachment permits. **Table 2** provides permits and approvals required for the Project.

Table 2 Permits and Approvals

Project Component	Permit or Approval	Agency
County of Imperial		
Solar facility and generation tie line	CUP	County of Imperial, Planning and Development Services
Backup emergency generator	Ministerial Permits (e.g. building/grading, encroachment)	County of Imperial, Department of Public Works
	Fugitive Dust Control Plan Authority to Construct	Imperial County Air Pollution Control District
Water Delivery Service	Water Card / IWSP Water Supply Agreement	Imperial Irrigation District

Construction Water Requirements

Construction will begin once all applicable approvals and permits have been obtained. It will take approximately 23 weeks to complete construction of the 30 MW solar facility. During Project construction, the workforce is expected to be approximately 80 employees, with a peak workforce of approximately 200 employees. Portable restrooms will be brought to site for construction crews. The facilities will be serviced by licensed providers. Applicants will provide potable water for the construction workforce.

Water will be needed during construction for dust control and soil compaction, with small amounts used for sanitary and other purposes. All non-potable water for construction will be obtained from IID. Total water demand during construction is estimated to be 80 AF.

Operations and Maintenance Water Requirements

Panel washing and operational water required for O&M of the Project will be provided by IID. As noted earlier, water storage will be installed as required by the Imperial County Fire Department. Water will be used for periodic cleaning of the solar PV

panels. It is anticipated that the solar PV panels will be washed up to four times per year to ensure optimum solar absorption by removing dust particles and other buildup. Total water demand during operation, including panel washing and other domestic water needs, is estimated to be approximately 10 AFY. One or two small above ground portable sanitary waste facilities may be installed to retain wastewater for employee use. If installed, these facilities will remain onsite for the duration of the project. These facilities will be installed in accordance with state requirements and emptied as needed by a contracted wastewater service vehicle. No wastewater will be generated during panel washing as water will be absorbed into the surrounding soil or will evaporate.

Facility Decommissioning

The Project's expected lifetime is 30 years. The generating facility and access roads will be used year round. If at the end of the PPA term, no contract extension is available for a power purchaser, no other buyer of the energy emerges, or there is no further funding of the project, the Project will be decommissioned and dismantled.

Consistent with County of Imperial and CEQA requirements, a Reclamation Plan will be developed that both protects public health and safety and is environmentally acceptable. The Applicants will employ a collection and recycling program to dispose of site materials. After closure, measures will be taken to stabilize disturbed areas once equipment and structures are decommissioned and removed from the Project site. These measures will be outlined in the Reclamation Plan.

The site could be converted to other uses in accordance with applicable land use regulations in effect at the time of closure. If developed for agricultural use, historic water demand would resume at that time.

DESCRIPTION OF IID SERVICE AREA

The Project is located in Imperial County in the southeastern corner of California. The County is comprised of approximately 4,597 square miles or 2,942,080 acres[2], bordered by San Diego County to the west, Riverside County to the north, the Colorado River/Arizona boundary to the east, and 84 miles of international border with the Republic of Mexico (Mexico) to the south. Approximately fifty percent (50%) of

[2] Imperial County General Plan, Land Use Element 2008 Update.

Imperial County is undeveloped land under federal ownership and jurisdiction. The Salton Sea accounts for approximately eleven percent (11%) of Imperial County's surface area. In 2017, fifteen percent (15%) of the area was in irrigated agriculture (446,796 acres), including 14,676 acres of the Yuma project, some 35 sections or 5,600 acres served by Palo Verde Irrigation District (PVID), and 409,194 acres served by IID.[3]

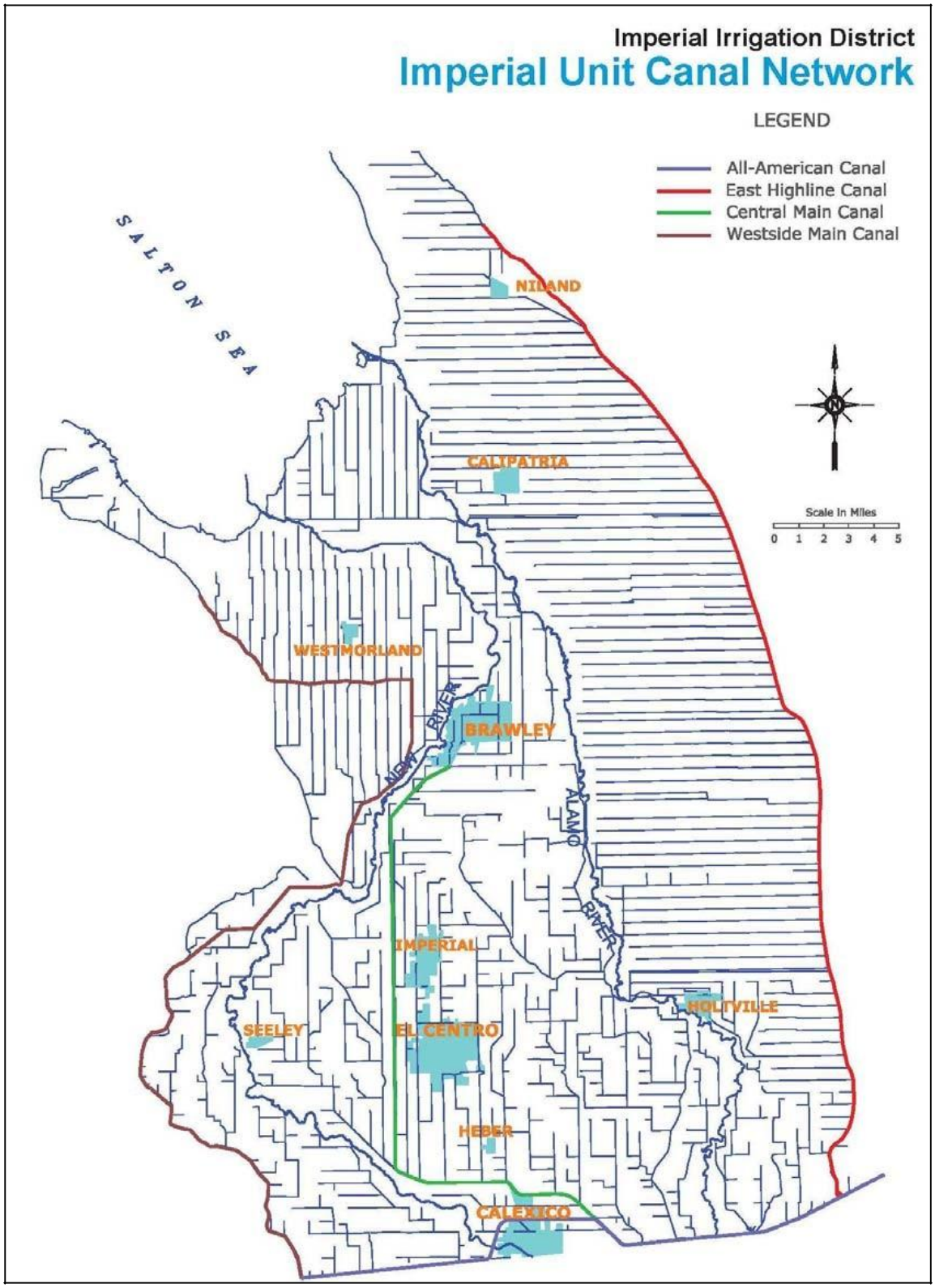
The area served by IID is located in Imperial Valley, which is generally contiguous with IID's Imperial Unit, lying south of the Salton Sea, north of the US/Mexico international border and generally within the 658,942 acre area between IID's Westside Main and East Highline canals.[4] In 2016, IID delivered untreated water to 432,797 net irrigated acres, predominantly in the Imperial Valley along with small areas of East and West Mesa land.

The developed area consists of seven (7) incorporated cities (Brawley, Calexico, Calipatria, El Centro, Holtville, Imperial and Westmorland), three (3) unincorporated communities (Heber, Niland, Seeley), and three (3) institutions (Naval Air Facility [NAF] El Centro, Calipatria California Department of Corrections and Rehabilitation [CDCR], and Centinela CDCR) and supporting facilities.

Figure 2 provides a map of the IID Imperial Unit boundary, as well as cities, communities and IID main canals and laterals.

[3] USBR website: Yuma Project. 7 June 2017, PVID website: About Us, Acreage Map. 7 June 2017.
[4] IID Annual Inventory of Areas Receiving Water, 2016, , 2014

Figure 2 IID Imperial Unit Boundary and Canal Network



Imperial Valley is located in the Northern Sonoran Desert, which has a subtropical desert climate characterized by hot, dry summers and mild winters. Clear and sunny conditions typically prevail, and frost is rare. The region receives 85 to 90 percent of possible sunshine each year, the highest in the United States. Winter temperatures are mild rarely dropping below 32°F, but summer temperatures are very hot, with more than 100 days over 100°F each year. The remainder of the year has a relatively mild climate with temperatures averaging in the mid-70s.

The 100-year average climate characteristics are provided in **Table 3.** Rainfall contributes around 50,000 AF of effective agricultural water per inch of rain. Most rainfall occurs from November through March; however, summer storms can be significant in some years. Annual areawide rainfall is shown **Table 4**. The thirty-year, 1990-2014, average annual air temperature was 72.9°F, and average annual rainfall was 2.67 inches, see **Table 5** and **Table 6**. This record shows that while average annual rainfall has fluctuated, monthly average temperatures are remarkably consistent.

Table 3 Climate Characteristics, Imperial, CA 100-Year Record, 1915-2014

Climate Characteristic	Annual Value
Average Precipitation (100-year record, 1915-2014)	3.00 inches (In)
Minimum Temperature, Jan 1937	16 ^{o}F
Maximum Temperature, July 1995	121 ^{o}F
Average Minimum Temperature, 1915-2014	47.8 ^{o}F
Average Maximum Temperature, 1915-2014	98.2 ^{o}F
Average Temperature, 1915-2014	72.8 ^{o}F

Table 4 IID Areawide Annual Precipitation (In), 1990-2014

1990	1991	1992	1993	1994	1995	1996
1.646	3.347	4.939	2.784	1.775	1.251	0.685
1997	**1998**	**1999**	**2000**	**2001**	**2002**	**2003**
1.328	2.604	1.399	0.612	0.516	0.266	2.402
2004	**2005**	**2006**	**2007**	**2008**	**2009**	**2010**
4.116	4.140	0.410	1.331	1.301	0.619	3.907
2011	**2012**	**2013**	**2014**			
2.261	2.752	2.772	1.103			

Computation based on polygon average of CIMIS and IID data as stations came online in the WIS[5]

[5] From 1/1/1990-3/23/2004, 3 CIMIS stations: Seeley, Calipatria/Mulberry, Meloland; 3/24/2004-7/5/2009, 4 CIMIS stations (added Westmorland N.); 7/6/2009-12/1/2009, 3 CIMIS stations: Westmorland N. offline; 12/2/2009-2/31/2009, 4 CIMIS stations, Westmorland N. back online; 1/1/2010-9/20/2010, 4 CIMIS & 4 IID stations; from 9/21/2010-present 4 CIMIS & 3 IID stations: IID Calexico was decommissioned on 09/20/2010.

