Inland Empire Utilities Agency
A MUNICIPAL WATER DISTRICT

AGENDA

COMMISSION MEETING OF THE CHINO BASIN REGIONAL FINANCING AUTHORITY AND WORKSHOP MEETING OF THE BOARD OF DIRECTORS

WEDNESDAY, FEBRUARY 17, 2016
10:00 A.M.

INLAND EMPIRE UTILITIES AGENCY*
AGENCY HEADQUARTERS
6075 KIMBALL AVENUE, BUILDING A
CHINO, CALIFORNIA 91708

CALL TO ORDER
OF THE CHINO BASIN REGIONAL FINANCING AUTHORITY

FLAG SALUTE

PUBLIC COMMENT

Members of the public may address the Commission on any item that is within the jurisdiction of the Board; however, no action may be taken on any item not appearing on the agenda unless the action is otherwise authorized by subdivision (b) of Section 54954.2 of the Government Code.

ADDITIONS TO THE AGENDA

In accordance with section 54954.2 of the Government Code (Brown Act), additions to the agenda require two-thirds vote of the legislative body, or, if less than two-thirds of the members are present, a unanimous vote of those members present, that there is a need to take immediate action and that the need for action can be the attention of the local agency subsequent to the agenda being posted.

1. **ACTION ITEMS**

   A. **ADOPTION OF RESOLUTION NO. 2016-1, RECYCLED WATER SERVICE EXPANSION PROGRAM AS CEQA-RESPONSIBLE PARTY**
   It is recommended that the Board of Commissioners:

      1. Adopt Resolution No. 2016-1, approving and adopting the Initial Study, Mitigated Negative Declaration, and Addendum to these

documents and the Mitigation Monitoring and Reporting Program as a CEQA-Responsible Agency; and

2. Authorize IEUA's General Manager, or his designee, to file the Notice of Determination (NOD) with the San Bernardino County Clerk of the Board.

2. ADJOURN

CALL TO ORDER OF THE INLAND EMPIRE UTILITIES AGENCY BOARD OF DIRECTORS MEETING

FLAG SALUTE

PUBLIC COMMENT

Members of the public may address the Board on any item that is within the jurisdiction of the Board; however, no action may be taken on any item not appearing on the agenda unless the action is otherwise authorized by Subdivision (b) of Section 54954.2 of the Government Code. Those persons wishing to address the Board on any matter, whether or not it appears on the agenda, are requested to complete and submit to the Board Secretary a "Request to Speak" form which are available on the table in the Board Room. Comments will be limited to five minutes per speaker. Thank you.

ADDITIONS TO THE AGENDA

In accordance with Section 54954.2 of the Government Code (Brown Act), additions to the agenda require two-thirds vote of the legislative body, or, if less than two-thirds of the members are present, a unanimous vote of those members present, that there is a need to take immediate action and that the need for action came to the attention of the local agency subsequent to the agenda being posted.

"KICK THE HABIT" PRESENTATION -Tripepi Smith

1. CONSENT CALENDAR

NOTICE: All matters listed under the Consent Calendar are considered to be routine and non-controversial and will be acted upon by the Board by one motion in the form listed below. There will be no separate discussion on these items prior to the time the Board votes unless any Board members, staff or the public requests specific items be discussed and/or removed from the Consent Calendar for separate action.

A. MINUTES

The Board will be asked to approve the minutes from the January 20, 2016, Board meeting.

B. REPORT ON GENERAL DISBURSEMENTS

It is recommended that the Board approve the total disbursements for the month of December 2015, in the amount of $19,602,753.89.

C. **RESOLUTION NO. 2016-2-1, PARTICIPATION IN THE CALIFORNIA ASSET MANAGEMENT PROGRAM**

It is recommended that the Board adopt Resolution No. 2016-2-1, authorizing participation in the California Asset Management Program.

D. **RESOLUTION NO. 2016-2-2, AUTHORIZING AGENCY ORGANIZATION MEMBERSHIPS AND AFFILIATIONS**

It is recommended that the Board:

1. Approve the Agency-wide memberships and affiliations for FY 2016/17, in the amount of $238,250 (includes 5% contingency); and

2. Adopt Resolution No. 2016-2-2, authorizing Agency organizational memberships and affiliations.

E. **ADOPTION OF RESOLUTION NO. 2016-2-5 FOR THE INTERIM APPOINTMENT OF A RETIRED ANNUITANT**

It is recommended that the Board adopt Resolution No. 2016-2-5 for exception to the 180-day wait period Government Code Sections 7522.56 & 21221(h) and for the interim appointment of Ernest Yeboah, as a retired annuitant, to the position of Executive Manager of Operations/Assistant General Manager.

F. **CONTRACT AWARD FOR THE CARBON CANYON WASTEWATER REGIONAL FACILITY (CCWRF) LAWN CONVERSION IMPROVEMENT**

It is recommended that the Board:

1. Approve the landscape services contract to EcoTech Services, Inc. for the CCWRF Lawn Conversion Improvements Project, for a not-to-exceed amount of $124,000;

2. Approve a budget amendment to increase the Regional Wastewater Operations and Maintenance (RO) Fund revenue and expense in the amount of $200,000; and

3. Authorize the General Manager to execute the contract.

G. **CONTRACT AWARD FOR ON-SITE FLEET VEHICLE MAINTENANCE SERVICES**

It is recommended that the Board:

1. Approve Contract No. 4600002004 to Managed Mobile, Inc. of Placentia, California establishing a two-year contract for on-site vehicle maintenance services, with an option for two, one-year extensions, for a not-to-exceed amount of $150,000 for the initial two-year term; and

2. Authorize the General Manager, or the designee, to execute the contract with two one-year potential contract extensions.

H. **PROJECT MANAGEMENT, ENGINEERING, AND CONSTRUCTION STAFF AUGMENTATION SUPPORT SERVICES CONTRACT AWARD**

It is recommended that the Board:

1. Award three-year contracts to Carollo Engineers, Inc., GK & Associates, MWH, and Wallace & Associates Consulting, Inc. for on-call "as needed" project management, engineering, and construction staff augmentation support services for a not-to-exceed total amount of $1,500,000 for each contract; and

2. Authorize the General Manager to execute the contracts.

I. **ADOPTION OF RESOLUTION NO. 2016-2-3, FOR THE USBR WATERSMART: 2016 WATER AND ENERGY EFFICIENCY PROGRAM GRANT APPLICATION**

It is recommended that the Board:

1. Adopt Resolution No. 2016-2-3, authorizing the Agency to enter into a financial assistance agreement with the U.S. Department of Interior – Bureau of Reclamation (USBR) for a grant application submitted on January 20, 2016, for the recycled water laterals for the California Steel Industries and the Auto Club Speedway to Increase Local Water Supply and Energy Efficiency Project (Project);

2. Authorize the General Manager, Assistant General Managers, or his designees to execute the financial assistance agreement, any amendments, and any grant related documents thereto.

J. **ADOPTION OF ADDENDUM NO. 2 TO THE FACILITIES MASTER PLAN PROGRAM ENVIRONMENTAL IMPACT REPORT**

It is recommended that the Board:

1. Adopt the Addendum No. 2 to the Facilities Master Plan Program Environmental Impact Report; and

2. Authorize the General Manager to file the Notice of Determination (NOD) with the San Bernardino County Clerk of the Board.

K. **1630 EAST AND WEST RECYCLED WATER PUMP STATION SURGE PROTECTION CONSTRUCTION CONTRACT AWARD**

It is recommended that the Board:

1. Approve the construction contract for the 1630 East and West Recycled Water Pump Station Surge Protection, Project No. EN15055, to J.R. Filanc Construction Company for $729,000; and

2. Authorize the General Manager to execute the contract.

L. **RP-4 AERATION BASIN MEMBRANE DIFFUSER SERVICE**
It is recommended that the Board:

1. Authorize the single source procurement of new aeration basin membrane diffusers that the membrane diffuser reskinning services for Regional Water Recycling Plant No. 4 (RP-4) from OVIVO USA, LLC for a not-to-exceed amount of $1,032,000; and

2. Authorize the General Manager, or his designee, to execute the purchase.

2. ACTION ITEMS

A. **WATER PURCHASE AND STORAGE AGREEMENT**
It is recommended that the Board:

1. Approve the Water Storage Agreement between Inland Empire Utilities Agency (IEUA) and Cucamonga Valley Water District (CVWD) for the purchase of up to 5,000 acre-feet of supplemental water;

2. Approve the use of $2,700,000 of "one-time" incremental property taxes to fund the purchase of supplemental water; and

3. Authorize the General Manager, subject to non-substantial changes, to execute the Agreement.

B. **ENERGY MANAGEMENT PLAN**
It is recommended that the Board concur with the proposed initiatives and findings as outlined in the Energy Management Plan.

C. **AGENCY-WIDE LIGHTING IMPROVEMENTS CONSTRUCTION CONTRACT AWARD**
It is recommended that the Board:

1. Approve the construction contract for the Agency-Wide Lighting Improvements Project No. EN16013, to Facilities Solutions Group for a not-to-exceed amount of $1,400,320; and

2. Authorize the General Manager to finalize and execute the contract.

3. INFORMATION ITEMS

A. **REGIONAL CONTRACT AMENDMENT AND RENEWAL UPDATE**

B. **MID-YEAR BUILDING ACTIVITY REPORT (POWERPOINT)**

C. **CHINO BASIN BOUNDARY UPDATE FOR THE 2014 SUSTAINABLE GROUNDWATER MANAGEMENT ACT (SGMA) (POWERPOINT)**

D. **MWD UPDATE AND DROUGHT UPDATE (ORAL)**

RECEIVE AND FILE INFORMATION ITEMS

E. **TREASURER'S REPORT OF FINANCIAL AFFAIRS (WRITTEN/ POWERPOINT)**

F. **PUBLIC OUTREACH AND COMMUNICATION (WRITTEN)**

G. **LEGISLATIVE REPORT FROM INNOVATIVE FEDERAL STRATEGIES (WRITTEN)**

H. **LEGISLATIVE REPORT FROM WEST COAST ADVISORS (WRITTEN)**

I. **LEGISLATIVE REPORT FROM AGRICULTURAL RESOURCES (WRITTEN)**

J. **CALIFORNIA STRATEGIES, LLC MONTHLY ACTIVITY REPORT (WRITTEN)**

K. **FEDERAL LEGISLATIVE TRACKING MATRIX (WRITTEN)**

L. **ENGINEERING AND CONSTRUCTION MANAGEMENT PROJECT UPDATES (POWERPOINT)**

M. **UNFUNDED LIABILITIES FOR PENSION AND OTHER POST-EMPLOYMENT BENEFITS UPDATE (POWERPOINT)**

N. **WATER CONSERVATION PROGRAM UPDATE (POWERPOINT)**

O. **CONSERVATION & DATA INITIATIVES (POWERPOINT)**

P. **LABORATORY SEMI-ANNUAL UPDATE (POWERPOINT)**

Materials related to an item on this agenda submitted to the Agency, after distribution of the agenda packet, are available for public inspection at the Agency's office located at 6075 Kimball Avenue, Chino, California during normal business hours.

4. **AGENCY REPRESENTATIVES' REPORTS**

A. **SAWPA REPORT (WRITTEN)**

B. **MWD REPORT (WRITTEN)**

C. **REGIONAL SEWERAGE PROGRAM POLICY COMMITTEE REPORT**
(February meeting cancelled. Next meeting scheduled for March 3, 2016.)

D. **CHINO BASIN WATERMASTER REPORT (WRITTEN)**

5. **GENERAL MANAGER'S REPORT (WRITTEN)**

6. **BOARD OF DIRECTORS' REQUESTED FUTURE AGENDA ITEMS**

7. DIRECTORS' COMMENTS

A. CONFERENCE REPORTS

This is the time and place for the Members of the Board to report on prescheduled Committee/District Representative Assignment meetings, which were held since the last regular Board meeting, and/or any other items of interest.

8. CLOSED SESSION

A. PURSUANT TO GOVERNMENT CODE SECTION 54956.9(a) – CONFERENCE WITH LEGAL COUNSEL – EXISTING LITIGATION

1. Chino Basin Municipal Water District vs. City of Chino, Case No. RCV51010

2. Martin vs. IEUA, Case No. CIVRS 1000767

3. Mwembu vs. IEUA, Case No. CIVDS 1415762

B. PURSUANT TO GOVERNMENT CODE SECTION 54956.8 – CONFERENCE WITH REAL PROPERTY NEGOTIATOR

1. Supplemental Water Transfer/Purchase
   Negotiating Party: General Manager P. Joseph Grindstaff
   Under Negotiation: Price and Terms of Purchase

C. PURSUANT TO GOVERNMENT CODE SECTION 54956.9 CONFERENCE WITH LEGAL COUNSEL - ANTICIPATED LITIGATION

1. One (1) Case

D. PURSUANT TO GOVERNMENT CODE SECTION 54957 – PERSONNEL MATTERS

1. Various Positions – Compensation Study
2. Various Positions.

E. PURSUANT TO GOVERNMENT CODE SECTION 54957 – PERSONNEL MATTERS – PUBLIC EMPLOYEE PERFORMANCE EVALUATION

1. General Manager

9. ADJOURN

*A Municipal Water District

In compliance with the Americans with Disabilities Act, if you need special assistance to participate in this meeting, please contact the Board Secretary (909) 993-1736, 48 hours prior to the scheduled meeting so that the Agency can make reasonable arrangements.