Table 5 Monthly Mean Temperature (^{o}F) Imperial, CA, 10-Year, 30-Year & 100-Year, 2005-2014, 1995-2014, 1915-2014

	Jan			Feb			Mar			Apr		
	Max	Min	Avg	Max	Min	Avg	Max	Min	Avg	Max	Min	Avg
10-year	81	31	56	84	36	59	94	40	66	99	45	71
30-year	80	33	56	84	36	60	92	41	65	100	47	71
100-year	80	31	55	84	35	59	91	40	64	98	45	71
	May			Jun			Jul			Aug		
	Max	Min	Avg	Max	Min	Avg	Max	Min	Avg	Max	Min	Avg
10-year	107	54	79	113	60	86	115	68	92	114	67	91
30-year	105	54	79	112	60	86	114	68	92	113	69	92
100-year	105	52	78	112	59	86	114	68	92	113	67	91
	Sep			Oct			Nov			Dec		
	Max	Min	Avg	Max	Min	Avg	Max	Min	Avg	Max	Min	Avg
10-year	107	54	79	84	36	59	94	40	66	99	45	71
30-year	105	54	79	84	36	60	92	41	65	100	47	71
100-year	105	52	78	84	35	59	91	40	64	98	45	71

Source: IID Imperial Headquarters Station Record (Data provided by IID staff).

Table 6 Monthly Mean Rainfall (In) Imperial, CA, 10-Year, 30-Year & 100-Year, 2005-2014, 1995-2014, 1915-2014

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
10-year	0.47	0.36	0.15	0.03	0.00	0.00	0.21	0.38	0.17	0.21	0.24	0.34	2.54
30-year	0.44	0.44	0.26	0.06	0.04	0.00	0.13	0.23	0.26	0.30	0.23	0.34	2.67
100-year	0.42	0.38	0.26	0.11	0.02	0.00	0.12	0.35	0.37	0.26	0.21	0.50	3.00

Source: IID WIS: CIMIS stations polygon calculation (Data provided by IID staff).

Imperial Valley depends on the Colorado River for its water, which IID transports, untreated, to delivery gates for agricultural, municipal, industrial (including geothermal and solar energy), environmental (managed marsh), recreational (lakes), and other non-agricultural uses. IID supplies the cities, communities, institutions and Golden State Water (which includes all or portions Calipatria, Niland, and some adjacent Imperial County territory) with untreated water that they treat to meet state and federal drinking water guidelines before distribution to their customers. Industries outside the municipal areas treat the water to required standards of their industry. The IID Water Department tracks nearly 4,000 raw water service accounts required by the California Department of Public Health (CDPH) to have alternate state approved drinking water service. IID maintains a small-acreage pipe and drinking water database and provides an annual compliance update to CDPH.

IMPERIAL COUNTY PAST AND FUTURE LAND AND WATER USES

Agricultural development in the Imperial Valley began at the turn of the twentieth century. In 2017, gross agricultural production for Imperial County was valued at $2,381.4 million USD, of which approximately $ 2,286.1 million USD was produced in

the IID water service area.[6] While 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.

Imperial Valley's economy is gradually diversifying. Agriculture will likely continue to be the primary industry within the valley; however, two principal factors anticipated to reduce crop acreage are renewable energy (geothermal and solar) and urban development. Over the next 35 years, urbanization is expected to replace some agricultural land uses due to an increase in residential, commercial, municipal and industrial uses. The transition from agricultural land use typically results in a minor net decrease in water demand for municipal and commercial development, a considerable net decrease in water demand for 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.[7] Alternative energy facilities, like the one proposed in the Project, 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 the following policies and programs to address how to accommodate water demands under the terms of the QSA/ Transfers Agreements and minimize potential negative impacts on agricultural water uses:

Imperial Integrated Regional Water Management Plan: adopted by the 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 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.

[6] 2016 Imperial County Crop and Livestock Report.
[7] Imperial County General Plan, Geothermal/Alternative and Transmission Element, revised 2006 and 2015.

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

Equitable Distribution Plan: adopted by the 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 EDP on February 6, 2018.

Imperial Integrated Regional Water Management Plan (October 2012)

The Imperial IRWMP serves as the governing document for regional water planning to meet present and future water resource needs and demands by addressing such issues as additional water supply options, demand management and determination and prioritization of uses and classes of service provided. In November 2012, the Imperial County Board of Supervisors approved the Imperial IRWMP, and the City of Imperial City Council and the IID Board of Directors approved it in December 2012. Approval by these three (3) stakeholders meets the basic requirement of California Department of Water Resources (CDWR) for an IRWMP. Through the IRWMP process, IID presented to the region stakeholders options in the event long-term water supply augmentation is needed, such as water storage and banking, recycling of municipal wastewater, and desalination of brackish water[8]. As discussed herein, long term water supply augmentation is not anticipated to be necessary to meet Project demands.

Chapter 5 of the 2012 Imperial IRWMP addresses water supplies, demand, baseline and forecasted through 2050, and IID water budget. Chapter 12 addresses projects, programs and policies, and funding alternatives. Chapter 12 of the IRWMP lists, and Appendix N details, a set of capital projects that IID could pursue, including the amount of water that might result (AFY) and cost ($/AF) if necessary. These highlight potential capital improvement projects that could be implemented in the future.

Imperial Valley historic 2015 and forecasted for 2015 to 2055 non-agricultural water delivery demand is provided in **Table 7** in five-year increments. Total water demand for non-agricultural uses is projected to be 199.3 KAF in the year 2055. This is a forecasted increase in the use of non-agricultural water from 107.2 KAF for the period of 2015 to

[8] October 2012 Imperial Integrated Regional Water Management Plan, Chapter 12.

2055.[9] These values were modified from Chapter 5 of the Imperial IRWMP to reflect updated conditions from the IID Provisional Water Balance for calendar year 2015. Due to the recession in 2009 and other factors, non-agricultural growth projections have lessened since the 2012 Imperial IRWMP. Projections in **Table 7** have been adjusted (reduced by 3%) to reflect IID 2015 delivery data.

Table 7 Historic and Forecasted Non-Agricultural Water Delivery Demand within IID Water Service Area, 2015-2055 (KAFY)

	2015	2020	2025	2030	2035	2040	2045	2050	2055
Without Conservation									
Municipal	30.0	34.1	37.1	40.1	41.9	46.9	52.4	58.7	62.8
Industrial	26.4	33.1	39.8	46.6	53.3	60.1	66.8	73.5	80.3
Other	5.5	5.5	5.5	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	19.1	19.1	19.1
Envr Resources	8.1	12.2	12.2	12.2	12.2	12.2	12.2	12.2	12.2
Recreational	7.4	7.4	7.4	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	12.0	12.0	12.0
Total Non-Ag Delivery Demand	107.2	123.4	133.1	142.9	151.4	163.2	175.4	188.4	199.3

Notes: 2015 non-agricultural water demands are from IID 2015 Provisional Water Balance rerun 03/21/2017
2020-2055 demands are modified from 2012 Imperial IRWMP Chapter 5 based on IID 2015 Provisional Water Balance analysis with assistance from IID staff: projections have been reduced by 3% based on IID 2015 delivery data.
Industrial Demand includes geothermal, but not solar, energy production.

Agricultural evapotranspiration (ET) demand of approximately 1,475.7 KAF in 2015, is expected to increase in 2018 to around 1,566.5 KAF with termination of fallowing programs implemented to provide as much as 150 KAFY 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. Market forces and other factors may impact forecasted future water demand.

Table 8 provides the 2015 historic and 2020-2055 forecasted agricultural consumptive use and delivery demand within the IID water service area. 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 2055. Forecasted total agricultural delivery demand is around 100 KAFY higher than the CU demand, ranging from 2,158.7 KAF in 2015 to 2,210.5 KAF in 2055.

[9] Wistaria Solar Ranch, Final Environmental Impact Report, December 2014

Table 8 Historic and Forecasted Agricultural Water Consumptive Use and Delivery Demand within IID Water Service Area, 2015-2055 (KAFY)

	2015	2020	2025	2030	2035	2040	2045	2050	2055
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	1,566.5	1,566.5	1,566.5
Ag Tailwater	283.6	322.9	272.9	222.9	222.9	222.9	222.9	222.9	222.9
Ag Tilewater	398.4	420.1	420.1	420.1	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	2,209.5	2,209.5	2,209.5
Total Ag Delivery Demand	2,158.7	23,010.6	2,260.5	2,010.5	2,210.5	2,210.5	2,210.5	2,210.5	2,210.5

Notes: 2015 record from IID 2015 Provisional Water Balance rerun 03/21/2017; 2020-2055 forecasts from spreadsheet used to develop Figure 19, et seq. in Imperial IRWMP Chapter 5 (Data provided by IID staff).

IID INTERIM WATER SUPPLY POLICY FOR NON-AGRICULTURAL PROJECTS (SEPTEMBER 2009)

The IID IWSP provides a mechanism to address water supply requests for projects being developed within the IID service area. The IWSP designates up to 25,000 AFY of IID's annual Colorado River water supply for new non-agricultural projects, provides a mechanism and process to develop a water supply agreement for any appropriately permitted project, and establishes a framework and set of fees to ensure the supplies used to meet new demands do not adversely affect existing users by funding water conservation or augmentation projects as needed.[10]

Depending on the nature, complexity and water demands of the proposed projects, new projects may be charged a one-time Reservation Fee and an annual Water Supply Development Fee for the contracted water volume used solely to assist in funding new water supply projects. All new industrial use projects are subject to the fee, while new municipal and mixed-use projects shall be subject to the fee if the project water demands exceed certain district-wide average per capita use standards. The applicability of the fee to mixed-use projects will be determined by IID on a case-by-case basis, depending on the proportion of types of land uses and water demand proposed for a project. The 2018 fee schedule is shown in **Table 9**.

[10] For additional information see, IID website: Municipal, Industrial and Commercial Customers.

Table 9 Interim Water Supply Policy 2018 Annual Non-Agricultural Water Supply Development Fee Schedule

Annual Demand (AF)	Reservation Fee ($/AF)*	Development Fee ($/AF)*
0-500	$71.41	$285.64
501-1000	$100.54	$402.18
1001-2500	$126.25	$505.01
2501-5000	$155.96	$623.83

Note: Adjusted annually in accordance with the Consumer Price Index (CPI).

IID customers with new projects receiving water under the IWSP will be charged the appropriate water rate based on measured deliveries, see IID Water Rate Schedules. As of October 2016, IID has issued one Water Supply Agreement for 1,200 AFY, leaving a balance of 23,800 AFY of supply available for contracting under the IWSP.