Proofed by: SR

Declaration of Posting

I, April Woodruff, Board Secretary of the Inland Empire Utilities Agency*, A Municipal Water District, hereby certify that a copy of this agenda has been posted by 5:30 p.m. at the Agency's main office, 6075 Kimball Avenue, Building A, Chino, CA on Thursday, February 11, 2016.

for Stephanie Riley

April Woodruff

ACTION
ITEM

2A

Inland Empire Utilities Agency
A MUNICIPAL WATER DISTRICT

Date:	February 17, 2016
To:	The Honorable Board of Directors
Through:	Public, Legislative Affairs, and Water Resources Committee *(2/10/16)* Finance, Legal, and Administration Committee *(2/10/16)*
From:	P. Joseph Grindstaff General Manager
Submitted by:	Chris Berch CB Executive Manager of Engineering/Assistant General Manager Sylvie Lee CB for SL Manager of Planning and Environmental Resources
Subject:	Water Purchase and Storage Agreement

RECOMMENDATION

It is recommended that the Board of Directors:

1. Approve the Water Storage Agreement between Inland Empire Utilities Agency (IEUA) and Cucamonga Valley Water District (CVWD) for the purchase of up to 5,000 acre-feet of supplemental water;

2. Approve the use of $2,700,000 of "one-time" incremental property taxes to fund the purchase of supplemental water; and

3. Authorize the General Manager, subject to non-substantial changes, execute the Agreement.

BACKGROUND

In response to the 2015 Governor's Order, several IEUA member agencies have significantly reduced their demands on imported water purchases through Metropolitan Water District (MWD). These demands have resulted in ongoing operational challenges for the CVWD. As required within the MWD Administrative Code, CVWD must maintain a minimum flow of 15 cubic-feet/second (10% of total turnout capacity) to their water treatment plant through the MWD turnout at any time. Use below this level will be charged at 15 cubic-feet/second (take-or-pay).

Several planned IEUA water resource programs are contingent upon the development of Chino Basin groundwater storage. IEUA has a pending storage application with the Chino Basin Watermaster (CBWM); however, it is anticipated that the processing of the application will take at least a year to be formally considered and approved by CBWM. Storage of supplemental water during wet years and use of stored water during dry years is an IEUA Business Goal and a fundamental strategy within the Integrated Water Resource Plan.

In late 2015, CVWD and IEUA developed an approach that would help CVWD meet their minimum flow needs and enable IEUA to purchase and store water in the Chino Basin. This approach is memorialized in the attached Water Storage Agreement (Agreement). Key provisions of the Agreement are as follows:

- CVWD would maintain minimum MWD turnout flow rate
- CVWD would purchase actual water needed through the MWD turnout
- IEUA would purchase the additional increment of water needed for CVWD to meet the minimum flow requirement
- An equivalent volume of Chino Basin groundwater will be stored by CVWD for IEUA for all supplemental water purchases (in-lieu groundwater storage)
- CVWD will carry IEUA's water in storage until such time that IEUA elects to sell or transfer stored water

The approval of this Agreement would affect the purchase of up to 5,000 acre-feet of water. Based on the 2016 MWD Untreated Tier-1 rate of $594/acre-foot, approximately $3,000,000 of water could be purchased and stored under this Agreement. The purchase and subsequent resale of stored water will be recorded in the Water Resources (WW) Fund.

This Agreement meets the IEUA adopted Business Goal of *Water Reliability* by reducing demands for imported water during dry and normal years and storing imported water into the Chino Basin during wet years.

PRIOR BOARD ACTION

On June 17, 2015, the Board of Directors approved the use of "one-time" receipts as a funding source for the Supplemental Water Resource reserve.

IMPACT ON BUDGET

Upon approval, water purchases will be supported by "one-time" incremental property tax receipts of $2,700,000 received in December 2015 as a result of the dissolution of redevelopment agencies. All revenues associated with the future sale of stored water will be used to make future supplemental water purchases.

Attachment: 2016 Water Storage Agreement

2016
WATER AGREEMENT

Inland Empire Utilities Agency
and
Cucamonga Valley Water District

This 2016 Water Agreement ("Agreement") is made as of _____, 2016, by and between the Inland Empire Utilities Agency, a Municipal Water District, ("IEUA"), and the Cucamonga Valley Water District ("CVWD"). IEUA and CVWD are hereinafter collectively referred to as the Parties or individually as a Party.

RECITALS

WHEREAS, The Chino Groundwater Basin (Chino Basin) is one of the largest subsurface storage aquifers in Southern California and has the potential to store large volumes of water for local use during dry periods.

WHEREAS, CVWD has pumping rights and storage rights within the Chino Basin.

WHEREAS, IEUA has the desire and ability to purchase untreated imported water to supplement local groundwater supply.

WHEREAS, IEUA contemplates delivering and storing supplemental water in the Chino Basin for the purpose of providing additional local water supplies during dry years.

WHEREAS, IEUA desires to have a designated storage account within the Chino Basin; a process that is scheduled to be worked through over the next year with the Chino Basin Watermaster (Watermaster).

WHEREAS, During times when water demands are very low, CVWD does not regularly have sufficient demand on the Metropolitan Water District (MWD) service connection that meets the minimum take-or-pay flow requirement.

WHEREAS, IEUA would be willing to supplement CVWD's minimum take-or-pay MWD service connection requirement, if the additional supplemental water supply could be credited to IEUA through CVWD's Chino Basin excess carryover storage account.

NOW, THEREFORE, the Parties hereto agree as follows:

SECTION 1: DELIVERY OF MWD TIER-1 WATER

A. Upon request by CVWD, or as otherwise coordinated between the Parties, IEUA shall at its own cost purchase and deliver to a service connection at one of CVWD's treatment facilities, as designated by CVWD, the volume of MWD water requested by CVWD to meet its minimum service connection flows from MWD and included within the CVWD Tier-1 allocation. The Parties acknowledge and agree that CVWD shall not be billed for any such deliveries; CVWD shall not be responsible for any and all applicable charges for such deliveries, including but not limited to MWD RTS charges, and IEUA shall be responsible for any charges. CVWD shall be responsible for all treatment and distribution costs incurred after the MWD service connection point to a CVWD treatment facility.

B. In the event CVWD desires to have IEUA purchase and deliver MWD Tier-1 water to a service connection at one of CVWD's treatment facilities to meet its minimum service connection flows in accordance with Section 1(A) above, CVWD shall, in good faith, provide IEUA a forecast of anticipated purchases no later than 30-days prior to the start of actual delivery. Any such water purchased and delivered by IEUA at the request of CVWD shall be counted towards the CVWD Tier-1 allocation (limit is 28,368 for Fiscal Year 2015/16).

C. CVWD shall notify IEUA no later than 5-working days following the end of the calendar month (if deliveries have been made at the request of CVWD) of actual delivery of water through the MWD service connection that they wish to have applied to this agreement. The reported volume of water will therefore be paid for by IEUA and removed from any imported water billing to CVWD.

D. In the event IEUA desires to purchase and deliver additional MWD Tier-1 water to a service connection at one of CVWD's treatment facilities that is not covered by Section 1(A) above, and for which IEUA desires to receive a stored water credit in accordance with Section 2 below, IEUA shall submit a written request to CVWD for any such proposed transaction no later than 30-days prior to the proposed delivery, and any such proposed transaction shall be subject to written approval by CVWD within its sole and complete discretion. Any such water purchased and delivered by IEUA at the request of IEUA and approval of CVWD in accordance with this Section 1(C) shall be counted towards the IEUA Tier-1 allocation. The Parties acknowledge and agree that CVWD shall not be billed for any such deliveries and that IEUA shall be responsible for any and all applicable charges for such deliveries, including but not limited to MWD RTS charges, and that CVWD shall not be responsible for any charges.

SECTION 2: STORED WATER CREDITS

A. Following the purchase and delivery of any water in accordance with Section 1 of this Agreement, CVWD shall account for an equivalent volume of Chino Basin groundwater to IEUA within CVWD's existing Excess Carryover Storage Account ("IEUA-credited stored water").

B. IEUA-credited stored water shall be subject to losses normally assessed to Appropriative Pool storage accounts by Watermaster and any such losses shall be passed-through to IEUA by CVWD.

C. In the event that IEUA desires to transfer all or any portion of its IEUA-credited stored water to another party, IEUA shall notify CVWD in writing of the requested transfer no less than 30-days prior to the proposed transfer being filed with Watermaster. Thereafter, CVWD shall, in good faith, file the necessary paperwork required by Watermaster within 30-days of receiving a written request from IEUA; provided, however, that IEUA shall cooperate in supplying CVWD with all necessary data and information that may be needed to complete the Watermaster paperwork, and provided further that CVWD shall have no responsibility, liability, duty to defend, or any other obligation in relation to the timing, Watermaster consideration, potential third-party protest, or any other factors affecting any proposed transfer by IEUA.

D. CVWD shall provide IEUA with a written summary of the IEUA-credited stored water balance (which shall include, at a minimum, prior water balance, water added, losses applied, transfers in/out and new water balance) within 45-days of the end of each quarter (i.e., May 15th for January – March).

E. Upon termination of this Agreement, CVWD shall notify IEUA of the balance of IEUA-credited stored water, which shall remain IEUA's asset. Subject to Watermaster approval, IEUA may transfer the remaining said balance of IEUA-credited stored water to IEUA's dedicated water storage account, request transfer of the water to another party, or leave the balance in CVWD's storage account for future transfer subject to the terms of this Agreement. IEUA shall make good faith efforts to ensure that all IEUA-credited stored water is removed from the CVWD storage account within 120-months following the termination of this Agreement. In the event any IEUA-credited stored water remains in the CVWD storage account at the end of said 120-month period, the Parties shall meet and confer in good faith to develop a mutually agreeable plan for the disposition of said water. If the Parties cannot reach agreement through the meet and confer process, the Dispute Resolution provision of this agreement shall be applied.

SECTION 3: EFFECTIVE DATE

This Agreement shall be effective from the date of execution of this Agreement by both Parties and shall terminate on June 30, 2017, unless a one-year extension is entered by written amendment to this Agreement executed by both Parties.

SECTION 4: MUTUAL INDEMNIFICATION

Each Party agrees to protect, defend, indemnify and hold harmless the other Party and its officers, directors, agents, employees, volunteers, attorneys, consultants, and subcontractors from any and all liability, claims, judgments, costs and demands, including demands arising from injuries or death of persons and damage to property, occurring as a result of its own or its respective officers, directors, agents, employees, volunteers, attorneys, consultants, or subcontractor's wrongful or negligent acts or omissions in performing or failing to perform this Agreement. Each Party shall be responsible only to the extent of its negligence. Each Party further agrees to investigate, handle, respond to, and provide defense for any such claims, demands or suit required hereunder at its sole expense.

SECTION 5: OBSERVING LAWS AND ORDINANCES

The Parties shall at all times observe and comply with all applicable laws, ordinances, regulations, requirements, orders and decrees affecting their respective performance under this Agreement, and a Party's failure to comply with applicable laws, ordinances, regulations, requirements, orders or decrees may constitute a breach of this Agreement and entitle the non-breaching Party to remedies as provided in this Agreement.

SECTION 6: DISPUTE RESOLUTION

The Parties shall seek to resolve any dispute concerning the interpretation or implementation of this Agreement, including but not limited to an alleged breach of this Agreement, through good faith negotiation, involving, as and when appropriate, the general manager or chief executive officer of each of the Parties. A Party alleging a breach of this Agreement or other dispute arising under this Agreement shall send written notice with a reasonably detailed description of the alleged breach or other dispute to the other Party. The Party receiving the notice of the alleged breach or other dispute shall have thirty (30) calendar days to cure any such alleged breach or dispute to the satisfaction of the Party alleging the breach or other dispute. Any alleged breach or other dispute that remains unresolved sixty days (60) days after the initial written notice of alleged breach or other dispute is delivered shall be submitted to a single arbitrator with substantial experience in the matter or matters in dispute, and conducted in accordance with Judicial Arbitration and Mediation Services (JAMS). The JAMS arbitrator shall apply the JAMS rules of arbitration, which shall govern any arbitration. If the Parties cannot agree on a single arbitrator within ten (10) days of the written election to submit the matter to arbitration, any Party may request JAMS to appoint a single, neutral arbitrator. The Parties shall use their reasonable best efforts to have the arbitration proceedings concluded within ninety (90) business days of selection of the arbitrator.

SECTION 7: NOTICE

Written notices to be given to any Party must be given by personal delivery or by registered or certified mail addressed and delivered as set forth below. Other correspondence and invoices may be sent by first-class mail, addressed and delivered as set forth below:

Inland Empire Utilities Agency
6075 Kimball Avenue
Chino, CA 91708
Attention: Chris Berch

Cucamonga Valley Water District
10440 Ashford Street
Rancho Cucamonga, CA 91730
Attention: John Bosler

SECTION 8: TERMINATION FOR CONVENIENCE

In addition to other rights set forth in this Agreement, each Party reserves and has the right to immediately suspend, cancel or terminate this Agreement at any time upon thirty (30) days written notice to the other Party. In the event of such termination, the terminating Party shall pay the other Party any and all amounts owed for all authorized costs or any obligations hereunder up to the date of such termination. Any water remaining in a storage account at the time of termination shall be disposed of in accordance with the provisions of Section 2(E) of this Agreement.

SECTION 9: REPRESENTATION OF AUTHORITY

Each Party represents to the other that it has the authority to enter into this Agreement and that the individual signing this Agreement on behalf of their respective Party has the authority to execute this Agreement and to bind their respective Party to the terms and conditions of this Agreement.

SECTION 10: GOVERNING LAW

This Agreement shall be governed by and constructed in accordance with the laws of the State of California in the County of San Bernardino.

SECTION 11: INCORPORATION OF RECITALS

The Recitals set forth above are incorporated herein and made a part of this Agreement.

SECTION 12: ENTIRE AGREEMENT; NO THIRD PARTY BENEFICIARIES

This Agreement is intended by the Parties as a complete and exclusive statement of the terms of their agreement and it supersedes all prior agreements, written or oral, as to the subject matter of this Agreement. This Agreement may be modified only upon the mutual written agreement of the Parties hereto. No third party beneficiary is intended or created by the execution of this Agreement.

SECTION 13: ATTORNEYS' FEES AND COSTS

In any proceeding to enforce or interpret the terms or provisions of this Agreement, the prevailing Party, in addition to costs, shall be entitled to recover its reasonable attorneys' fees.