IID TEMPORARY LAND CONVERSION FALLOWING POLICY[11] (MAY 2012)

Imperial County planning officials determined that renewable energy facilities were consistent with the county's agricultural zoning designation and began issuing CUPs for these projects with ten- to twenty-year terms. These longer-term, but temporary, land use designations were not conducive to a coordinated land use/water supply policy as envisioned in the Imperial IRWMP, because temporary water supply assignments during a conditional use permit (CUP) term were not sufficient to meet the water supply verification requirements for new project approvals. Agricultural land owners also sought long-term assurances from IID that, at project termination, irrigation service would be available for them to resume their farming operations.

Based on these conditions, IID determined it had to develop a water supply policy that conformed to the local land use decision-making in order to facilitate new development and economic diversity in Imperial County. IID concluded that certain lower water use projects could still provide benefits to local water users. The resulting benefits; however, may not be to the same categories of use (e.g., MCI) but to the district as a whole.

At the general manager's direction, staff developed a framework for a fallowing program that could be used to supplement the IWSP and meet the multiple policy objectives envisioned for the coordinated land use/water supply strategy. Certain private projects that, if implemented, will temporarily remove land from agricultural

[11] IID website: Temporary Land Conversion Fallowing Policy (TLCFP), and The TLCFP are the sources of the text for this section.

production within the district's water service area include renewable solar energy and other non-agricultural projects. Such projects may need a short-term water supply for construction and decommissioning activities and longer-term water service for facility operation and maintenance or for treating to potable water standards. Conserved water will be credited to the extent that water use for the Project is less than historic water use for the Project site's footprint as determined by EDP analysis.[12]

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. This allows the district to avail itself of the ability during the term of the QSA/Transfer Agreements under CWC Section 1013 to create conserved water through projects such as temporary land fallowing conservation measures. This conserved water can then be used to satisfy the district's conserved water transfer obligation and for environmental mitigation purposes.

Under the terms of the legislation adopted to facilitate the QSA/Transfer Agreements and enacted in CWC Section 1013, the TLCFP was adopted by the IID board on May 8, 2012 and revised on March 29, 2016 to update the fee schedule for 2016. This policy provides a framework for a temporary, long-term fallowing program to work in concert with the IWSP. While conserved water generated from the TLCFP is limited by law for use for water transfer or environmental purposes, by satisfying multiple district objectives the TLCFP serves to reduce efficiency conservation and water use reduction demands on IID water users, thus providing district wide benefits.

IID WATER RIGHTS

As noted above, IID and its customers are dependent on Colorado River water. The following section summarizes the laws and regulations that influence IID's water supply. The Law of the River (as described below), along with the 2003 Quantification Settlement Agreement and Related Agreements serve as the laws, regulations and agreements that primarily influence the findings of this WSA. These agreements grant California the most senior water rights along the Colorado River and IID specify that IID has access to 3.1 MAF per year. These two components will influence future decisions in terms of water supply during periods of shortages.

[12] For details of how water conservation yield attributable to land removed from agricultural production and temporarily fallowed is computed, see TLCFP for Water Conservation Yield.

California Law

IID's has a longstanding right to divert Colorado River water, and IID holds legal titles to all of its water and water rights in trust for landowners within the district (Water Code §§ 20529, 22437; *Bryant v. Yellen*, 447 U.S. 352, 371 (1980), fn. 23..) Beginning in 1885, a number of individuals, as well as the California Development Company, made a series of appropriations of Colorado River water under California law for use in the Imperial Valley. The rights to these appropriations were among the properties acquired by IID from the California Development Company.

Law of the River

Colorado River water rights are governed by numerous compacts, state and federal laws, court decisions and decrees, contracts, and regulatory guidelines collectively known as the "Law of the River." Together, these documents form the basis for allocation of the water, regulation of land use, and management of the Colorado River water supply among the seven Basin States and Mexico.

Of all regulatory literature that governs Colorado River water rights, the following are the specifics that impact IID:

- Colorado River Compact (1921)
- Boulder Canyon Project Act (1928)
- California Seven-Party Agreement (1931)
- *Arizona v. California* US Supreme Court Decision (1964, 1979)
- Colorado River Basin Project Act (1968)
- Quantification Settlement Agreement and Related Agreements (2003)
- 2003 Colorado River Water Delivery Agreement (CRWDA): Federal QSA for purposes of Section 5(b) Interim Surplus Guidelines (ISG)
- 1970 Criteria for Coordinated Long-Range Operation of Colorado River Reservoirs Annual Operating Plan (AOP) for Colorado River Reservoirs
- 2007 Colorado River Interim Guidelines for Lower Basin Shortages and Coordinated Operations for Lakes Powell and Mead (2007 Interim Guidelines).

Colorado River Compact (1924)

With authorization of their legislatures and urging of the federal government, representatives from the seven Colorado River Basin States began negotiations regarding distribution of water from the Colorado River in 1921. In November 1922, an interstate agreement called the Colorado River Compact (Compact) was signed by the

representatives giving the Lower Basin (Arizona, California and Nevada) perpetual rights to annual apportionments of 7.5 million acre-feet (MAF) of Colorado River water (75 MAF over ten [10] years). The Upper Basin (Wyoming, New Mexico, Colorado and Utah) was to receive the remainder, which based on the available hydrological record was also expected to be 7.5 MAF annually, with enough left over to provide 1.5 MAF annually to Mexico.

Boulder Canyon Project Act (1928)

Provisions in the 1928 Boulder Canyon Project Act made the compact effective and authorized construction of Hoover Dam and the AAC, and served as the United States' consent to accept the Compact. Through a Presidential Proclamation on June 25, 1929, this act resulted in ratification of the Compact by six (6) of the basin states and required California to limit its annual consumptive use to 4.4 MAF of the lower basin's apportionment plus not less than half of any excess or surplus water unapportioned by the Compact. A lawsuit was filed by the State of Arizona after its refusal to sign. Through the implementation of its 1929 Limitation Act, California abided by this federal mandate. The Boulder Canyon Act authorized the Secretary of the Interior (Secretary) to "contract for the storage of water… and for the delivery thereof… for irrigation and domestic uses," and additionally defined the Lower Basin's 7.5 MAF apportionment split, with an annual allocation 0.3 MAF to Nevada, 2.8 MAF to Arizona, and 4.4 MAF to California. Although the three (3) states never formally settled or agreed to these terms, a 1964 Supreme Court decision (*Arizona v. California*, 373 U.S. 546) declared the three (3) states' consent to be insignificant since the Boulder Canyon Project Act was authorized by the Secretary.

California Seven-Party-Agreement (1931)

Following implementation of the Boulder Canyon Project Act, the Secretary requested that California make recommendations regarding distribution of its apportionment of Colorado River water. In August 1931, under chairmanship of the State Engineer, the California Seven-Party Agreement was developed and authorized by the affected parties to prioritize California water rights. The Secretary accepted this agreement and established these priorities through General Regulations issued in September of 1931. The first four (4) priority allocations account for California's annual apportionment of 4.4 MAF, with agricultural entities using 3.85 MAF of that total. Additional priorities are defined for years in which the Secretary declares that excess waters are available.

Arizona v. California U.S. Supreme Court Decision (1964, 1979)

The 1964 Supreme Court decision settled a 25-year disagreement between Arizona and California that stemmed from Arizona's desire to build the Central Arizona Project (CAP) to enable use of its full apportionment. California's argument was that as Arizona used water from the Gila River, which is a Colorado River tributary, it was using a portion of its annual Colorado River apportionment. An additional argument from California was that it had developed a historical use of some of Arizona's apportionment, which, under the doctrine of prior appropriation, precluded Arizona from developing the project. California's arguments were rejected by the United States Supreme Court. Under direction of the Supreme Court, the Secretary was restricted from delivering water outside of the framework of apportionments defined by law. Preparation of annual reports documenting consumptive use of water in the three Lower Basin states was also mandated by the Supreme Court. In 1979, present perfected water rights (PPRs) referred to in the Compact and in the Boulder Canyon Project Act were addressed by the Supreme Court in the form of a Supplemental Decree.

In March of 2006, a Consolidated Decree was issued by the Supreme Court to provide a single reference to the conditions of the original 1964 decrees and several additional decrees in 1966, 1979, 1984 and 2000 that stemmed from the original ruling. The Consolidated Decree also reflects the settlements of the federal reserved water rights claim for the Fort Yuma Indian Reservation.

Colorado River Basin Project Act (1968)

In 1968, various water development projects in both the Upper and Lower Basins, including the CAP were authorized by Congress. Under the Colorado River Basin Project Act, priority was given to California's apportionment over (before) the CAP water supply in times of shortage. Also under the act, the Secretary was directed to prepare long-range criteria for the Colorado River reservoir system in consultation with the Colorado River Basin States.

Quantification Settlement Agreement and Related Agreements (2003)

With completion most of the CAP infrastructure in 1994, creation of the Arizona Water Banking Authority in 1995, and the growth of Las Vegas in the 1990s, California encountered increasing pressure to live within its rights under the Law of the River. After years of negotiating among Compact states and affected California water delivery agencies, a Quantification Settlement Agreement and Related Agreements and

documents were signed on October 10, 2003, by the Secretary of Interior, IID, Coachella Valley Water District (CVWD), Metropolitan Water District of Southern California (MWD), San Diego County Water Authority (SDCWA), and other affected parties.

The Quantification Settlement Agreement and Related Agreements (QSA/Transfer Agreements) 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; the ability to conserve, transfer and acquire conserved Colorado River water; the quantification and priority of Priorities 3(a) and 6(a)[13] within California for use of Colorado River water; and the obligation to implement and fund environmental impact mitigation.

Conserved water transfer agreements between IID and SDCWA, IID and CVWD, and IID and MWD are all part of the QSA/Transfer Agreements. For IID, these contracts identify conserved water volumes and establish transfer schedules along with price and payment terms. As specified in the agreements, IID will transfer nearly 415,000 AFY over a 35-year period (or longer), as follows:

- MWD 110,000 AFY [modified to 105,000 AFY in 2007]
- SDCWA 200,000 AFY
- CVWD and MWD combined 103,000 AFY
- San Luis Rey Indian Tribes 11,500 AFY of water

All of the conserved water will ultimately come from IID system efficiency and on-farm efficiency conservation improvements. In the interim, IID has implemented a fallowing program to generate water associated with Salton Sea mitigation related to the impacts of the IID/SDCWA water transfer (Fallowing Program), as required by the State Water Resources Control Board, which is to run from 2003 through 2017. In return for its QSA/Transfer Agreements programs and deliveries, IID will receive payments totaling billions of dollars to fund needed efficiency conservation measures and to pay growers for conserved on-farm water, so IID can transfer water without impacting local productivity. In addition, IID will transfer 67,700 AFY annually to SDCWA of water conserved from the lining of the All American Canal (AAC) in exchange for payment of

[13] Priorities 1, 2, 3(b), 6(b), and 7 of current Section 5 Contracts for the delivery of Colorado River water in the State of California and Indian and miscellaneous Present Perfected Rights within the State of California and other existing surplus water contracts are not affected by the QSA Agreement.

lining project costs and a grant to IID of certain rights to use the conserved water. In addition to the 105,000 acre-feet of water currently being conserved under the 1988 IID/MWD Conservation Program, these more recent agreements define an additional 303,000 AFY to be conserved by IID from on-farm and distribution system conservation projects for transferred to SDCWA, CVWD, and MWD.

Colorado River Water Delivery Agreement (2003)[14]

As part of QSA/Transfer Agreements among California and federal agencies, the Colorado River Water Delivery Agreement: Federal QSA for purposes of Section 5(b) Interim Surplus Guidelines (CRWDA) was entered into by the Secretary, IID, CVWD, MWD and SDCWA. This agreement involves the federal government because of the change in place of diversion from Imperial Dam into the AAC to Parker Dam into MWD's Colorado River Aqueduct.

The CRWDA assists California to meet its "4.4 Plan" goal of using the State's 4.4 MAFY Colorado River entitlement by quantifying deliveries for a specific number of years for certain Colorado River entitlements so transfers may occur. In particular, for the term of the CRWDA, quantification of Priority 3(a) was effected through caps on water deliveries to IID (consumptive use of 3.1 MAF per year) and CVWD (consumptive use of 330 KAF per year). In addition, California's Priority 3(a) apportionment between IID and CVWD, with provisions for transfer of supplies involving IID, CVWD, MWD and SDCWA are quantified in the CRWDA for a period of 35 years or 45 years (assumes SDCWA does not terminate in year 35) or 75 years (assumes SDCWA and IID mutually consent to renewal term of 30 years).

Allocations for consumptive use of Colorado River water by IID, CVWD and MWD that will enable California to stay within its basic annual apportionment (4.4 MAF plus not less than half of any declared surplus) are defined by the terms of the QSA/Transfer Agreements shown in **Table** 10. As specified in the CRWDA, by 2026, IID annual use within its water service area (Imperial Valley) is to be reduced to just over 2.6 MAF of its 3.1 MAF quantified annual apportionment. The remaining nearly 500,000 AF (which includes the 67,000 AF from AAC lining) are to be transferred annually to urban water users outside of the Imperial Valley.

[14] CRWDA: Federal QSA accessed 7 June 2017.

Table 10 Colorado River Entitlement – QSA Annual 4.4 MAF Apportionment Cap (Priorities 1 to 4) for California Agencies (Excluding Transfers and Exchanges)

User	Apportionment (AFY)
Palo Verde Irrigation District and Yuma Project*	420,000
Imperial Irrigation District	3,100,000
Coachella Valley Water District	330,000
Metropolitan Water District of Southern California*	550,000
Total:	4,400,000

PVID and Yuma Project did not agree to a cap; value represents a contractual obligation by MWD to assume responsibility for any overages or be credited with any volume below this value.
Notes: All values are consumptive use at point of Colorado River diversion: Palo Verde Diversion Dam (PVID), Imperial Dam (IID and CVWD), and Parker Dam (MWD). Source: IID 2009 Annual Water Report, p 15.

Quantification of Priority 6(a) was effected through quantifying annual consumptive use amounts to be made available in order of priority to MWD (38 KAF), IID (63 KAF), and CVWD (119 KAF) with the provision that any additional water available to Priority 6(a) be delivered under IID's and CVWD's existing water delivery contract with the Secretary.[15] The CRWDA provides that the underlying water delivery contract with the Secretary remain in full force and effect (*Colorado River Documents 2008*, Chapter 6, pages 6-12 and 6-13). The CRWDA also provides a source of water to affect a San Luis Rey Indian Water rights settlement. Additionally, the CRWDA satisfies the requirement of the 2001 Interim Surplus Guidelines (ISG) that a QSA be adopted as a prerequisite to the interim surplus determination by the Secretary in the ISG.

Inadvertent Overrun Payback Policy (2003)

The Inadvertent Overrun Payback Policy (IOPP), adopted by the Secretary contemporaneously with the execution of the CRWDA, provides additional flexibility to Colorado River management and applies to entitlement holders in the Lower Division States (Arizona, California and Nevada).[16] The IOPP defines inadvertent overruns as "Colorado River water diverted, pumped, or received by an entitlement holder of the Lower Division States that is in excess of the water users' entitlement for the year." An entitlement holder is allowed a maximum overrun of ten percent (10%) of its Colorado River water entitlement.

In the event of an overrun, the IOPP provides a mechanism to payback the overrun. When the Secretary has declared a normal year for Colorado River diversions, a

[15] When Colorado River reservoir water levels are low, Priority 5, 6 and 7 apportionments are not available for diversion.
[16] USBR, 2003 CRWDA ROD Implementation Agreement, IOPP and Related Federal Actions Final EIS. Section IX. Implementing the Decision A. Inadvertent Overrun and Payback Policy. Pages 16-19 of 34.

contractor has from one to three years to pay back its obligation, with a minimum annual payback equal to twenty percent (20%) of the entitlement holder's maximum allowable cumulative overrun account or 33.3 percent of the total account balance, whichever is greater. However, when Lake Mead is below 1,125 feet on January 1, the terms of the IOPP require that the payment of the inadvertent overrun obligation be made in the calendar year after the overrun is reported in the United States Bureau of Reclamation (USBR) Lower Colorado Region Colorado River Accounting and Water Use Report for Arizona, California, and Nevada (Decree Accounting Report).[17]

1970 Criteria for Coordinated Long-Range Operation of Colorado River Reservoirs

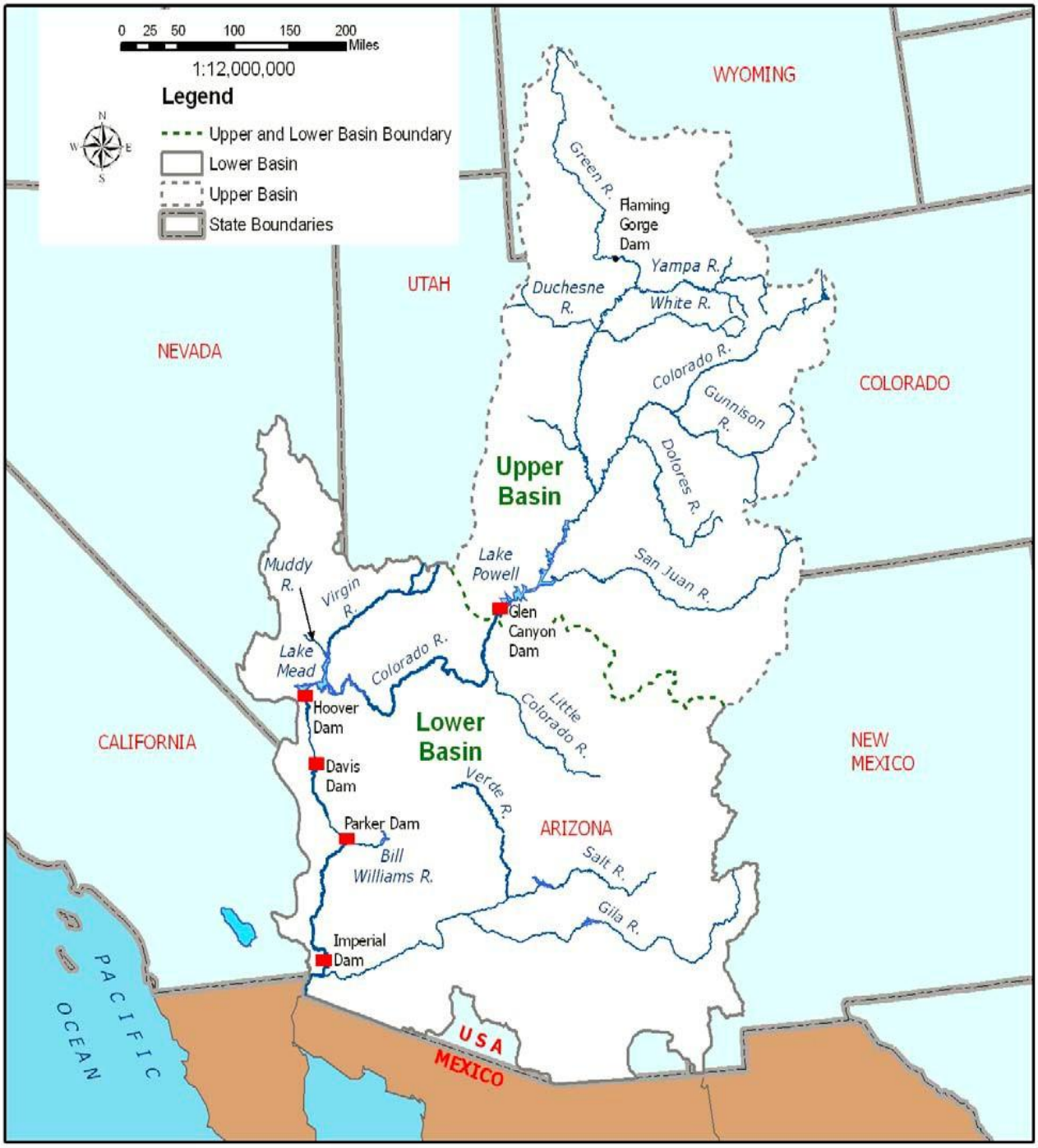
The 1970 Operating Criteria control operation of the Colorado River reservoirs in compliance with requirements set forth in the Colorado River Compact of 1922, the United States-Mexico Water Treaty of 1944, the Colorado River Storage Project Act of 1956, the Boulder Canyon Projects Act (Lake Mead) and the Colorado River Basin Project Act (Upper Basin Reservoirs) of 1968, and other applicable federal laws. Under these Operating Criteria, the Secretary makes annual determinations published in the USBR Annual Operating Plan for Colorado River Reservoirs (discussed below) regarding the release of Colorado River water for deliveries to the Lower Basin states. A requirement to equalize active storage between Lake Powell and Lake Mead when there is sufficient storage in the Upper Basin is included in these operating criteria. **Figure 3** identifies the major storage facilities and the Upper Basin and Lower Basin boundaries.

Annual Operating Plan for Colorado River Reservoirs

The Annual Operating Plan (AOP) is developed in accordance with Section 602 of the Colorado River Basin Project Act (PL 90-537); the Criteria for Coordinated Long-Range Operations of Colorado River Reservoirs pursuant to the Colorado River Basin Project Act of 1968, as amended, promulgated by the Secretary; and Section 1804(c)(3) of the Grand Canyon Protection Act (PL 102-575). As part of the AOP process, the Secretary makes determinations regarding the availability of Colorado River water for deliveries to the Lower Basin states, including whether normal, surplus, and shortage conditions are in effect on the lower portion of the Colorado River.

[17] 2003 CRWDA ROD. Section IX. A.6.c., page 18 of 34.