SECTION 14: COUNTERPARTS

This Agreement may be signed in counterparts, each of which shall constitute an original, and which taken together shall constitute one and the same Agreement. Verifiable facsimile and electronic execution copies of this Agreement shall constitute original counterparts or copies of this Agreement.

IN WITNESS WHEREOF, each of the Parties has caused this Agreement to be executed by its respective duly authorized officers. The effective date of this Agreement shall be the in accordance with the terms of this Agreement.

INLAND EMPIRE UTILITIES AGENCY:	CUCAMONGA VALLEY WATER DISTRICT:
P. Joseph Grindstaff General Manager	Martin E. Zvirbulis General Manager/CEO
Date: _____	Date: _____

ACTION
ITEM

2B

Inland Empire Utilities Agency
A MUNICIPAL WATER DISTRICT

Date: February 17, 2016

To: The Honorable Board of Directors

Through: Public, Legislative Affairs, and Water Resources Committee *(02/10/16)*

From: P. Joseph Grindstaff
General Manager

Submitted by: Chris Berch
Executive Manager of Engineering/Assistant General Manager

Sylvie Lee
Manager of Planning and Environmental Resources

Subject: Energy Management Plan (EMP)

RECOMMENDATION

It is recommended that the Board of Directors concur with the proposed initiatives and findings as outlined in the Energy Management Plan.

BACKGROUND

The primary objectives of the EMP is to benchmark the Agency's current energy performance and greenhouse gas emissions baseline; forecast future demands; and explore measures that will cultivate a reliable and sustainable energy infrastructure to achieve the objectives set forth in IEUA's Business Goals. This plan also aims to identify projects and business practices that can improve the Agency's Integrated Demand Side Management (IDSM) and work in concert with energy utilities whenever possible to benefit grid management.

The major initiatives discussed in the EMP are:

- Peak power independence
- Grid interdependence
- Organics diversion, and
- Carbon neutrality

As described in past planning documents, peak power independence has been a central goal for the Agency due to cost of this power. IEUA has progressed toward this goal by developing a diverse energy portfolio that includes energy efficiency, as well as solar, wind, and fuel cell generation. As more renewable energy comes into the state's power grid; however, the State

must cope with changing grid conditions. This means that assumptions about peak power demand periods will shift, as will the times when surplus power needs to be taken off the grid. IEUA's demand response and battery storage projects are at the cutting edge of addressing this emerging grid management issue. Additionally, environmental regulatory issues related to energy generation will require detailed studies to identify new technologies to address these issues.

In concert with peak power independence and grid interdependence, the EMP also introduces a new initiative to assist the member agencies in complying with the State's anticipated increase in organics diversion requirements, by diverting food waste to the Agency's anaerobic digesters and composting facility. The State has a target to reduce landfilling of solid waste by 75% by 2020, and this is expected, under the 2016 Short Lived Climate Pollutants Plan, to increase to 90% by 2025 in order to further reduce greenhouse gas emissions. Staff is currently conducting a feasibility study to estimate the amount of food waste available in the service area; the biogas generation potential; and the possible alternatives to beneficially use the digester gas generated in a cost effective manner.

A direct consequence of the implementation of the first two initiatives is the proposed carbon neutrality goal, which requires the Agency to acquire 100 percent of its electricity needs from carbon neutral sources by 2030. This will be accomplished through increased energy efficiency and renewable energy generation, and optimized interdependence with the State's power grid. In addition to greenhouse gas emissions voluntary reporting initiated in 2013 (with an audited carbon emissions baseline completed in 2016), staff will establish a carbon impact evaluation criteria to ensure future energy projects selected for implementation contribute to the Agency's achievement of the 100% carbon neutral goal.

The EMP relied on forecasting to evaluate the feasibility of site-specific energy projects. Forecasts were developed by incorporating projects from the Ten-Year Capital Improvement Plan (TYCIP) and findings from the Wastewater Facilities Master Plans, as well as, the anticipated performance of applicable self-generation installations. Wastewater flow projections were utilized to forecast anticipated seasonal demands at each IEUA facility. The EMP identified several potential energy projects, such as lighting upgrades and expansion of the solar installation at the IERCF, that are recommended to undergo more detailed analyses to determine whether they will be incorporated into the 2016/17 TYCIP.

Focused business practices, such as energy procurement strategies and improved energy monitoring were discussed within the plan, as cost saving measures can extend beyond conservation projects. Through prudent planning that considers past performance and anticipates regional needs, this EMP constructs a blueprint to shape a reliable and efficient energy profile for the Agency and an open communication with energy utilities to enhance the water-energy relationship.

The EMP will be reevaluated every two years. A Programmatic Environmental Impact Report (PEIR) is being prepared and will incorporate the findings of the EMP, along with the remainder of the Agency's planning documents, such as the Wastewater Facilities Master Plan and the Integrated Resources Plan. Following the Board approval of the PEIR, anticipated in summer

2016, each of these planning documents will be brought to the Board for final approval. Development of the EMP is consistent with the IEUA business goal of *Wastewater Management*, namely optimizing facility energy use, achieving state environmental sustainability and renewable energy goals, effectively managing renewable resources to achieve peak power independence, and providing for future rate stabilization.

PRIOR BOARD ACTION

None.

IMPACT ON BUDGET

The EMP was entirely developed in-house. Projects recommended by the EMP will be included in the TYCIP to ensure they are properly funded.

Attachments:

Attachment 1: PowerPoint Presentation
Attachment 2: 2015 Energy Management Plan
Attachment 3: Fact Sheets

Energy Management Plan (EMP)



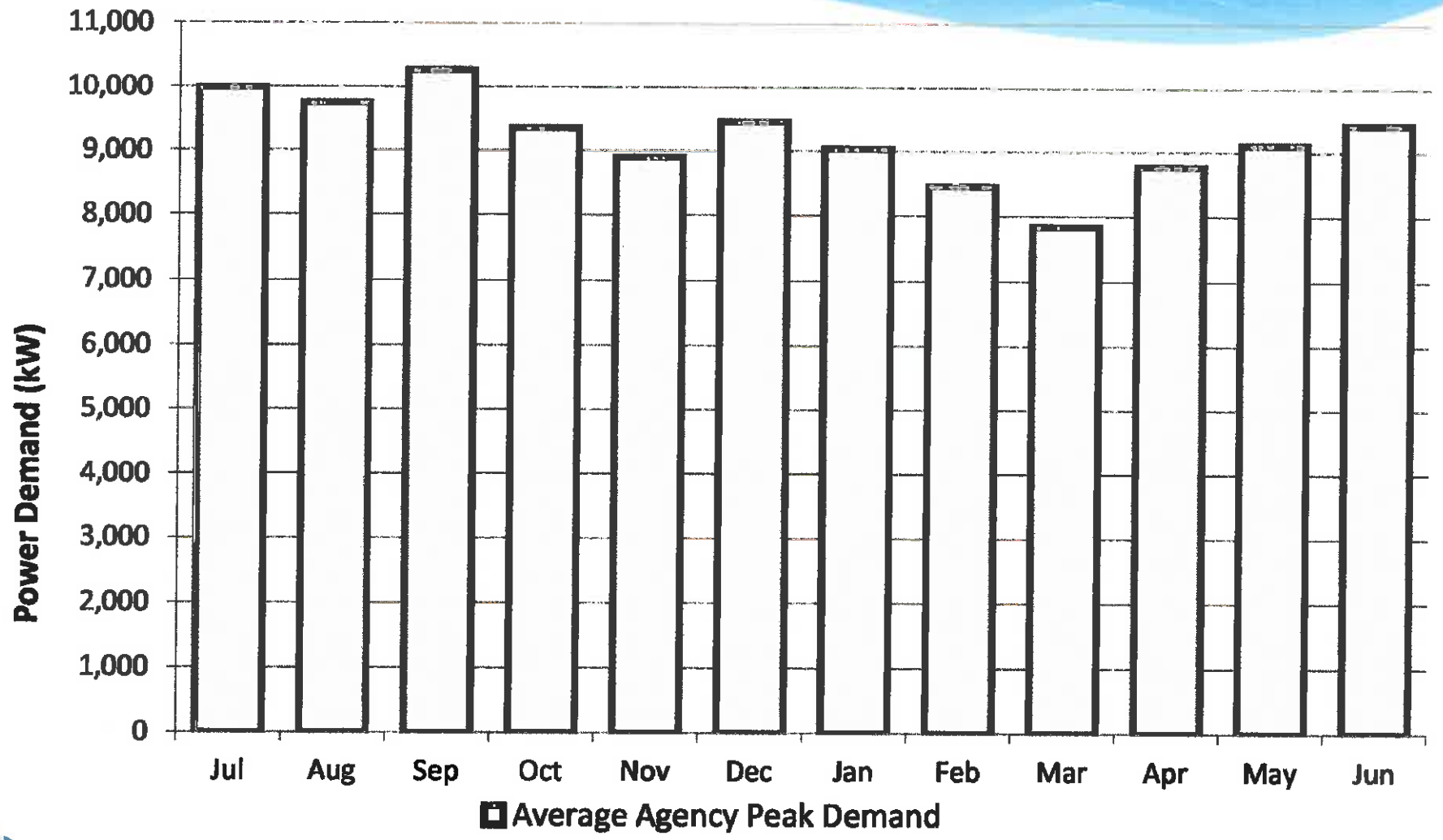

Inland Empire Utilities Agency
A MUNICIPAL WATER DISTRICT

Pietro Cambiano
Planning & Environmental Resources

EMP Initiatives

- Peak power independence
- Organics diversion
- Grid interdependence
- Carbon neutrality

Peak Power Benchmarking



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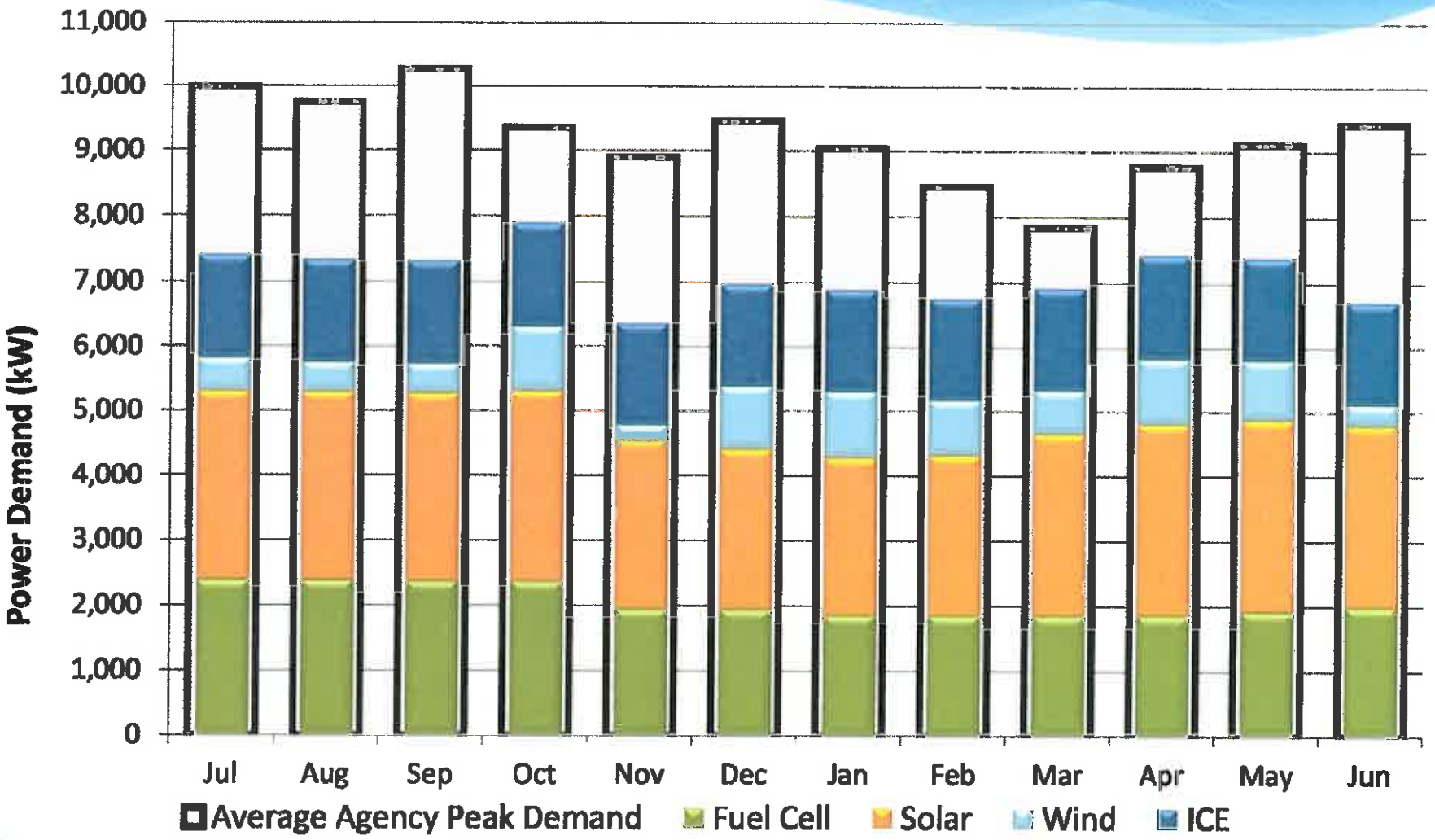
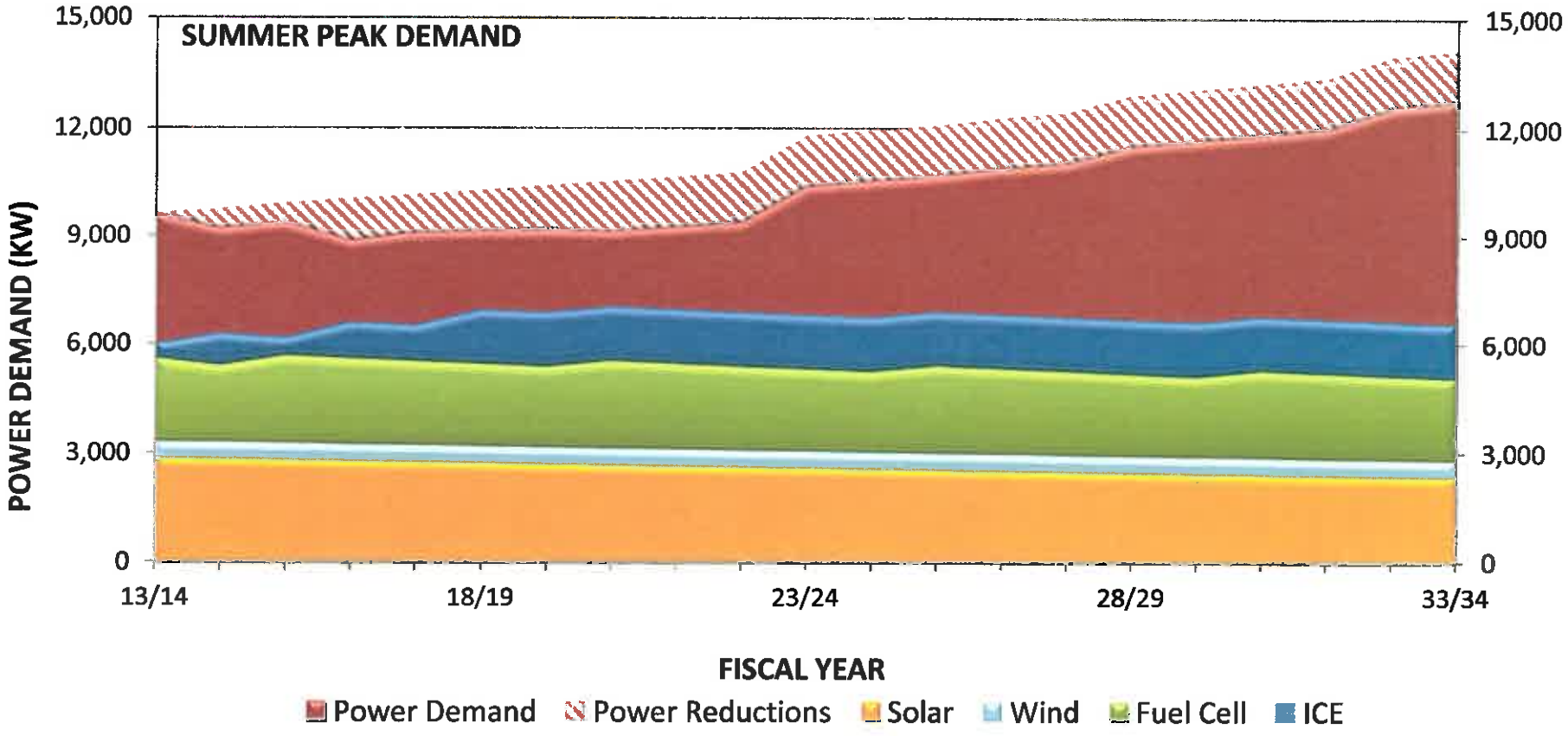
Peak Power Benchmarking



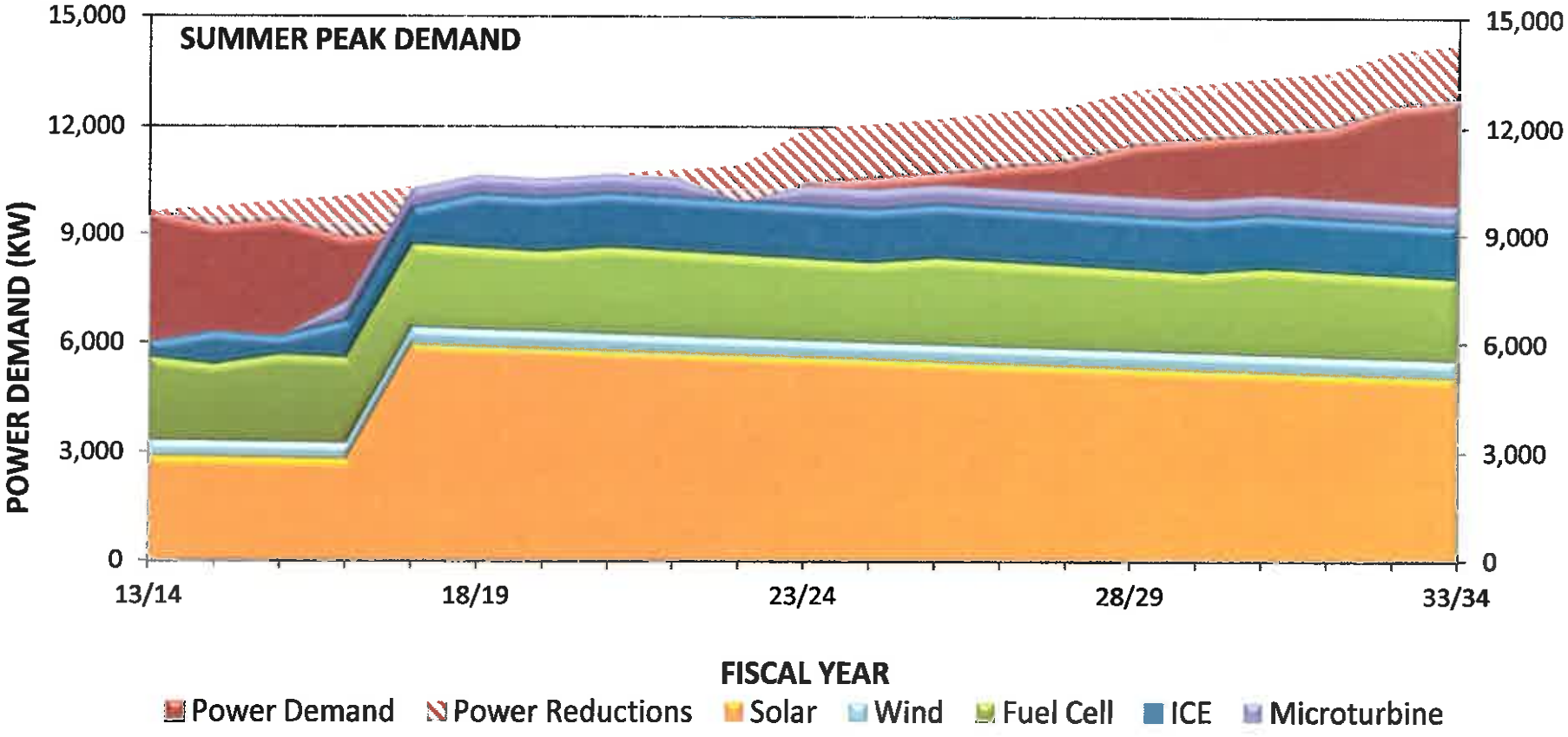
Forecasting Demands

Includes TYCIP, WFMPs, and Short-Term Projects



Forecasting Demands

Includes TYCIP, WFMPs, Short-Term and Long-Term Projects



Organics Diversion

- Assist Member Agencies to comply with the State's organics diversion requirements
- Divert organics from landfills to IEUA's solids facilities
- Reduce critical short-lived climate pollutants

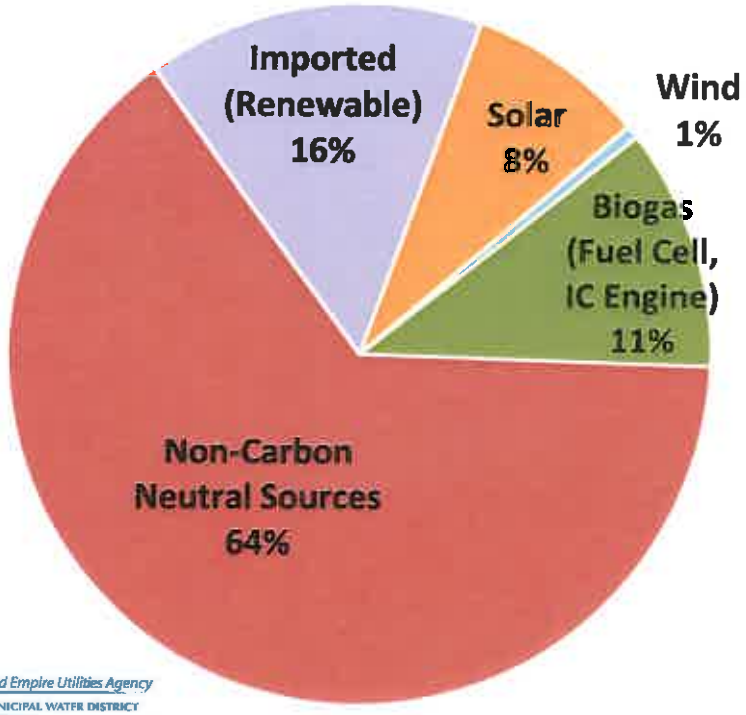




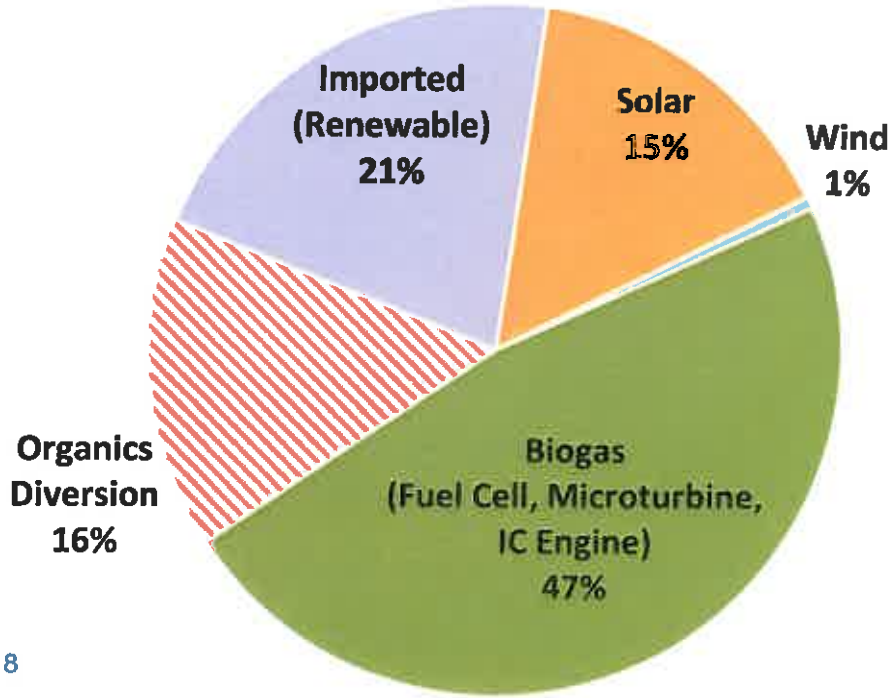
Carbon Neutral by 2030

- Current planning efforts expected to achieve 84% neutrality
  - Combination of efficiency measures and new renewable
- Future EMPs to identify opportunities to bridge gap

2013 (36% Neutral)



2030 Projected (100% Neutral)



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Recent Efforts

- Energy Audits Completed and Efficiency Measures Identified
  - Lighting retrofit to begin in first quarter 2016
  - Pump optimization to begin in second quarter 2016
- Energy Storage Agreement in development
  - RP-5 installation to be completed by first quarter 2016
- Organics Diversion Feasibility Study
  - Report to be completed by second quarter 2016

Next Steps

- Implement Goals and Strategies Identified
- Complete Programmatic EIR – Summer 2016
- Update the EMP every two years – 2017

This project meets the Agency's Business Goal of Energy Management and Wastewater Management by optimizing facility energy use and effectively managing renewable resources.

Inland Empire Utilities Agency
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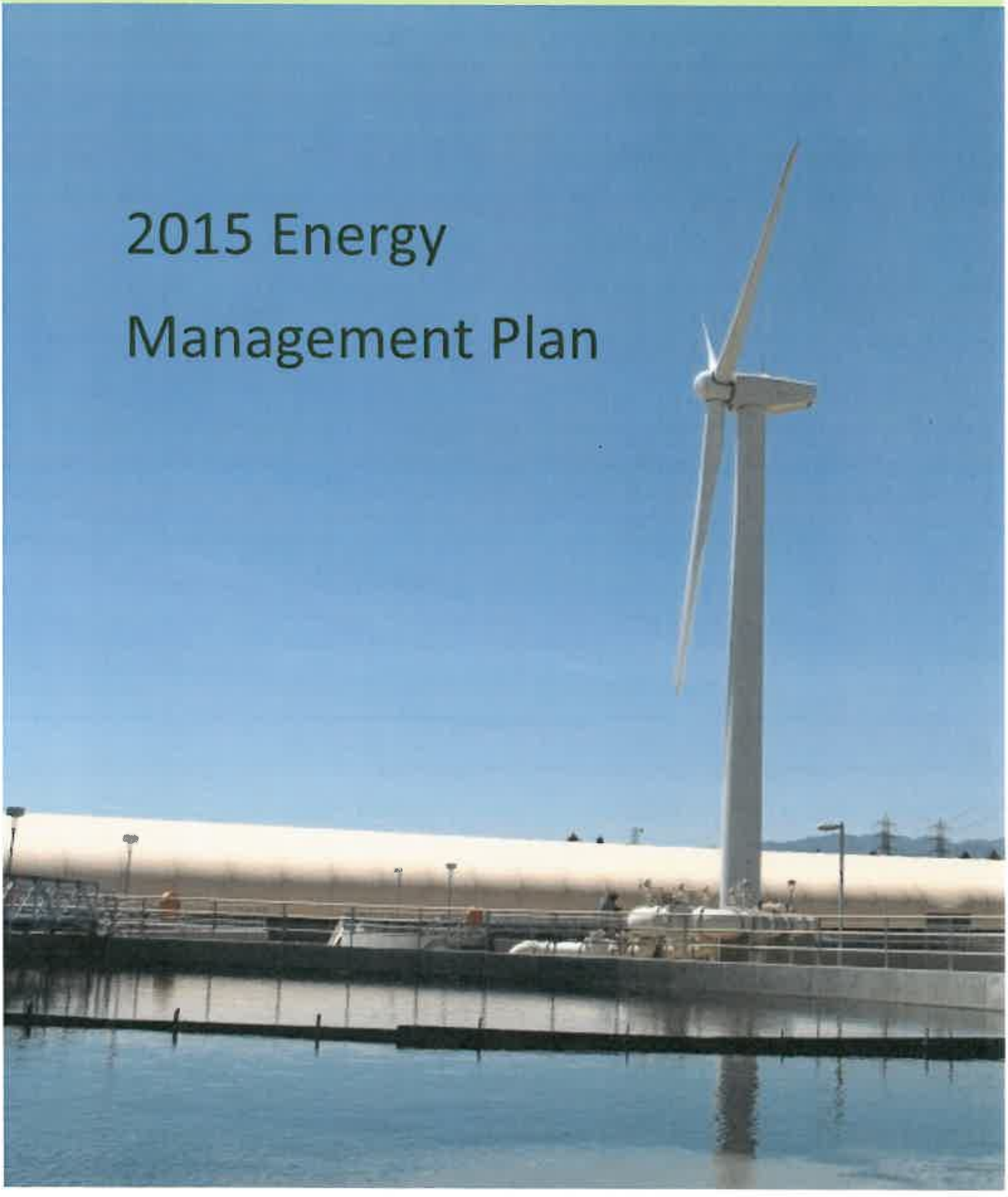
2015 Energy Management Plan