Figure 3 Major Colorado River Reservoir Storage Facilities and Basin Location Map



Source: Final EIS – Colorado River Interim Guidelines for Lower Basin Shortages and Coordinated Operations for Lake Powell and Lake Mead, Volume 1 Chapter 1 Purpose and Need***, p I-10.***

2007 Colorado River Interim Guidelines for Lower Basin Shortages (2007 Interim Guidelines)

A multi-year drought in the Upper Colorado River basin that began in October 1999 was the trigger for the Interim Shortage Guidelines. In the summer of 1999, Lake Powell was essentially full with reservoir storage at 97 percent of capacity. However, precipitation fell off starting in October 1999 and 2002 inflow was the lowest recorded since Lake Powell began filling in 1963.[18,19] By August 2011, inflow was 279 percent (279%) of average; however, drought resumed in 2012 and has continued through calendar year 2017. Using the record in **Table 11,** average unregulated inflow to Lake Powell for water years 2000-2017 is 74 percent (74%); or if 2011 is excluded, 70 percent (70%) of the historic average, see **Table 11**.

Table 11 Unregulated Inflow to Lake Powell, Percent of Historic Average, 2000-2015

2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
62%	59%	25%	51%	49%	105%	73%	68%	102%	88%	73%
2011	2012	2013	2014	2015	2016	2017				
136%	35%	49%	90%	83%	80%	100%				

Sources: Drought in the Upper Colorado River Basin (2000-2010), and UCR Water Operations: Historic Data (2011-2017)

In the midst of the drought, USBR developed 2007 Interim Guidelines with consensus from the seven basin states, which selected the Draft EIS Preferred Alternative as the basis for USBR's final determination. The basin states found the Preferred Alternative best met all aspects of the purpose and need for the federal action.[20]

The 2007 Interim Guidelines Preferred Alternative highlights the following:

- The need for the Interim Guidelines to remain in place for an extended period of time.
- The desirability of the Preferred Alternative based on the facilitated consensus recommendation from the basin states.
- The likely durability of the mechanisms adopted in the Preferred Alternative in light of the extraordinary efforts that the basin states and water users have undertaken to develop implementing agreements that will facilitate the water management tools (shortage sharing, forbearance, and conservation efforts) identified in the Preferred Alternative.

[18] Water Year: October 1 through September 30 of following year, so water year ending September 30, 1999
[19] Drought in the Upper Colorado River Basin. August 2011
[20] USBR Colorado River Interim Guidelines for Lower Basin Shortages and Coordinated Operations for Lake Powell and Lake Mead

- That the range of elements in the Preferred Alternative will enhance the Secretary's ability to manage the Colorado River reservoirs in a manner that recognizes the inherent tradeoffs between water delivery and water storage.

In June 2007, USBR announced that a preferred alternative for Colorado River Interim Guidelines for Lower Basin Shortages and Coordinated Operations of Lake Powell and Lake Mead (Final Preferred Alternative) had been determined. The Final Preferred Alternative, based on the Basin States' consensus alternative and an alternative submitted by the environmental interests called "Conservation Before Shortage," is comprised of four key operational elements which are to guide operations of Lake Powell and Lake Mead through 2026 are:

- Shortage strategy for Lake Mead and Lower Division states: The Preferred Alternative proposed discrete levels of shortage volumes associated with Lake Mead elevations to conserve reservoir storage and provide water users and managers in the Lower Basin with greater certainty to know when, and by how much, water deliveries will be reduced during low reservoir conditions.
- Coordinated operations of Lake Powell and Lake Mead: The Preferred Alternative proposed a fully coordinated operation of the reservoirs to minimize shortages in the Lower Basin and to avoid risk of curtailments of water use in the Upper Basin.
- Mechanism for storage and delivery of conserved water in Lake Mead: The Preferred Alternative proposed the Intentionally Created Surplus (ICS) mechanism to provide for the creation, accounting, and delivery of conserved system and non-system water thereby promoting water conservation in the Lower Basin. Credits for Colorado River or non-Colorado River water that has been conserved by users in the Lower Basin creating an ICS would be made available for release from Lake Mead at a later time. The total amount of credits would be 2.1 MAF, but this amount could be increased up to 4.2 MAF in future years.
- Modifying and extending elements of the ISG: The ISG sets conditions under which surplus water is made available for use within the Lower Division states. These modifications eliminate the most liberal surplus conditions thereby leaving more water in storage to reduce the severity of future shortages.

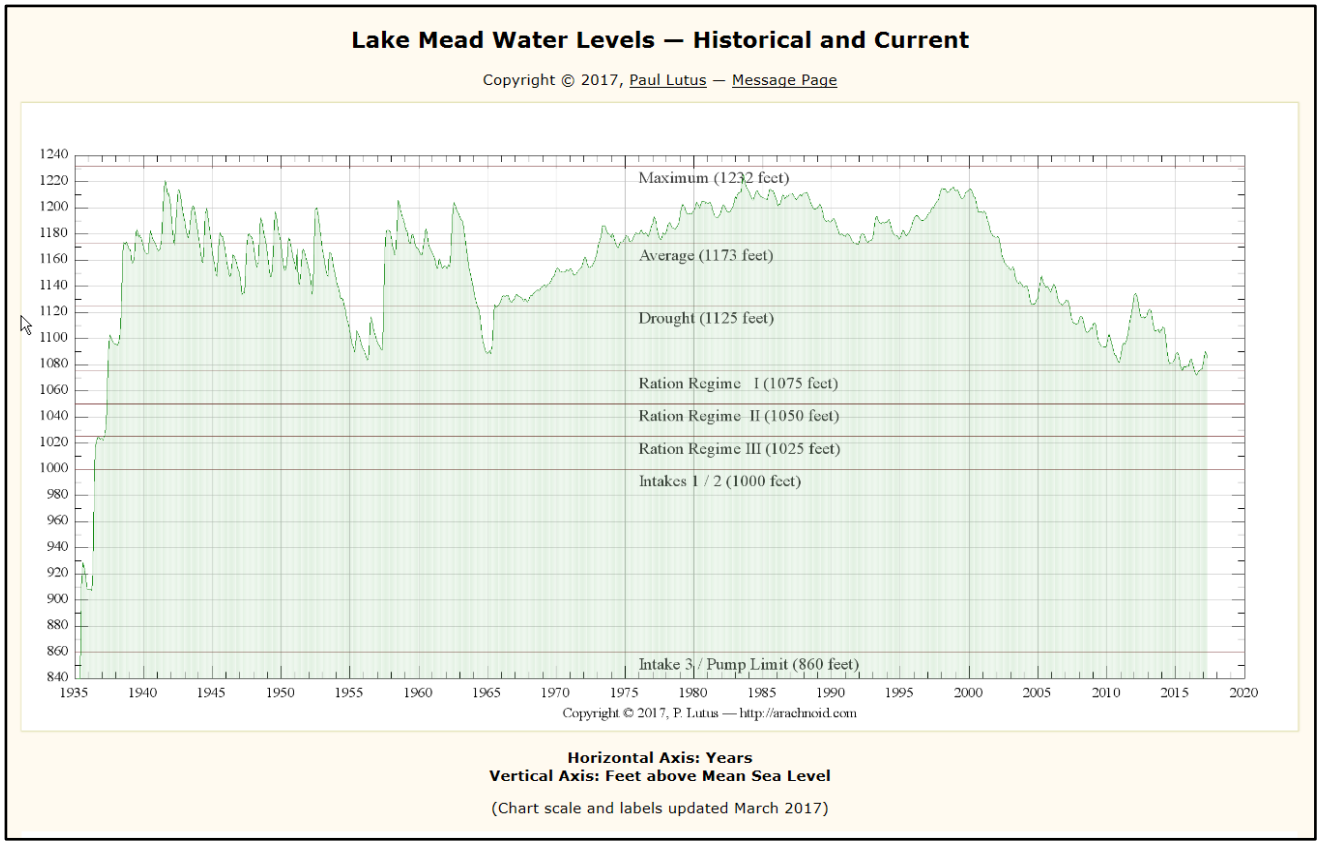
With respect to the various interests, positions and views of the seven basin states, this provision adds an important element to the evolution of the legal framework for

prudent management of the Colorado River. Furthermore, the coordinated operation element allows for adjustment of Lake Powell releases to respond to low reservoir storage conditions in either Lake Powell or Lake Mead[21]. States found the Preferred Alternative best met all aspects of the purpose and need for the federal action.[22]

Lower Colorado Region Water Shortage Operations

The drought in the Colorado River watershed has continued through 2017 despite an increase in observed runoff in August 2011 when unregulated inflow to Lake Powell was 279 percent of the average. Since 2000, Lake Mead has been below the "average" level of lake elevations (see **Figure 4**). Such conditions have caused the preparation of shortage plans for waters users in Arizona and Nevada, and in Mexico.

Figure 4 Lake Mead Water Elevation Levels



For graph of latest elevations visit Lake Mead Water Levels — Historical and Current

[21] For discussion of 2007 Interim Guidelines, see: Intermountain West Climate Summary by The Western Water Assessment, Jan. 21, 2008, Vol. 5, Issue 1, *January 2009 Climate Summary*, Feature Article, pages 5-7, 22 Mar 2013.

[22] USBR Colorado River Interim Guidelines for Lower Basin Shortages and Coordinated Operations for Lake Powell and Lake Mead.

According to guidelines put in place in 2007, Arizona and Nevada begin to take shortages when the water elevation in Lake Mead falls below 1,075 feet. The volumes of shortages increase as water levels fall to 1,050 feet and again at 1,025 feet. In 2012, Mexico agreed to participate in a 5-year pilot agreement to share specific volumes of shortages at the same elevations. The 2007 interim shortage guidelines contain no reductions for California, which has senior water rights to the Central Arizona Project water supply, through 2025 when the guidelines expire. If Lake Mead's elevation drops to 1,025 feet, a re-consultation process would be triggered among the basin states to address next steps. Consultation would start out within each state, then move to the three lower basin states, followed by all seven states and the USBR. Mexico will then be brought into the process unless they choose to participate earlier.

IID WATER SUPPLY – NORMAL YEAR, SINGLE AND MULTIPLE DRY YEARS

SB 610 requires an analysis of a normal, single dry, and multiple dry water years to show that adequate water is available for the proposed Project in various climate scenarios. Water availability for this Project in a normal year is no different from water availability during a single-dry and multiple-dry year scenarios. This is due to the small effect rainfall has on water availability in IID's arid environment along with IID's strong entitlements to the Colorado River water supply. Local rainfall does have some impact on how much water is consumed (i.e. if rain falls on agricultural lands, those lands will not demand as much irrigation), but does not impact the definition of a normal year, a single-dry year or a multiple-dry year scenario.