Inland Empire Utilities Agency
2015
Energy Management Plan

Inland Empire Utilities Agency
6075 Kimball Avenue
Chino, CA 91708

Executive Summary

The Southern California water industry is currently operating within a burdensome climate, as adverse environmental conditions are driving policy change during a time of continued population growth and socioeconomic decline. Meeting both water and energy demands in this region in a reliable and environmentally responsible manner have converged to form a substantive challenge for water agencies. The Inland Empire Utilities Agency has addressed this challenge through the development of an Energy Management Plan (EMP) that will focus on resource optimization and sustainable operations.

This EMP analyzes historical energy usage, defines a current energy and Greenhouse Gas emissions baseline, forecasts future demands, examines procurement strategies, and proactively explores measures that can ease the Agency's load on the utility while cultivating a reliable and sustainable energy infrastructure across its facilities. This plan also aims to identify projects and business practices that can improve the Agency's Integrated Demand Side Management (IDSM) and work in concert with energy utilities whenever possible to benefit grid management.

As detailed in past planning documents, grid independence during peak periods has been a central goal within the Agency. Though IEUA has taken advantage of its renewable resources by developing a diverse energy portfolio, further planning is needed to address changing environmental regulations that may dictate available technologies. The EMP introduces a new initiative to assist the member agencies in complying with the organic diversion goals, by diverting food waste to the agency's anaerobic digesters and composting facility. The EMP also establishes a new Business Goal that will require 100 percent of IEUA's electricity needs to be procured from carbon neutral sources by 2030 through strategic planning and renewable resource optimization.

Wastewater flow projections are utilized to forecast anticipated seasonal demands at each IEUA facility. The EMP relies on forecasting to evaluate the feasibility of site-specific energy projects, which resulted in a total of 11 projects that are estimated to require approximately $38 million in capital expenditures. These projects will undergo more detailed analyses to determine whether they will be implemented into IEUA's Ten Year Capital Improvement Plan (TYCIP).

The EMP outlines economic, operational, environmental, and regulatory factors that influence new project implementation at the Agency's wastewater treatment plants, as well as current aspects that tend to impede new project development. Costly and time-intensive grid interconnections, generating capacity limitations on Net Energy Metering (NEM) eligible renewable installations, and limited economic incentives are all identified as elements that can negatively impact new energy management projects. This EMP also offers recommendations that would address each obstacle for regulatory consideration.

Focused business practices, such as energy procurement strategies and improved energy monitoring are discussed within the plan, as cost saving measures can extend beyond conservation projects. Through prudent planning that considers past performance and anticipates regional needs, this EMP attempts to construct a blueprint to shape a reliable and efficient energy profile for the Agency and open communication with energy utilities to enhance the water-energy relationship.

Table of Contents

Acronyms

AMP	Asset Management Plan
AF	Acre-foot
BAC	Bioenergy Association of California
BCE	Business Case Evaluation
BTU	British Thermal Unit
CARB	California Air Resources Board
CASA	California Association of Sanitation Agencies
CBWM	Chino Basin Watermaster
CBWCD	Chino Basin Water Conservation District
CEC	California Energy Commission
CCWRF	Carbon Canyon Wastewater Recycling Facility
CEC	California Energy Commission
CEQA	California Environmental Quality Act
CH_4	Methane
CO2	Carbon Dioxide
CO_2e	CO_2 Equivalent
CPUC	California Public Utilities Commission
CWCCG	California Wastewater Climate Change Group
DA	Direct Access
DG	Distributed Generation

DOE	Department of Energy
DR	Demand Response
EMP	Energy Management Plan
EMS	Energy Management System
ESP	Energy Service Provider
FY	Fiscal Year
GHG	Greenhouse Gas
GWP	Global Warming Potential
HVAC	Heating/Ventilation/Air Conditioning
ICE	Internal Combustion Engine
IDSM	Integrated Demand Side Management
IE	Inland Empire
IERCF	Inland Empire Regional Composting Facility
IOU	Investor-Owned Utility
KW	Kilowatt
KWH	Kilowatt-hour
MW	Megawatts
MWH	Megawatt-hour
MWD	Metropolitan Water District of Southern California
N_2O	Nitrous Oxide
NEM	Net Energy Metering
NGOM	Net Generation Output Meter
O&M	Operations & Maintenance

PPA	Power Purchase Agreement
REC	Renewable Energy Certificate
REEP	Renewable Energy Efficiency Project
RES-BCT	Renewable Energy Self-Generation Bill Credit Transfer
RFP	Request for Proposal
RP-1	Regional Plant No.1 in the City of Ontario
RP-2	Regional Plant No.2 in the City of Chino
RP-4	Regional Plant No.4 in the City of Rancho Cucamonga
RP-5	Regional Plant No.5 in the City of Chino
RP-5 SHF	RP-5 Solids Handling Facility
RPS	Renewable Portfolio Standard
RWRPs	Regional Water Recycling Plants
RWQCB	Regional Water Quality Control Board
SAWPA	Santa Ana Watershed Project Authority
SBCFCD	San Bernardino County Flood Control District
SCAQMD	South Coast Air Quality Management District
SCAP	Southern California Alliance of Publicly Owned Treatment Works
SCE	Southern California Edison
SCF	Standard cubic feet
SCGC	Southern California Gas Company
SGIP	Self-Generation Incentive Program
SLCP	Short-Lived Climate Pollutant
SWP	State Water Project

TA/TI	Technical Assistance and Technology Incentives
TCR	The Climate Registry
TOU	Time of Use
TYCIP	Ten-Year Capital Improvement Plan
VFD	Variable Frequency Drives
VOC	Volatile Organic Compounds

Introduction

WATER-ENERGY NEXUS

Tightening environmental regulations and increasing electrical demand has brought significant challenges to Southern California electrical utilities. Meeting the electrical demands of millions of consumers becomes more difficult during periods of peak activity (generally between 12:00 p.m. and 6:00 p.m., and highest in summer months), as reflected in increased utility rates during these times. The water industry is not only one of the electrical utilities' largest consumers, but is also subject to the same temporal variability in demand.

The water sector is subject to many energy-intensive processes, including water extraction, conveyance, treatment, distribution, and wastewater treatment. Since population growth drives demand for water and energy usage, both are expected to continue increasing in parallel. The wastewater treatment industry is in a unique position to positively impact both water and energy sectors through improved efficiency and using renewable resources from the process.

IEUA has taken advantage of its position by focusing efforts to reduce energy consumption and ease demand on the local electric utility. In 2012, IEUA developed an energy management plan with the goal of going "gridless" by 2020, with the intent of generating enough electricity on site that Agency facilities would be independent from the already taxed Southern California power grid system. IEUA has explored various power generating technologies in pursuit of this goal since its inception. Although IEUA prioritizes the utilization of renewable digester gas produced on site, a spectrum of renewable energy systems have been pursued to develop a robust portfolio across all facilities. While securing renewable technologies along the way, IEUA has also learned lessons that altered the roadmap to meet the 2012 goal.

In order to achieve grid independence with renewable technologies, IEUA must build an energy infrastructure that is capable of handling the full demand of each facility at any given time. Realistically, this would result in the daily export of energy back to the grid when generation exceeded demand. Furthermore, Southern California Edison (SCE) policies dictate that renewable installations are subject to standby and/or departing load charges that rise as the nameplate rating increases, hindering the

cost effectiveness of renewable technologies as the generating capacity grows. Since one of the pillars of the "Gridless by 2020" initiative was to hedge against market volatility, IEUA adjusted its focus on achieving relative independence from the grid during peak periods, when electricity costs are highest. This effort aligns with IEUA's Business Goals (included in Appendix A), adopted by the Board of Directors in 2013 as part of the Agency's Strategic Plan.

REGIONAL PROGRAMS & FACILITIES OVERVIEW

IEUA is a regional wastewater treatment agency and wholesale distributor of imported water. Today the Agency is responsible for serving approximately 830,000 people[1] over 242 square miles in western San Bernardino County. The Agency is focused on providing three key services: (1) treating wastewater, developing recycled water, local water resources, and conservation programs to reduce the region's dependence on imported water supplies and drought-proof the service area; (2) converting biosolids and waste products into a high-quality compost made from recycled materials; and (3) generating electrical energy from renewable sources.

Industrial and municipal wastewater collections are provided through regional wastewater interceptors and two non-reclaimable wastewater pipeline systems. Recycled water is produced at four regional water recycling plants (RWRPs). In addition, the Agency has three facilities where the biosolids produced at the water recycling plants are handled: RP-1 Solids Handling Facility, RP-2 Solids Handling Facility, and the Inland Empire Regional Composting Facility. The Agency also has a solids handling facility at RP-5 which is leased to a private enterprise that intends to produce biogas and energy from food waste.

Although the Agency is a wholesale water provider, the Agency has very little infrastructure or assets related to potable water treatment, conveyance, or use. Water resources-related assets are primarily connected to the recycled water program. In addition to recycled water and wastewater services, the Agency operates a network of groundwater recharge facilities in partnership with Chino Basin Watermaster (CBWM), San Bernardino County Flood Control District (SBCFCD), Chino Basin Water Conservation District (CBWCD). The Agency also operates the Chino Desalter I facility in coordination with the Chino Desalter Authority. The Agency also manages an extensive regional water use efficiency program, and collaborates with Santa Ana Watershed Project Authority (SAWPA), Metropolitan Water District of Southern California (MWD), and the Regional Water

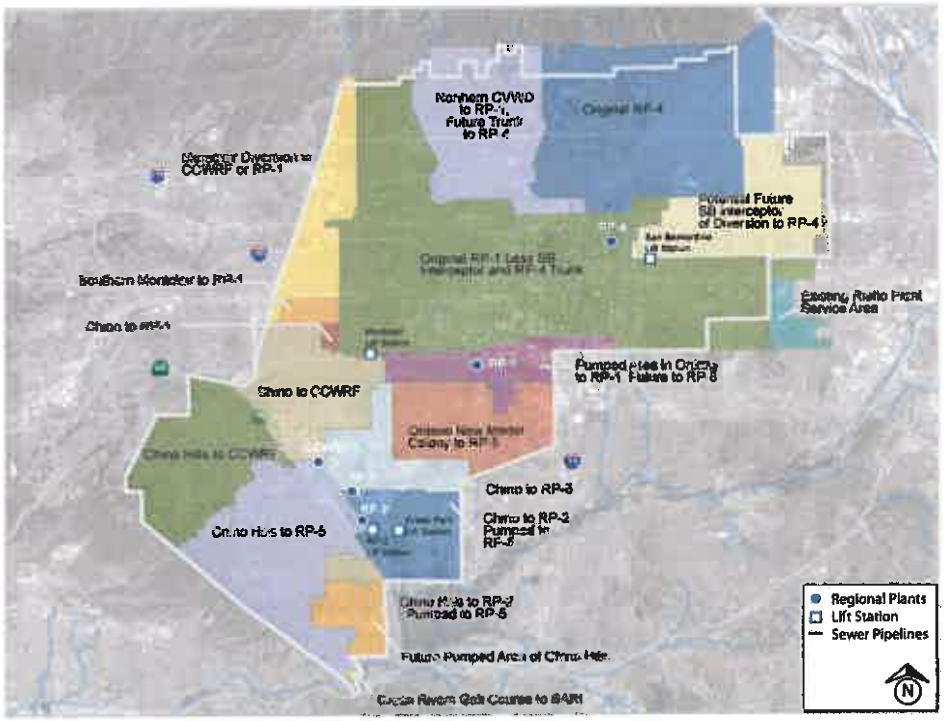
[1] *Source: California Department of Finance, April 2013 census projection.*

Quality Control Board (RWQCB) to develop regional planning documents.

Regional Wastewater Facilities

The Agency has four RWRPs which produce recycled water that meets Title 22 standards for indirect reuse and groundwater recharge. All of the RWRPs have primary, secondary, and tertiary treatment and recycled water pumping facilities and are interconnected in a regional network. Agency staff routinely uses the Agency's bypass and diversion facilities, such as the San Bernardino Lift Station, Montclair Diversion Structure, Etiwanda Trunk Line, and Carbon Canyon bypass, to optimize the Agency's flows and capacity utilization. In general, flows are routed between regional plants in order to maximize recycled water deliveries while minimizing overall pumping and treatment costs. Figure 1 illustrates the service area boundaries for the Agency's four RWRPs.