IID Water Supply – Normal Year

IID is entitled to annual net consumptive use of 3.1 MAF of Colorado River, less its QSA/Transfer Agreement obligations. Imperial Dam, located north of Yuma, Arizona, serves as a diversion structure for water deliveries throughout southeastern California, Arizona and Mexico. Water is transported to the IID water service area through the AAC for use throughout the Imperial Valley. IID historic and forecast net consumptive use volumes at Imperial Dam from CRWDA Exhibit B are shown in **Table 12**. Volumes 2003-2017 are adjusted for USBR Decree Accounting historic records. Volumes for 2018-2077 are from CRWDA Exhibit B modified to reflect 2014 Letter Agreement changes to the 1988 IID/MWD Water Conservation Agreement.[23]

[23] 2014 Imperial Irrigation District Letter Agreement for Substitution and Conservation Modifications to the

Due to limits on annual consumptive use of Colorado River water under the QSA/Transfer Agreements, IID's water supply during a normal year is best represented by the CRWDA Exhibit B Net Available for Consumptive Use (**Table 12**, Column 11). The annual volume is IID Priority 3(a) Quantified Amount of 3.1 million acre-feet (MAF) (**Table 12**, Column 2) less the IID transfer program reductions for each year (**Table 12**, Columns 3-9). These volumes represent the supply available to IID at Imperial Dam.

CRWDA Exhibit B Net Available for Consumptive Use volumes less system operation demand represent the amount of water available for delivery by IID Water Department to its customers each year. In a normal year, perhaps 50,000 to 100,000 AF of effective rainfall would fall in the IID water service area. However, rainfall is not evenly distributed throughout the IID water service area and is not taken into account by IID in the submittal of its Estimate of Diversion (annual water order) to the USBR.

IID Water Supply – Single Dry and Multiple Dry Years

When drought conditions exist within the IID water service area, as has been the case for the past decade or so, the water supply available to meet agricultural and non-agricultural water demands remains the same as normal year water supply because IID continues to rely solely on its entitlement for Colorado River water. Due to the priority of IID water rights and other agreements, drought conditions affecting Colorado River water supplies cause shortages for Arizona, Nevada and Mexico, before impacting California and IID. Accordingly, the Net Available for Consumptive Use volumes in **Table 12**, Column 11 represents the water supply at Imperial Dam available for diversion by IID in single-dry year and multiple-dry year scenarios.

Under CRWDA Inadvertent Overrun Payback Policy (IOPP), IID has some flexibility to manage its water use. When the water level in Lake Mead is above 1,125 feet, an overrun of its USBR approved annual water order is permissible, and IID has up to three years to pay water use above the annual water order. When Lake Mead's water level is at or below 1,125 feet on January 1 in the calendar year after the overrun is reported in the USBR Lower Colorado Region Decree Accounting Report, the IOPP prohibits additional overruns and requires that outstanding overruns be paid back in the subsequent calendar year rather than in three years as allowed under normal conditions; that is, the payback is to be made in the calendar year following publication

IID/MWD Water Conservation Agreement - December 17, 2014.

of the overrun in the USBR Decree Accounting Report. For historic IID annual rainfall, net consumptive use, transfers and IID underrun/overrun amounts, see **Table 13.**

Table 12 IID Historic and Forecast Net Consumptive Use for Normal Year, Single-Dry Year and Multiple-Dry Year Water Supply, 2003-2037, et seq. (CRWDA Exhibit B)

IID Quantification and Transfers, Volumes in KAF at Imperial Dam [1]										
Col 1	2	3	4	5	6	7	8	9	10	11
	IID Priority 3(a)									
		IID Reductions								**IID Net [Available for] Consumptive Use (Col 2 - 10)**
Year	**IID 3(a) Quantified Amount**	**1988 MWD Transfer [2]**	**SDCWA Transfer**	**AAC Lining**	**Salton Sea Mitigation SDCWA Transfer [3]**	**Intra-Priority 3 CVWD Transfer**	**MWD Transfer w\ Salton Sea Restoration [4]**	**Misc. PPRs**	**IID Total Reduction (Σ Cols 3-9) [5]**	
2003	3,100	105.1	10.0	0.0	0.0	0.0	0.0	11.5	126.6	2978.2
2004	3,100	101.9	20.0	0.0	15.0	0.0	0.0	11.5	148.4	2743.9
2005	3,100	101.9	30.0	0.0	15.0	0.0	0.0	11.5	158.4	2756.8
2006	3,100	101.2	40.0	0.0	20.0	0.0	0.0	11.5	172.7	2909.7
2007	3,100	105.0	50.0	0.0	25.0	0.0	0.0	11.5	191.5	2872.8
2008	3,100	105.0	50.0	8.9	26.0	4.0	0.0	11.5	205.4	2825.1
2009	3,100	105.0	60.0	65.5	30.2	8.0	0.0	11.5	280.2	2566.7
2010	3,100	105.0	70.0	67.7	33.7	12.0	0.0	11.5	299.9	2540.5
2011	3,100	103.9	63.3	67.7	0.0	16.0	0.0	11.5	246.4	2915.8
2012	3,100	104.1	106.7	67.7	15.2	21.0	0.0	11.5	326.2	2,903.2
2013	3,100	105.0	100.0	67.7	71.4	26.0	0.0	11.5	381.6	2,554.9
2014	3,100	104.1	100.0	67.7	89.2	31.0	0.0	11.5	403.5	2,533.4
2015	3,100	107.82	100.0	67.7	153.3	36.0	0.0	11.5	476.32	2,480.9
2016	3,100	105.0	100.0	67.7	130.8	41.0	0.0	11.5	556.0	2,504.3
2017	3,100	105.0	100.0	67.7	105.3	45.0	0.0	9.9	570.2	2,548.2
2018	3,100	105	130	67.7	0	63	0	11.5	377.2	2,722.8
2019	3,100	105	160	67.7	0	68	0	11.5	412.2	2,687.8
2020	3,100	105	193	67.7	0	73	0	11.5	450.2	2,649.8
2021	3,100	105	205	67.7	0	78	0	11.5	467.2	2,632.8
2022	3,100	105	203	67.7	0	83	0	11.5	470.2	2,629.8
2023	3,100	105	200	67.7	0	88	0	11.5	472.2	2,627.8
2024	3,100	105	200	67.7	0	93	0	11.5	477.2	2,622.8
2025	3,100	105	200	67.7	0	98	0	11.5	482.2	2,617.8
2026	3,100	105	200	67.7	0	103	0	11.5	487.2	2,612.8
2027	3,100	105	200	67.7	0	103	0	11.5	487.2	2,612.8
2028	3,100	105	200	67.7	0	103	0	11.5	487.2	2,612.8
2029-37	3,100	105	200	67.7	0	103	0	11.5	487.2	2,612.8
2038-47 [6]	3,100	105	200	67.7	0	103	0	11.5	487.2	2,612.8
2048-77 [7]	3,100	105	200	67.7	0	50 [8]	0	11.5	434.2	2,665.8

1. 2003 through 2016, volumes are adjusted for actual USBR Decree Accounting values; IID Total Reduction and Net Available for Consumptive Use may not equal Col 2 minus Col 10, if IID conservation/use was not included in Exhibit B.
2. 2014 Letter of Agreement provides that, effective January 2016 total amount of conserved water available is 105 KAFY
3. Salton Sea Mitigation volumes may vary based on conservation volumes and method of conservation.
4. *This transfer is not likely given lack of progress on Salton Sea restoration as of 2018; shaded entries represents volumes that may vary..*
5. Reductions include conservation for 1988 IID/MWD Transfer, IID/SDCWA Transfer, AAC Lining; SDCWA Transfer Mitigation, MWD Transfer w/Salton Sea Restoration (if any); Misc. PPRs. Amounts are independent of increases and reductions as allowed by the IOPP.
6. Assumes SDCWA does not elect termination in year 35.
7. Assumes SDCWA and IID mutually consent to renewal term of 30 years.
8. Modified from 100 KAFY in CRWDA Exhibit B; stating in 2018 MWD will provide CVWD 50 KAFY of the 100 KAFY.

Source: CRWDA: Federal QSA Exhibit B, p 13; updated values from 2016 IID QSA Implementation Report

Table 13 IID Annual Rainfall (In), Net Consumptive Use and Underrun/Overrun Amounts (AF), 1988-2016

Year	IID Total Annual Rainfall	IID Water Users	IID/MWD Transfer	IID/ SDCWA Transfer	SDCWA Transfer Salton Sea Mitigation	IID Underrun / Overrun	IID/CVWD Transfer	AAC Lining
1988		2,947,581						
1989		3,009,451						
1990	91,104	3,054,188	6,110					
1991	192,671	2,898,963	26,700					
1992	375,955	2,575,659	33,929					
1993	288,081	2,772,148	54,830					
1994	137,226	3,048,076	72,870					
1995	159,189	3,070,582	74,570					
1996	78,507	3,159,609	90,880					
1997	64,407	3,158,486	97,740					
1998	100,092	3,101,548	107,160					
1999	67,854	3,088,980	108,500					
2000	29,642	3,112,770	109,460					
2001	12,850	3,089,911	106,880					
2002	12,850	3,152,984	104,940					
2003	116,232	2,978,223	105,130	10,000	0	6,555		
2004	199,358	2,743,909	101,900	20,000	15,000	166,408		
2005	202,983	2,756,846	101,940	30,000	15,000	159,881		
2006	19,893	2,909,680	101,160	40,000	20,000	12,414		
2007	64,580	2,872,754	105,000	50,000	25,021	6,358		
2008	63,124	2,825,116	105,000	50,000	26,085	47,999	4,000	8,898
2009	30,0354	2,566,713	105,000	60,000	30,158	237,767	8,000	65,577
2010	189,566	2,545,593	105,000	70,000	33,736	207,925	12,000	67,700
2011	109,703	2,915,784	103,940	63,278	0	82,662	16,000	67,700
2012	133,526	2,903,216	104,140	106,722	15,182	134,076	21,000	67,700
2013	134,497	2,554,845	105,000	100,000	71,398	65,981	26,000	67,700
2014	53,517	2,533,414	104,100	100,000	89,168	797	31,000	67,700
2015	97,039	2,480,933	107,820	100,000	153,327	97,188	36,000	67,700
2016	90,586	2,504,258	105,000	100,000	130,796	62,497	41,000	67,700
2017	105,919	2,548,164	105,000	100,000	105,311	30,227	4,000	67,700

Notes: Volumes in acre-feet and except Total Annual Rainfall are USBR Decree Accounting Report record at Imperial Dam.
IID Total Annual Rainfall from IID Provisional Water Balance, first available calculations are for 1990
Not all IID QSA programs are shown on this table.
Source: 2016 IID QSA Implementation Report and 2017 IID SWRCB Report, page 31 of 335; IID Total Rainfall and IID Overrun /Underrun is a separate calculation

PROJECT WATER SUPPLY SOURCES

Untreated Colorado River water will be supplied to the Project via IID delivery gates located on the East Highline Canal, as noted **Table 15**. Potable drinking water will be obtained for the duration of the Project from a state-approved provider.[24] No groundwater will be utilized due to the poor groundwater quality in the region.

The Applicants will seek to obtain a CUP from Imperial County to allow a change from crop production to solar energy production. As noted previously, under the terms of California legislation adopted to facilitate the QSA/Transfer Agreements and enacted in CWC Section 1013, the IID board adopted the TLCFP to address how to deal with any such temporary reduction of water use by projects like the Citizens Imperial Solar, LLC Project that are developed under a CUP.