FIGURE 1. REGIONAL PLANT SERVICE AREA BOUNDARIES



The four

Regional facilities are: Regional Water Recycling Plant No. 1 (RP-1), Regional Water Recycling Plant No. 4 (RP-4), Regional Water Recycling Plant No. 5 (RP-5), and Carbon Canyon Wastewater Recycling Facility (CCWRF). The biosolids produced at RP-4 and RP-1 are thickened, digested, and dewatered at solids handling facilities located at RP-1. Similarly, the CCWRF and RP-5 biosolids are treated at Regional Water Recycling Plant No. 2 (RP-2). The stabilized and dewatered solids are then transported to the Inland Empire Regional Composting Facility (IERCF) for processing into soil amendment.

The Agency has a network of regional interceptor sewers that can be used to bypass flow from one water recycling plant to another to balance and optimize the use of treatment capacity. Currently, the regional interceptors can bypass flow from RP-4 to RP-1 and from CCWRF to RP-5. In addition, primary effluent can be bypassed from the RP-1 equalization basins to RP-5.

The Agency also has four wastewater lift stations, which are used to shift flows that would naturally flow from one portion of the service area to a different treatment plant. The lift stations are instrumental in balancing flows and keeping water in the northern portion of the service area to maximize potential recycled water use.

Recycled Water Distribution System

The Agency has been serving recycled water to its member agencies since formation of the Regional Sewerage Service Contract in 1973. Initially, recycled water was delivered to Whispering Lakes Golf Course and Westwind Park in the city of Ontario, as well as to Prado Regional Park and El Prado Golf Course in San Bernardino County. In the early 1990's, the Agency planned and built the first phase of the Carbon Canyon Recycled Water Project, which now serves several customers in Chino and Chino Hills. The connected demand for the recycled water has more than tripled since FY 2006/07 from 13,000 AFY to over 43,800 AFY. Recycled water and groundwater recharge sales have nearly tripled as well.

Groundwater Recharge Basins

The Agency, in conjunction with the CBWM is implementing the groundwater recharge program to increase artificial groundwater recharge within Chino Basin using storm water, recycled water, and imported water. By enhancing the recharge capacity in the Chino Basin, greater quantities of high quality water can be captured

and stored during wet years. Subsequently, the stored water can be drawn from the Basin during droughts and shortages of imported water. Annual recharge varies due to weather patterns, and the availability of imported water and recycled water supplies.

Inland Empire Regional Composting Facility

The IERCF, constructed in Rancho Cucamonga in 2007 under a Joint Powers Authority agreement between the Agency and the CSDLAC, is completely enclosed to control odors and meet stringent air quality regulations. It is the nation's largest indoor biosolids composting facility. The IERCF uses the Aerated Static Pile composting process to recycle approximately 150,000 wet tons per year of dewatered and stabilized biosolids from the Agency and CSDLAC's wastewater treatment processes, as well as wood waste from local communities. It

The facility is currently operating at its design capacity, receiving nearly 600 tons per day of combined biosolids and recycled waste amendments and producing over 230,000 cubic yards of high quality compost each year for local landscaping and horticultural use. For energy management purposes, RP-4 and IERCF are considered to be a single entity, as they share the same electrical meter.

WORK COMPLETED SINCE 2008

Renewables

IEUA began the renewable energy procurement process by issuing Requests for Proposals (RFPs) for solar, wind, fuel cell, and in-conduit hydroelectric projects in 2008. The RFPs offered vendors the ability to propose outright sale of equipment or Power Purchase Agreements (PPAs) that would eliminate up front capital costs, aside from labor, for the Agency. Multiple proposals were received for solar, wind, and fuel cell projects, while no in-conduit hydroelectric proposals were received. IEUA performed Business Case Evaluations (BCEs) for the proposals received to determine the most economical projects for each facility. In addition to cost and operational reliability, site variations such as digester gas production, land use, and electrical load were important factors in determining the site-specific feasibility of each project.

The first product of the RFP process was a PPA, signed in June 2008, for 3.5 MW of solar energy across four Agency facilities. The solar installations were completed in

December of the same year. Through the agreement, IEUA purchases the energy produced by the solar panels at a competitive rate with fixed escalation over a 20-year period.

This rate structure, typical for all PPAs that the Agency has since entered into, allows the Agency to avoid capital outlay while still receiving the benefit of on-site renewable energy. In each PPA project, the private entity has financed, designed, constructed, operated, and maintained the generation equipment. In return, the private entity receives any incentives available through government funding programs and sells the energy generated to IEUA at a fixed rate.

In March 2010, IEUA entered into a second public-private partnership to install a 1 MW wind turbine at Regional Plant No. 4. The PPA is structured similarly to the solar agreement, with the Agency purchasing 100 percent of the energy produced by the equipment at a fixed escalating rate over 20 years. The turbine installation was completed in December 2011.

In September 2010, IEUA entered into a third public-private partnership with an environmental engineering consulting firm to develop IEUA's RP-5 Solids Handling Facility (RP-5 SHF) as a food waste digestion site. The facility, initially designed as a

manure digestion site, has been diverting food waste regionally since 2012 with the goal of producing enough digester gas to fuel two 1.5 MW cogeneration engines that will provide power for the facility. The project is still under development, with engine commissioning expected in June 2015.

The Agency has historically employed cogeneration engines to combust the digester gas and produce heat and power to be used on-site. However, the 2008 amendment to South Coast Air Quality Management District (SCAQMD) Rule 1110.2 required cogeneration engines to be retrofitted with costly pollution control technologies in order to achieve stringent emissions limits. The Agency issued another RFP to evaluate potential alternatives that could utilize the digester gas in a more cost-effective manner.

In October 2010, IEUA entered into a PPA with a third party to install, maintain, and operate a 2.8 MW molten carbonate fuel cell operating on digester gas at Regional Plant No. 1. The fuel cell is also equipped with a 4.1 MMBtu/hr heat recovery unit to increase overall plant efficiency. As with other PPAs, the Agency agreed to purchase all renewable electricity generated by the fuel cell at a fixed escalation rate over 20 years. The agreement not only provided the Agency with the ability to procure clean renewable energy with no capital costs, but it also mitigated risk associated with the fuel cell technology by combining the digester gas cleaning system and fuel cell power plant under a single entity. In researching the feasibility of a fuel cell system, IEUA staff discovered that previous installations suffered from ineffective gas conditioning that resulted in prolonged shutdowns and reduced equipment lifecycles. IEUA's fuel cell agreement is structured to ensure that downtime is minimized and equipment maintenance is optimized.

Conservation

In addition to the renewable installations, IEUA worked with third parties to perform energy audits at Agency facilities. Select recommendations from these audits were implemented to reduce energy consumption. Lighting retrofits and controls were installed across several facilities, along with variable frequency drives (VFDs) on many pumps and motors. Damper installation on high volume air blowers also resulted in significant electricity savings at the Agency's composting facility. Furthermore, a project is currently underway to improve the aeration basin air handling system at Regional Plant No. 1 to minimize air leaks. This project is expected to reduce electricity consumption at the plant by approximately 1,500 MWh annually.

Demand Response

IEUA has also been involved in Demand Response (DR) programs to reduce Agency costs and to ease pressure on the electrical grid during times of high usage. The Agency's first involvement in DR was in a Time-of-Use Base Interruptible Program (TOU-BIP) from 2008 to 2010. However, because of the financial risk associated with the BIP, the Agency terminated the TOU-BIP contract, and since July 2011, has participated in a Demand Response (DR) program through EnerNOC (a SCE authorized third-party DR provider), a private entity providing energy intelligence software that displays real-time electricity usage. In addition to facilitating DR events, EnerNOC software is used to track consumption from facility processes over time.

The Agency has agreed to provide EnerNOC a total cumulative curtailment of 1,230 kW for all facilities enrolled in the program (RP-1, RP-2, RP-4/IERCF, RP-5 and CCWRF) at a value of approximately $74,000 per year. Reduced energy import from the grid during demand response events is primarily achieved by shutting down some of the recycled water pump stations and through reduced ventilation at the IERCF. These temporary energy conservation techniques do not have any negative impact to the recycled water customers (operations staff was able to increase the reservoir level prior to the event) or to the indoor air quality at IERCF.

Table 1 shows the results of the six DR events that SCE dispatched during FY 13/14. Each facility enrolled in the DR program has a curtailment target, but the IEUA combined total of 1,230 kW is used to determine whether the Agency will be compensated for its performance during each event. IEUA's DR contract with EnerNOC contains a provision that requires the delivered load capacity to be at least 75 percent of the target reduction. If the delivered capacity falls below 75 percent, IEUA does not receive any credit for reducing load during the DR event. However, IEUA strives to reduce its load to match 100 percent of the target reductions at each plant during every event. In FY 13/14, IEUA reached its overall reduction goal in three of the six DR events.

Table 1 shows that IEUA's facilities generally perform better during DR events that occurred in warm months. The reason for this seasonal difference stems from reduced recycled water demand during winter months. Because each DR reduction target is calculated using a baseline averaging energy usage from the previous ten working days, reducing energy usage from RW pumping is difficult, or even impossible, during periods in winter months when pumping is limited or stopped completely due to low demand. The table also shows that RP-1 consistently

TABLE 1. FY 13/14 IEUA DEMAND RESPONSE RESULTS

Event Date	Percentage of Target Reduction Achieved					
	RP-1	RP-2	RP-4/IERCF	RP-5	CCWRF	Overall
7/31/2013	552	130	81	422	4	96
8/29/2013	484	90	95	974	6	125
8/30/2013	1,550	120	91	968	-20	160
2/6/2014	666	0	86	-636	-68	43
2/6/2014	1,608	0	44	-108	4	91
5/29/2014	786	0	114	428	80	145
Average	**941**	**57**	**85**	**341**	**1**	**110**

performed above expectations, while CCWRF had difficulty meeting its target goal. The DR capabilities of each facility will be examined in detail later in the EMP.

Monitoring

ENERNOC's software also allows IEUA to track electricity usage at each facility in real time. The Agency invested in sub-meters that gauge electricity usage from individual processes within the treatment facilities. Sub-metering involves the use of digital meters connected to the SCADA system as a resource to help monitor kW, kWh, amperes, load factor and other units of energy consumption.

A combination of sub-meters and load profiling data can help staff understand operating patterns, increase operating efficiency, assist in identifying malfunctioning equipment and reduce energy demand charges. In addition, this electronic data can be brought into the treatment plant control systems, which will enhance operational control of the facilities, reduce maintenance costs, and prolong equipment operating life.

As of April 2015, the sub-metering installation was complete, but various pieces of equipment were undergoing modifications to improve performance and reliability. Once the modifications are complete, IEUA intends to compare the energy usage of each process to industry metrics to gauge levels of efficiency. Continuous energy tracking of treatment processes will also allow Agency staff to measure the effectiveness of energy projects that are implemented.

SHORT-TERM GOALS

This EMP establishes goals aimed to improve the Agency's energy management through various means, including renewable portfolio diversification, increased monitoring, resource optimization, and strategic procurement. This section focuses on goals that are to be achieved within the next five years.

Procurement

IEUA's renewable PPAs benefit IEUA by establishing energy rates for the next 20 years and eliminating uncertainty that comes with purchasing imported electricity. Nevertheless, IEUA is continuously evaluating the economic landscape of its renewable resources, and is in the process of evaluating the option of purchasing the solar installations that were procured through a PPA in 2008. If the purchase value is economical, IEUA could benefit over the remaining term of the agreement . As the owner of the solar arrays, IEUA would assume responsibility for any required Operations and Maintenance (O&M) expenses, but would also avoid electricity expenses for the energy generated from the panels moving forward.

In addition to renewable installations, IEUA is consistently evaluating procurement options for imported purchases. IEUA purchases both electricity and natural gas from an Energy Service Provider (ESP) through the Direct Access (DA) program. These services are procured via an agreement that has a one-year term. The term length is designed to allow the Agency flexibility to adapt to market changes. IEUA will continue to evaluate its procurement options on an annual basis and extend the DA agreement in one-year increments, as necessary.

Integrated Demand Side Management

The California Public Utilities Commission (CPUC) has funded programs designed to help Investor-Owned Utilities (IOUs) develop Integrated Demand Side Management (IDSM) programs that focus on energy efficiency, conservation, demand response, and distributed generation (DG). With an array of renewable resources at its disposal, IEUA has plenty of opportunity to assist the IOUs by improving demand side management at all of its facilities.

IEUA's solar, wind, and fuel cell installations provide a DG portfolio with a total nameplate capacity of 7.3 MW. IEUA will track the generation profiles of these resources to optimize their integration into the grid. Further expansion of the

Agency's renewable portfolio will consider current and future load demands to determine the impact on imported needs and potential for export. IEUA is also pursuing energy storage technology, which would add significant flexibility to the Agency's energy usage profile. By integrating energy storage into its renewable installations, IEUA could temporally manage its load on the grid at each facility. Storage would also impact procurement, as IEUA could take advantage of TOU rates by purchasing and storing electricity when grid demand and tariffs are lowest.

Integrating energy storage into IEUA's energy infrastructure would also benefit the DR capabilities of each facility. During DR events, facilities with energy storage maximize electricity consumption from batteries in order to offset grid demand. Unlike typical DR load reduction techniques, which require turning off equipment otherwise used for normal operations, integrating energy storage into IEUA's DR program would reduce imported electricity levels without interrupting operations. Combining both techniques could result in significantly more load reduction capacity to offer SCE during DR events.

Increasing energy efficiency at IEUA facilities is another component of improving IDSM. IEUA has partnered with The Energy Network, which is part of the Energy Coalition and funded by the California Public Utilities Commission (CPUC), to conduct comprehensive energy audits of IEUA's treatment plants and identify efficiency measures that can reduce energy consumption. Results from these audits will provide direction on the potential reductions that can be achieved at each site.

Each of these IDSM concepts will require collaboration with SCE. New distributed generation projects will require interconnection agreements with SCE, as will incorporating battery storage into IEUA's energy infrastructure. Efficiency projects may also be eligible for SCE's incentive programs, so IEUA will coordinate with The Energy Network and SCE to ensure that all available funding resources are properly utilized.

Resource Management

RP-1 and RP-2 generate renewable digester gas. Gas produced at RP-1 is either consumed by a fuel cell, boilers, or an emergency flare. Gas produced at RP-2 is either consumed by an internal combustion engine (ICE), boilers, or an emergency flare. Both sites utilize anaerobic digestion processes to generate the gas. The first phase of this process produces a low quality acid phase gas that has a heat content between 200 and 300 Btu/scf. Due to its reduced quality, this acid phase gas cannot be directly consumed by the boilers, ICE, or fuel cell. At RP-1, this acid phase gas is constantly flared. At RP-2, the acid phase gas is injected in the digester gas mixing system, blended with the high BTU gas, and beneficially used.

IEUA will conduct an evaluation to determine the most effective method of utilizing the acid phase gas at RP-1. Even with a low heat content, continuous flaring of this gas amounts to wasted energy that could otherwise be beneficially used. IEUA Engineering, Technical Services, and Operations staff will collaborate to identify projects that can utilize the acid phase gas through mixing, conditioning, or storage.

In addition, this EMP establishes a goal of reducing the total digester gas consumed by the flares at RP-1 and RP-2 by 50 percent within the next five years. Integrating acid phase gas into the gas loop will significantly reduce the amount of gas flared at RP-1, but IEUA will also pursue projects that optimize gas usage.

LONG-TERM GOALS

Long-term goals, discussed in the following section, are expected to be completed within the next 20 years. These goals typically require significant modifications to the Agency's infrastructure and coordination with multiple utilities, which requires considerable planning and engineering efforts.

Peak Independence

IEUA's Business Goals state that peak power independence will be achieved by 2020. This EMP details the Agency's current sustainable capacity during peak periods. Achieving peak power independence will require further distributed generation projects and improved energy management capabilities. New projects that can take advantage of IEUA's renewable resources will be evaluated to determine the most cost effective and prudent path to accomplishing this goal.

Carbon Neutrality

In FY 13/14, approximately 36 percent of the electricity consumed at IEUA facilities was generated by carbon neutral sources. This includes IEUA's solar, wind, fuel cell, and biogas ICE installations, as well as a portion of imported electricity that was procured from Renewable Portfolio Standard (RPS) certified sources. By continuing to improve the Agency's renewable portfolio, optimizing digester gas utilization, increasing energy efficiency, and procuring greater amounts of RPS-certified electricity as needed, IEUA intends to procure 100 percent of its electricity needs from carbon neutral sources by the year 2030.

Table 2 summarizes the short and long-term goals established in this EMP. Each goal is evaluated in greater detail in following sections of the EMP.

TABLE 2. IEUA ENERGY MANAGEMENT GOALS

Type	Goal	Description	Estimated Completion
Energy Management	Provide Energy Management Training to Staff	Educating IEUA's Operations and Maintenance teams will not only increase awareness of the Agency's energy demands and usage, but also empower employees to consider new ways to conserve.	2nd Quarter of FY 15/16 and once annually thereafter
Energy Management	Incorporate Energy Efficiency Measures Into Project Solicitation	Whenever new projects are solicited, IEUA issues RFPs that detail the scope of work and equipment required. Beginning in FY 15/16, RFPs issued by IEUA will require high-efficiency equipment that reduces energy consumption. Furthermore, the energy impacts of each proposal will be considered in the review and selection process.	End of FY 15/16
Energy Management	Develop Sub-meter Tracking Program	IEUA's sub-metering data contains valuable information that can be used to identify potential areas of improvement and provide a blueprint for each facility's demand side management. In order to take advantage of these resources, IEUA will need to develop a program to record and monitor the data on a regular basis.	End of FY 15/16
Operational Efficiency	Facility Energy Audits	Third party energy service companies can conduct comprehensive energy audits that not only evaluate potential savings from equipment retrofits, but also process modifications that can result in higher operational efficiencies.	End of FY 15/16
Operational Efficiency	Establish Efficiency Reduction Targets	Based on the results of the energy audits and existing energy usage baselines, IEUA will establish efficiency goals and target reductions in consumption for each Agency facility.	2nd Quarter of FY 16/17
Energy Management	Evaluate Purchase of Existing Solar Installations	IEUA currently procures electricity from 3.5 MW of solar arrays through a PPA. Solar technology economics indicate that an outright purchase of the installations could benefit the Agency, although cooperation of the PPA provider and owner of the solar installations is required.	2nd Quarter of FY 16/17

Type	Goal	Description	Estimated Completion
Operational Efficiency	Implement Efficiency Projects	IEUA will consider the recommendations from the energy audits and implement projects deemed to be cost effective.	End of FY 16/17
Renewable Resources	Digester Gas Optimization	Acid phase digester gas produced at RP-1 is currently sent directly to the flare due to its low quality and BTU content. IEUA will investigate options for incorporating the acid phase gas into facility's gas loop so that the renewable acid phase gas can be used beneficially. Options will include, but not be limited to, gas conditioning, mixing, and storage.	End of FY 16/17
Energy Management	Install Energy Storage at IEUA Facilities	Energy storage would significantly improve IEUA's IDSM capabilities. Traditional procurement strategies have shown current technology to be cost prohibitive, but IEUA will pursue alternative procurement strategies, including PPAs, grant subsidization, and Demand Response Energy Storage Agreements to cost effectively install energy storage at IEUA facilities.	End of FY 17/18
Renewable Resources	Reduce Flaring by 50 Percent	RP-1 and RP-2 operate emergency flares to combust digester gas that cannot be otherwise used beneficially. IEUA aims to reduce flaring at these treatment plants by 50 percent by the end of FY 18/19.	End of FY 18/19
Energy Management	Peak Power Independence by 2020	Aligning with IEUA's Business Goals, the Agency aims to achieve a level of sustainability that will ensure grid independence during peak periods.	2nd Quarter of FY 20/21
Renewable Resources	100 percent Carbon Neutrality by 2030	IEUA's renewable portfolio and production of digester gas provide a blueprint for carbon neutrality. In 2013, IEUA established a carbon footprint by reporting GHG emissions to the Climate Registry. Annual emissions reporting will continue, and IEUA will strive to pursue projects with the goal of achieving 100 percent carbon neutrality by 2030.	2nd Quarter of FY 30/31

POLICY RECOMMENDATIONS

Inland Empire Utilities Agency

Improving energy management requires effort in many facets of an organization. In addition to monitoring and analyzing energy data, IEUA staff must raise awareness within the Agency of energy conservation opportunities. Training will be given to IEUA employees to bring attention to current consumption trends and highlight areas or strategies that can improve efficiency. This training will be conducted annually to foster and maintain continued awareness.

Additionally, IEUA's procurement strategy will be revised to include standard language requiring high-efficiency equipment whenever possible. Proposals received are typically weighed by selection criteria such as cost, experience, and operational impact. IEUA will add another criterion that evaluates the impact on energy consumption. Proposals that reduce energy consumption will be judged more favorably than those with negligible or adverse impacts.

Southern California Edison

Any substantial energy improvements at IEUA will rely on coordination with SCE. Each project is subject to the CPUC's policies, and interconnection of new projects requires significant effort from both SCE and IEUA staff. IEUA has secured interconnection agreements for all of the renewables at Agency facilities. Overall, IEUA has generally experienced difficulties during the interconnection process. Significant staff time and costs have been devoted to completing the agreements.

IEUA concedes that interconnecting large DG projects with the capacity for intermittent export presents complexities that must be addressed to ensure uninterrupted grid service. Interconnection agreements at RP-5 SHF and RP-1 saw marked progress improvement when twice-weekly conference calls were held with SCE staff, though SCE is assuredly not capable of offering this level of service for every interconnection agreement. IEUA believes that improving communication and policy understanding can streamline the interconnection process, and IEUA is committed to maintaining a dialogue with SCE and assist as needed.

IEUA's IDSM improvements rely on participation in SCE's DR program. IEUA is enrolled in SCE's Aggregator-Managed Portfolio DR program through EnerNOC. Increasing the Agency's load reduction capacity will benefit SCE during periods of

high grid demand. IEUA's contract with EnerNOC contains a provision that requires the delivered load capacity to be at least 75 percent of the target reduction. If the delivered capacity falls below 75 percent, IEUA does not receive any credit for reducing load during the DR event. As a result, IEUA is hesitant to increase the curtailment target until reliable load reduction measures can be identified.

Furthermore, the current DR program does not provide any incentive for additional power that is exported to the grid during DR events. Adding energy storage could further increase reduction capacities, but current DR program language is unclear regarding integration of energy storage. Modifying the DR program to include incentives for exported power above a baseline export level could result in higher DR commitments.

California Public Utilities Commission

IEUA has relied on PPAs to install renewable technologies, each of which has a purchase rates between $0.08 and $0.13 per kWh. Since exported is compensated at a rate between $0.04 and $0.06 per kWh, IEUA's DG projects are typically sized to maximize on-site use of the electricity generated and avoid export. Increasing export rates would benefit IEUA, but are unlikely to occur.

An alternative solution to improving renewable economics would rely on modifications to the RPS, which mandates that all electric service suppliers provide at least 33 percent of their energy from renewable sources by 2020. These suppliers can achieve the mandated limits by purchasing Renewable Energy Certificates (RECs) that satisfy one of three content categories, often referred to as buckets:

- ◊ Bucket 1: Energy and RECs (bundled) from an RPS-eligible facility that is directly connected to the transmission grid
- ◊ Bucket 2: RECs are purchased and renewable energy is firmed and shaped with substitute electricity that is scheduled into a California Balancing Authority within the same calendar year as the RPS generation
- ◊ Bucket 3: Unbundled RECs from RPS-eligibly facility

Because IEUA uses the renewable energy it generates on site, any RECs generated fall into Bucket 3, which carries the lowest value on the trading market. IEUA's experience in pursuing RECs for its renewable installations found that the cost of obtaining the certificates often negated the potential profits of any sale. However, the California assembly, with assistance from the California Association of Sanitation Agencies (CASA) and the Bioenergy Association of California (BAC), is pursuing

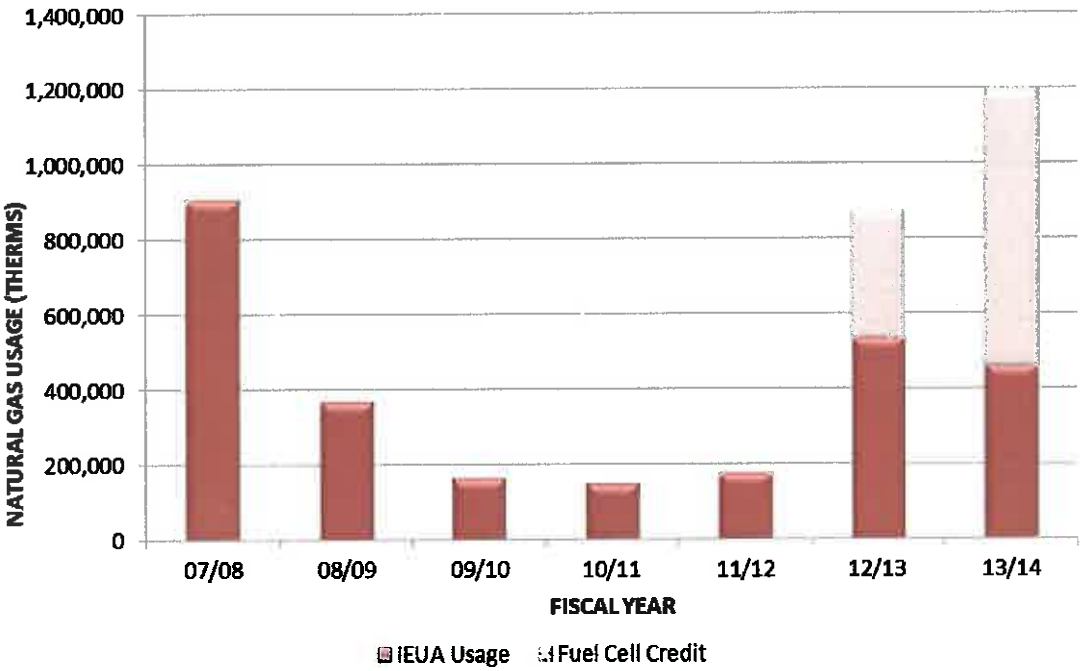
legislation that would allow for renewable installations at wastewater facilities to be eligible for Bucket 1 status as part of Assembly Bill 1144. This designation could drastically improve renewable project economics. IEUA is in support of AB 1144 and will track its progress closely.

Energy Data

NATURAL GAS

Figure 2 shows the Agency's wide fluctuation in natural gas usage in recent years. The changes are mainly due to the renewable self-generation technologies employed at the biosolids handling facilities. Beginning in 2001, IEUA operated natural-gas fired engines which generated electricity during peak periods to assist the SCE grid. A blend of natural gas and digester gas was also used in the cogeneration engines at RP-1. However, the peaking engines were removed from service in 2008, and SCAQMD Rule 1110.2 curbed natural gas usage in digester gas-fueled cogeneration engines in the same year, resulting in a dramatic reduction in natural gas consumption.