While conserved water generated from the TLCFP is limited by law for use for water transfer or environmental purposes, by satisfying multiple district objectives the TLCFP serves to reduce the need for efficiency conservation and other water use reduction practices on the part of IID and its water users providing the district with wide benefits. One of the considerations in developing the TLCFP was to provide agricultural land owners with long-term assurances from IID that, at Project termination, irrigation service would be available for them to resume farming operations.

At the present time, IID is providing water for use by solar energy generation projects under Water Rate Schedule 7 General Industrial Use. If IID determines that the Project should obtain water under IID's Interim Water Supply Policy (IWSP) for non-agricultural projects rather than Schedule 7 General Industrial Use, the Applicants will do so. The Project will be subject to the annual Water Supply Development fee if IID determines that water for the Project is to be supplied under the IWSP (see **Table 9**).

The likelihood that IID will not receive its annual 3.1 MAF apportionment less QSA/Transfer Agreement obligations of Colorado River water is low due to the high priority of the IID entitlement relative to other Colorado River contractors, see above section **Lower Colorado Region Water Shortage Operations** at the end of **IID Water Rights** section. If such reductions were to come into effect within the 30-year Project life, the Applicants are to work with IID to ensure any reduction can be managed.

[24] To avoid penalties that could exceed $25,000 a day, IID tracks nearly 4,000 raw water service accounts required by the CDPH to have alternate drinking water service. The section maintains a small-acreage pipe and drinking water database, and provides an annual compliance update to CDPH.

As such, lower Colorado River water shortage does not present a material risk to the available water supply that would prevent the County from making the findings necessary to approve this WSA. IID, like any water provider, has jurisdiction to manage the water supply within its service area and impose conservation measures during a period of temporary water shortage. Furthermore, without the Project, IID's task of managing water supply under the QSA/Transfer Agreements would be more difficult, because agricultural use on the Project sites would be significantly higher than the proposed demand for the Project as explained below in section **Expected Water Demands for the Project**.

EXPECTED WATER DEMANDS FOR THE PROJECT

The Project will obtain potable drinking water from a certified State of California provider. Operational water for the Project is needed for, fire protection, sanitary water, panel washing, dust control and potable non-drinking water. At buildout, the O&M demand is estimated to be 10 AFY. Total water demand for construction, operation, decommissioning of the Project is estimated to be 460 AF, for an annualized demand of 15.3 AFY for the 30-year Project life, as shown in **Table 14**.

Table 14 Total and Annual Estimated Life-of-Project Water Demand for Citizens Imperial Solar (the Project)

Water Use	Project Life Demand (AF)	Annual Demand (AFY)
Construction	80	2.66
Operations & Maintenance (10 AFY x 30 years)	300	10.00
Decommissioning/Site Reclamation	80	2.66
Total Demand, Project Life (AF) & Annual (AFY)	460	15.33

IID delivers untreated Colorado River water to the Project site through delivery gates EHL 27A and EHL 29, serving APN 025-280-003 and APN 025-260-024, respectively. Land served by EHL 27A was enrolled in IID fallowing programs (FP) from January 1, 2014 to December 31, 2014, and from July 1, 2015 to June 30, 2016. For the duration of 2015 (January 1-June 30) and 2016 (July 1-December 31) and all of 2017, no water was delivered through EHL 27A, as the land was left idle.[25] No water was delivered through EHL 29 during 2008-2017.[26] .

[25] Area Farmable But Not Farmed During Year

[26] The land has been unfarmed at least since 1987 when the IID Midway Substation, which occupies a portion of APN 025-260-024, was built and commissioned.

The 10-year record for 2008-2017 of water delivery accounting for gates EHL 27A and EHL 29 is shown in **Table 15**. The 10-year average annual delivery to the Project site for this period is 166.65 AFY, see **Table 16**.

Table 15 Historic Delivery and Fallowing Program Yield Record for Project Delivery Gates, (AF), 2008-2018

Canal/Gate	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	Total
EHL 27A	145.5	91.5	44.3	230.4	631.6	523.2	0.0	0.0	0.0	0.0	1666.5
EHL 29	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total	145.5	91.5	44.3	230.4	631.6	523.2	0.0	0.0	0.0	0.0	1666.5

Table 16 Total Historic Delivery and FP Yield for Project Delivery Gates (AF), 10-Year Total, 10-Year Average, 2008-2017

	10-Year Total (AF)	**10-Year Average (AFY)**
Historic Delivery & FP Yield	1,666.5	166.65

The Project has an estimated total water demand of 460 AF or 15.3 AFY amortized over the 30-year life of the Project. Thus, Project demand is a reduction of 151.35 AFY from the historical 10-year average delivery of 166.65 AFY, or 90.8 per cent (90.8%) less than the 10-year average delivery for agricultural uses. The Project's estimated water demand represents only 0.065 per cent (0.065%) of the 23,800 AFY balance of supply available for contracting under the IWSP.

IID ABILITY TO MEET DEMANDS WITH WATER SUPPLY

Non-agricultural water demands for the IID water service area are projected for 2020-2055 in **Table 7**, and IID agricultural demands including system operation are projected for 2020-2055 in **Table 8**, all volumes within the IID water service area. IID water supplies available for consumptive use after accounting for mandatory transfers are projected to 2077 in **Table 12**(Column 11), volumes at Imperial Dam.

To assess IID's ability to meet future water demands, IID historic and forecasted demands are compared with CRWDA Exhibit B net availability, volumes at Imperial Dam **Table 12** (Column 11). The analysis requires accounting for system operation consumptive use within the IID water service area and from AAC at Mesa Lateral 5 to Imperial Dam, and for water pumped for use by the USBR Lower Colorado Water Supply Project (LCRWSP), an IID consumptive use component in the USBR Decree Accounting Report. IID system operation consumptive use for 2015 is provided in **Table 17** to show the components included in the calculation and their 2015 volumes.

Table 17 IID System Operation Consumptive Use within IID Water Service Area and at Imperial Dam, (KAF), 2015

	Consumptive Use (KAF)
IID Delivery System Evaporation	133.3
IID Canal Seepage	92.4
IID Main Canal Spill	1.5
IID Lateral Canal Spill	125.4
IID Seepage Interception	-41.1
IID Unaccounted Canal Water	-7.5
Total IID System Operation Use, within water service area	288.6
"Losses" from AAC @ Mesa Lat 5 to Imperial Dam	62.5
LCWSP pumpage	-7.2
Total System Operational Use, at Imperial Dam	343.9

Sources: 2015 Water Balance rerun 03/21/2017, and Unpublished Draft 2016 IID Water Conservation Plan

IID's ability to meet customer water demands through 2055 as shown in **Table 18** is based on the following:

- Non-agricultural use from **Table 7**
- Agricultural and Salton Sea mitigation uses from **Table 8**
- CRWDA Exhibit B net available for IID consumptive use from **Table 12**
- IID system operation consumptive use from **Table 17**

Table 18 IID Historic and Forecasted vs CRWDA Exhibit B IID Net Available Consumptive Use (KAFY), 2015-2055

	2015	2020	2025	2030	2035	2040	2045	2050	2055
Non-Ag Delivery	107.2	123.4	133.1	142.9	151.4	163.2	175.4	188.4	199.3
Ag Delivery	2,157.7	2,309.6	2,259.5	2,209.5	2,209.5	2,209.5	2,209.5	2,209.5	2,209.5
QSA SS Mitigation Delivery	142.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
System Op CU in IID & to Imperial Dam	343.9	436.0	411.0	407.0	407.0	407.0	407.0	407.0	407.0
IID CU at Imperial Dam	**2,751.4**	**2,869.0**	**2,803.6**	**2,759.4**	**2,767.9**	**2,779.7**	**2,791.9**	**2,804.9**	**2,815.8**
Exhibit B IID Net Available for CU at Imperial Dam	**2,564.8**	**2,649.8**	**2,617.8**	**2,612.8**	**2,612.8**	**2,612.8**	**2,612.8**	**2,665.8**	**2,665.8**
IID Underrun/Overrun at Imperial Dam	**-97,188.0**	**219.2**	**185.8**	**146.6**	**155.1**	**166.9**	**179.1**	**139.1**	**150.0**

Source: 2015 Provisional Water Balance rerun 03/21/2017'
Notes: QSA Salton Sea Mitigation Delivery terminates on 12/31/2017
Underrun /Overrun IID CU at Imperial Dam minus CRWDA Exhibit B Net Available CU
Ag Delivery for 2020-2055 does not take into account land conversion for solar use nor reduction in agricultural land area due to urban expansion.

As reported in the 2016 IID QSA Implementation Report and 2017 SWRCB IID Report and presented in Table 13, from 2013 to 2017, IID consumptive use (CU) has resulted in underruns; i.e., annual CU that is less than the district's QSA Entitlement of 3.1 MAFY minus QSA/Transfer Agreements obligations. This would indicate that although IID forecasted demand Table 18 shows overruns, with IID CU at Imperial Dam exceeding CRWDA Exhibit B Net Available for CU, for the entire the life of the Project,

IID, consumptive use may be less than forecasted. However, with repeal of the IID EDP in February 2018, it is uncertain whether underruns will continue.

Meanwhile, Ag Delivery reductions presented in **Table 8** are premised on implementation of on-farm practices that will result in efficiency conservation and do not take into account land conversion for solar use nor reduction in agricultural land area due to urban expansion; that is to say, the forecasted Ag Delivery is for acreage in 2003 with reduction for projected on-farm conservation efficiency. Furthermore, given that the Project will use less water than the historical agricultural demand of Project site, the Project will ease rather than exacerbate overall IID water demands.

Finally, if (1) IID has issued water supply agreements that exhaust the 25 KAFY IWSP set aside, and (2) it becomes apparent that IID delivery demands due to non-agriculture use are going to cause the district to exceed its quantified 3.1 MAFY entitlement less QSA/Transfer Agreements obligations, IID has identified options to meet these new non-agricultural demands. These options include (1) tracking water yield from temporary land conversion from agricultural to non-agricultural land uses (renewable solar energy); and (2) only if necessary, developing projects to expand the size of the district's water supply portfolio.
These factors will be discussed in the following sections, Tracking Water Savings from Growth of Non-Agricultural Land Uses and Expanding Water Supply Portfolio.

These factors will be discussed in the following sections, Tracking Water Savings from Growth of Non-Agricultural Land Uses and Expanding Water Supply Portfolio.

Tracking Water Savings from Growth of Non-Agricultural Land Uses

The Imperial County Board of Supervisors has targeted up to 25,000 acres of agricultural lands, about 5 percent (5%) of the farmable acreage served by IID, for temporary conversion to solar farms; because the board found that this level of reduction would not adversely affect agricultural production. As reported for IID's 2017 Temporary Land Conversion Fallowing Program, existing solar developments at the end of 2017 have converted 10,176 acres of farmland. These projects had a yield at-river of 48,040 AF of water in 2016. The balance of the 25,000-acre agriculture-to-solar policy is 14,824 acres. On average, each agricultural acre converted reduces agricultural demand by 5.1 AFY, which results in a total at-river yield (reduction in consumptive use) of 127,500 AFY.

However, due to the nature of the conditional use permits under which solar farms are developed, IID cannot rely on this supply being permanently available. In fact, should a solar project decommission early, that land may go immediately back to agricultural use (it remains zoned an agricultural land). Nevertheless, during their operation, the solar farms do ameliorate pressure on IID to implement projects to meet demand from new non-agricultural projects.

Unlike water use by solar farms, other non-agricultural water demands are forecasted to increase use, as reflected in the nearly 76 percent (76%) increase in non-agricultural water demand from 107.2 KAF in 2015 to 188.4 KAF in 2050 reflected herein in **Table 7**. This increase in demand of 81.2 KAFY will more than likely be than met by solar development; however, as the land remains zoned as agricultural land, that source is not reliable to be permanently available to IID.

Municipal development is another anticipated change. For the years 2015-2050, Imperial Local Agency Formation Commission (LAFCO) projects that municipal land use in the IID water service area will increase by 48,500 acres within the sphere of influence (SOI) of local cities. That would result in an increase in demand of 46.1 KAF (0.95 AF/AC times 48.5 KAC) by 2050.[27] This delivery requirement is 17.4 KAF more than the Imperial IRWMP projected increase in municipal use for these years.[28]

Farmland retirement associated with municipal development would reduce IID agricultural delivery requirements beyond the efficiency conservation projections shown in **Table 7**. Agricultural water demand reduction from 48,500 acres of farm land being retired for municipal use based on Imperial LAFCO sphere of influence maps and existing zoning and land use in Imperial County would be 247.4 KAFY (5.1 AF/AC times 48.5 KAC) from 2050 on. While this volume of water is more than sufficient to meet the projected 2050 overrun and the extra municipal use of 17.4 KAFY from 2050 on, the change in land use projected for 2050 is unlikely to occur in time to provide sufficient water to meet overruns projected for 2020 and 2025. Therefore, in the event that Schedule 7 General Industrial Use water is unavailable, the Applicants will rely on IID IWSP water to supply the Project, as discussed above in the section **IID Interim Water Supply Policy for Non-Agricultural Projects (September 2009)**.

[27] Municipal use rate is 0.95 AF/AC, based on 2015 municipal water use of 30.0 KAF (**Table 7**) and 31.4 KAC acres in municipal use (IID Annual Inventory of Areas Receiving Water, 2016, , 2014).

[28] For 2015-2050, Imperial IRWMP projected increase in municipal use is 28.7 KAF (58.7 KAF - 30 KAF, see **Table 7**,

Expanding Water Supply Portfolio

While long-term forecast annual yield-at-river from the reduction in agricultural acreage due to municipal development in the IID service area is sufficient to meet the forecasted excess of non-agricultural use over CRWDA Net Available supply (**Table 12**) without expanding IID's Water Supply Portfolio, IID has also evaluated the feasibility of a number of capital projects to increase its water supply portfolio.

As reported in 2012 Imperial IRWMP Chapter 12, IID contracted with GEI Consultants, Inc. to identify a range of capital project alternatives that the district could implement. Qualitative and quantitative screening criteria and assumptions were developed in consultation with IID staff. Locations within the IID water service area with physical, geographical, and environmental characteristics most suited to implementing short- and long-term alternatives were identified. Technical project evaluation criteria included volumes of water that could be delivered and/or stored by each project, regulatory and permitting complexity, preliminary engineering components, land use requirements, and costs.

After preliminary evaluation, a total of 27 projects were configured:

- 17 groundwater or drain water desalination
- 2 groundwater blending
- 6 recycled water
- 1 groundwater banking
- 1 IID system conservation (concrete lining)

These projects were assessed at a reconnaissance level to allow for comparison of project costs. IID staff and the board identified key factors to categorize project alternatives and establish priorities. Lower priority projects were defined as those projects that were less feasible due to technical, political, or financial constraints. Preferential criteria were project characteristics that would increase the relative benefits of a project and grant it a higher priority. Four criteria were used to prioritize the IID capital projects:

- **Financial Feasibility.** Projects whose unit cost was more than $600/AF were eliminated from further consideration.
- **Annual Yield.** Project alternatives generating 5,000 AF or less of total annual yield were determined not to be cost-effective and lacking necessary economies of scale.

- **Groundwater Banking.** Groundwater banking to capture and store underruns is recognized as a beneficial use of Colorado River water. Project alternatives without groundwater banking were given a lower priority.
- **Partnering.** Project alternatives in which IID was dependent on others (private and/or public agencies) for implementation were considered to have a lower priority in the IID review; this criterion was reserved for the IRWMP process, where partnering is a desirable attribute.

Based on these criteria, the top ten included six desalination, two groundwater blending, one system conservation, and one groundwater storage capital projects. These capital projects are listed below in **Table 19**.

Table 19 IID Capital Project Alternatives and Cost (May 2009 price levels $)

Name	Description	Capital Cost	O&M Cost	Equivalent Annual Cost	Unit Cost ($/AF)	In-Valley Yield (AF)
GW 18	Groundwater Blending E. Mesa Well Field Pumping to AAC	$39,501,517	$198,000	$2,482,000	$99	25,000
GW 19	Groundwater Blending: E. Mesa Well Field Pumping to AAC w/Percolation Ponds	$48,605,551	$243,000	$3,054,000	$122	25,000
WB 1	Coachella Valley Groundwater Storage	$92,200,000	$7,544,000	$5,736,746	$266	50,000
DES 8	E. Brawley Desalination with Well Field and Groundwater Recharge	$100,991,177	$6,166,000	$12,006,000	$480	25,000
AWC 1	IID System Conservation Projects	$56,225,000	N/A	$4,068,000	$504	8,000
DES 12	East Mesa Desalination with Well Field and Groundwater Recharge	$112,318,224	$6,336,000	$12,831,000	$513	25,000
DES 4	Keystone Desalination with IID Drainwater/ Alamo River	$147,437,743	$15,323,901	$23,849,901	$477	50,000
DES 14	So. Salton Sea Desalination with Alamo River Water and Industrial Distribution	$158,619,378	$15,491,901	$24,664,901	$493	50,000
DES 15	So. Salton Sea Desalination with Alamo River Water and MCI Distribution	$182,975,327	$15,857,901	$26,438,901	$529	50,000
DES 2	Keystone Desalination with Well Field and Groundwater Recharge	$282,399,468	$13,158,000	$29,489,000	$590	50,000

Source: Imperial IRWMP, Chapter 12; see also Imperial IRWMP Appendix N, IID Capital Projects

IID Near-Term Water Supply Projections

As mentioned above, IID's quantified Priority 3(a) water right under the QSA/Transfer Agreements secures 3.1 MAF per year, less transfer obligations of water for IID's use from the Colorado River, without relying on rainfall in the IID service area. As the IID Website Water states:

> Through the implementation of extraordinary conservation projects, the development of innovative efficiency measures and the utilization of progressive management tools, the IID Water Department is working to ensure both the long-term viability of agriculture and the continued protection of water resources within its service area.

As such, IID actively promotes on-farm efficiency conservation and is implementing system efficiency conservation measures including seepage recovery from IID canals and the All-American Canal and measures to reduce operational discharge.

Overall, agricultural water demand in the Imperial Valley will decrease due to IID system and grower on-farm efficiency conservation measures that are designed to maintain agricultural productivity at pre-QSA levels while producing sufficient yield-at-river to meet IID's QSA/Transfer Agreements obligations. These efficiencies combined with the conversion of some agricultural land uses to non-agricultural land uses (both solar and municipal), ensure that IID can continue to meet the water delivery demand of its existing and future agricultural and non-agricultural water users, including the Citizens Imperial Solar, LLC Project for the next 20 years and for the life of the Project.

IID has also evaluated the feasibility of new capital water supply projects, but does not find them necessary to implement at this time in order to meet existing and forecasted water demands within its water service area.

PUBLIC WATER SYSTEM/LEAD AGENCY FINDINGS

IID's annual entitlement to consumptive use of Colorado River water is capped at 3.1 MAF less water transfer obligations, pursuant to the QSA and Related Agreements. Under the terms of the CRWDA, IID is implementing efficiency conservation measure to reduce net consumptive use of Colorado River water needed to meet its QSA/Transfer Agreements obligations while retaining historical levels of agricultural productivity.

Due to the dependability of IID's water rights and Colorado River water storage facilities, it is unlikely that the water supply of IID would be disrupted even under shortage conditions because Mexico, Arizona and Nevada have lower priority and are responsible for reducing their water use during a declared Colorado River water shortage before California would be impacted. Nevertheless, IID is participating in

discussions for possible actions in response to extreme drought on the Colorado River. Historically, IID has never been denied the right to use the annual volume of water it has available for its consumptive uses under its entitlement.

The Citizens Imperial Solar, LLC Project water demand is 80 AF during commissioning, 10 AFY during operation during the 30 year life of the project, and 80 AF during decommissioning. Amortized over the 30 year life of the Project (including construction, operation and decommissioning), this equates to 15.3 AFY. This is a decrease of 90.8 per cent (90.8%) when compared to historic agricultural water use at the Project site.

It is anticipated that IID will provide Schedule 7 General Industrial Use water for this Project. In the event that IID determines that the Project is to utilize IWSP for Non-Agricultural Projects water, the Applicants will enter into an IWSP Water Supply Agreement with IID. In which case, the Project would use only 0.065 percent (0.065%) of the remaining 23,800 AFY of IWSP water. Based on the Environmental Impact Report (EIR) prepared for this Project pursuant to the CEQA, California Public Resources Code sections 21000, *et seq*., Imperial County hereby finds that the IID projected water supply will be sufficient to satisfy the demands of this Project in addition to existing and planned future uses, including agricultural and non-agricultural uses for a 20-year Water Supply Assessment period and for the 30-year Project life.

ASSESSMENT CONCLUSION

This WSA has shown that IID water supply is adequate for this Project. IID's IWSP for Non-Agricultural Projects dedicates 25,000 AFY of IID's annual water supply to serve new projects. To date 23,800 AF per year remain available for new projects ensuring reasonably sufficient supplies for new non-agricultural water users. Total water usage for the Project life represents 0.065 percent (0.065%) of the supply set aside in the IWSP for non-agricultural project, and approximately 0.56 percent (0.56%) of forecasted future non-agricultural water demands planned in the Imperial IRWMP through 2055. Furthermore, the Project represents a 90.8 percent (90.8%) decrease of operational water demand for agricultural uses at the Project site and will provide a reduction in use 151.35 AFY for the Project life. As detailed herein, the amount of water available and the stability of the IID water supply along with on-farm and system efficiency conservation and other measures being undertaken by IID and its customers ensure that this Project's water needs will be met for the next 20 years as required by SB-610.

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