FIGURE 2. AGENCY-WIDE NATURAL GAS USAGE FROM FY 07/08 TO 13/14

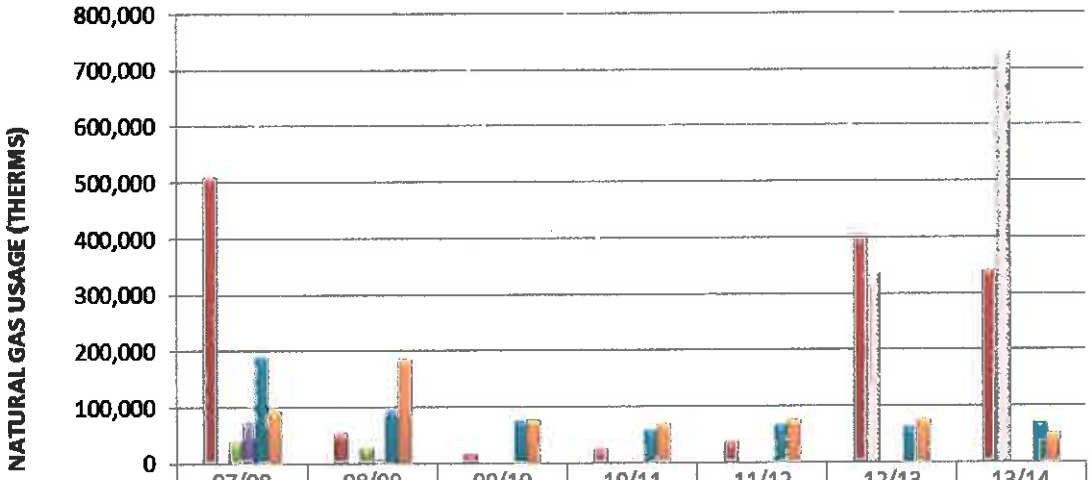


Between FY 09/10 and FY 11/12, the natural gas usage at the Agency was limited to hot water boilers used to meet the anaerobic digestion thermal demand and a minimal amount needed to maintain temperature in the digester gas-fueled cogeneration engines. The usage increase since FY 12/13 is due to the fuel cell installation, which is operated on a blend of digester gas and natural gas. Since the fuel cell catalyst is highly sensitive to air contaminants, the blend may vary depending on the status of the gas conditioning system. As such, natural gas can account for anywhere from 25 to 100 percent of the total fuel cell gas blend.

The fuel cell agreement structure contains provisions that outline IEUA's natural gas responsibility depending on the operating condition of the power plant. Under normal conditions, the fuel cell is expected to operate on a blend of approximately 75 percent digester gas and 25 percent natural gas by flow. As such, IEUA is responsible for the procurement of 25 percent of the natural gas utilized by the fuel cell. Natural gas usage on site is heavily dependent on the operational status of the fuel cell and digester gas conditioning systems. The figures included in this plan distinguish the natural gas used at IEUA's discretion and any supplemental natural gas required by the PPA provider to maintain operation of the fuel cell while the gas conditioning system is down ("Fuel Cell Credit").

A breakdown of natural gas usage by facility is shown on Figure 3. This data further elucidates the point that natural gas usage at the Agency is driven by the requirements of the technologies installed. Natural gas usage was effectively terminated at RP-4 and CCWRF when the natural gas peaking engines were removed from service in 2008. Since the fuel cell was installed at RP-1 in 2012, the facility has accounted for approximately 87 percent of the Agency's total natural gas consumption.

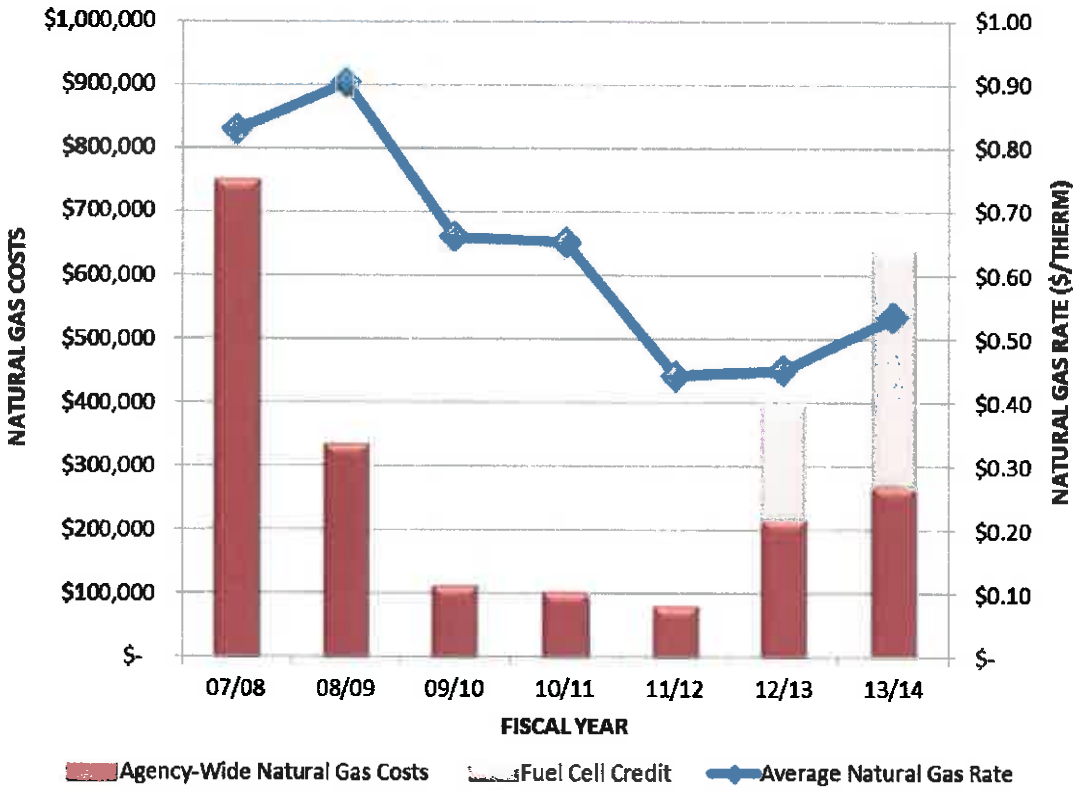
FIGURE 3. NATURAL GAS USAGE FROM FY 07/08 TO 13/14 BY FACILITY



	07/08	08/09	09/10	10/11	11/12	12/13	13/14
RP-1	509,800	54,200	17,500	25,000	36,400	398,181	340,581
Fuel Cell Credit	0	0	0	0		337,819	730,919
RP-4/IERCF	37,800	28,000	0	0	0	0	0
CCWRF	74,700	8,200	0	0	0	0	0
RP-2	190,100	95,100	74,900	59,100	67,800	63,500	71,200
RP-5/HQ	93,900	184,600	76,100	69,500	75,200	75,300	52,500

As aforementioned, one of the core goals of the Energy Management Plan is to reduce energy costs as well as usage. Figure 4 shows the Agency's overall costs for natural gas consumption from FY 07/08 to FY 13/14 with the average rate, on a $/therm basis, tracked alongside. The recent decline in natural gas pricing resulted in lower natural gas costs for FY 13/14 when compared to FY 07/08, despite the fact that gas usage was approximately 31 percent higher in FY 13/14. Consequently, IEUA routinely analyzes energy rate trends in addition to overall cost.

FIGURE 4. AGENCY-WIDE NATURAL GAS COSTS FROM FY 07/08 TO 13/14

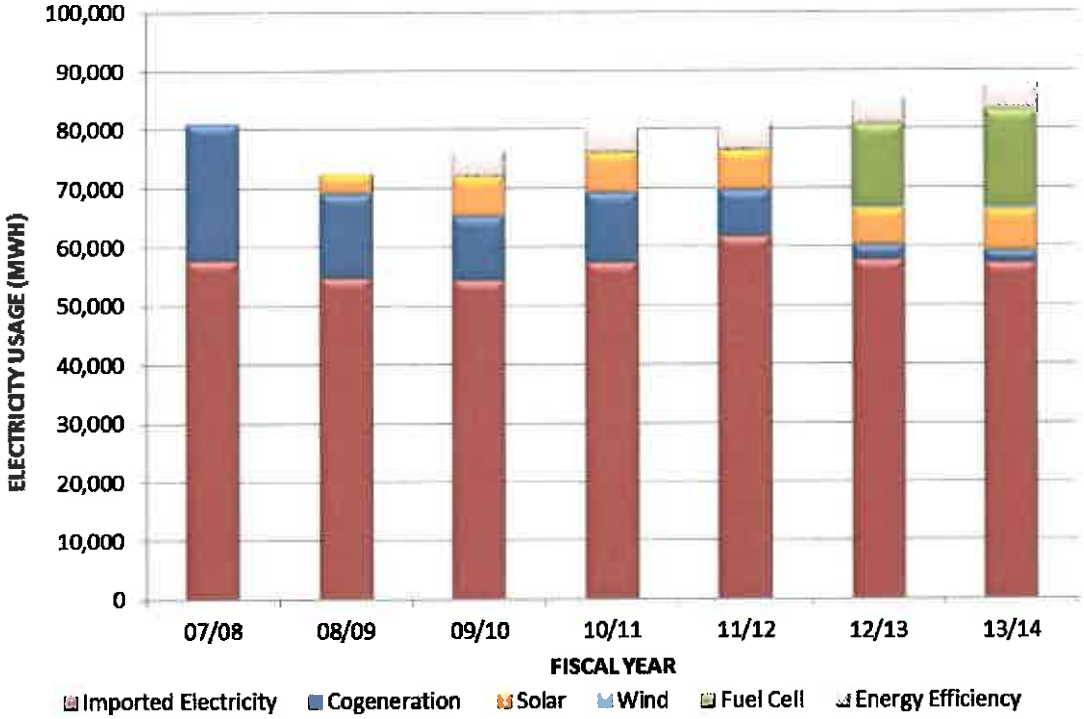


While the decreased price of natural gas has contributed to lower rates in recent years, IEUA has also reduced costs by procuring natural gas through an Energy Service Provider, rather than SCGC. The ESP offers both fixed and variable rates for natural gas that are based on market trends. By utilizing these variable rate structures through an ESP, IEUA has seen consistent cost savings when compared to SCGC rates.

ELECTRICITY

The Agency's efforts to optimize electricity consumption by increasing energy efficiency and expanding its renewable portfolio are evident on Figure 5. The figure shows the total electricity usage for the regional wastewater facilities, composting facility, recycled water pumping stations, and groundwater recharge basins between FY 07/08 and FY 13/14, as well as the energy efficiency projects certified by SCE over the same time period. Efficiency projects included damper installations at the IERCF and VFD installations and chiller replacement at RP-1.

FIGURE 5. AGENCY-WIDE ELECTRICITY USAGE FROM FY 07/08 TO 13/14



In FY 08/09, IEUA installed its solar generation systems and began implementing energy efficiency projects, resulting in lower electricity usage when compared to FY 07/08. Electricity usage has climbed incrementally since FY 09/10. This can be attributed to expansions of the Agency's Recycled Water and Groundwater Recharge programs, which require significant pumping demand to move water regionally. Despite the increase in energy demand to the Agency, these practices play a vital role in sustainable water management in the region and significantly reduce the global energy consumed in importing water from the State Water Project (SWP). In FY 13/14 alone, the electricity used by IEUA to distribute 38,252 acre-feet (AF) of recycled water to end users and groundwater recharge basins resulted in the conservation of approximately 91,000 MWh that would have been required to pump the equivalent amount of water from the SWP.[2]

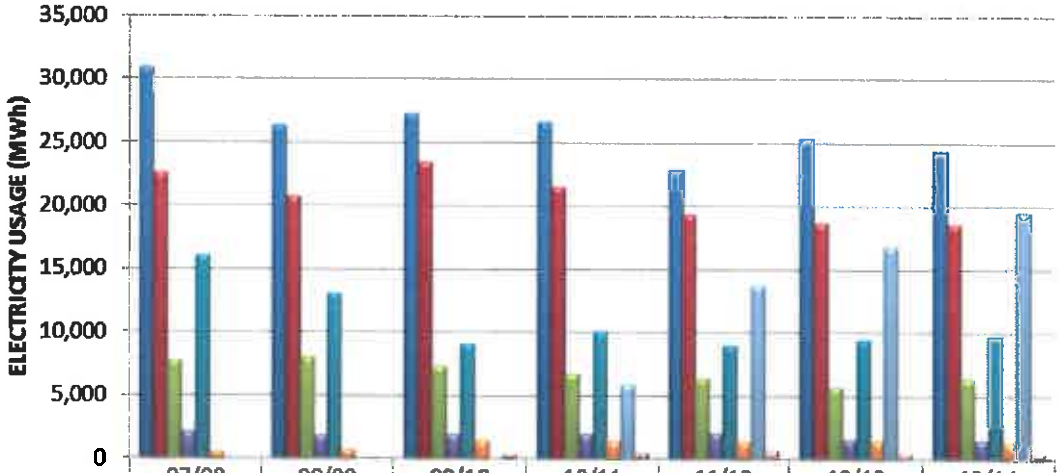
The amount of renewable energy utilized by the Agency has fluctuated annually, with electricity produced by cogeneration engines decreasing and low-emitting renewables (solar, wind, and fuel cells) steadily increasing each year. Due to increasingly stringent air quality regulations, the Agency has decreased reliance on the cogeneration engines in favor of technologies with lower emissions. The fuel cell installation at RP-1 resulted in a reduction of the facility's criteria pollutant

[2]*Source: California's Water-Energy Relationship, Final Staff Report. California Energy Commission, 2005.*

emissions by approximately 90 percent while matching the nameplate generation capacity, maintaining the ability to utilize digester gas, and recovering waste heat for the anaerobic digestion process.

Figure 6 shows the annual electricity usage at each facility, including lift stations, recycled water pumping stations, and groundwater recharge facilities. In 2011, IEUA began to separately track electricity consumed by the recycled water pumps at each RWRP. Prior to 2011, the lack of data availability prevented IEUA staff from separating electricity usages from treatment and RW processes, so the RW pumping power consumption is embedded in the totals for each plant. RP-1, RP-4, RP-5, and CCWRF all employ RW pumping stations on site. For the purposes of this Energy Management Plan, energy consumption in Fiscal Year 13/14 will be considered the baseline value when calculating potential future energy savings.

FIGURE 6. ELECTRICITY USAGE FROM FY 07/08 TO 13/14 BY FACILITY



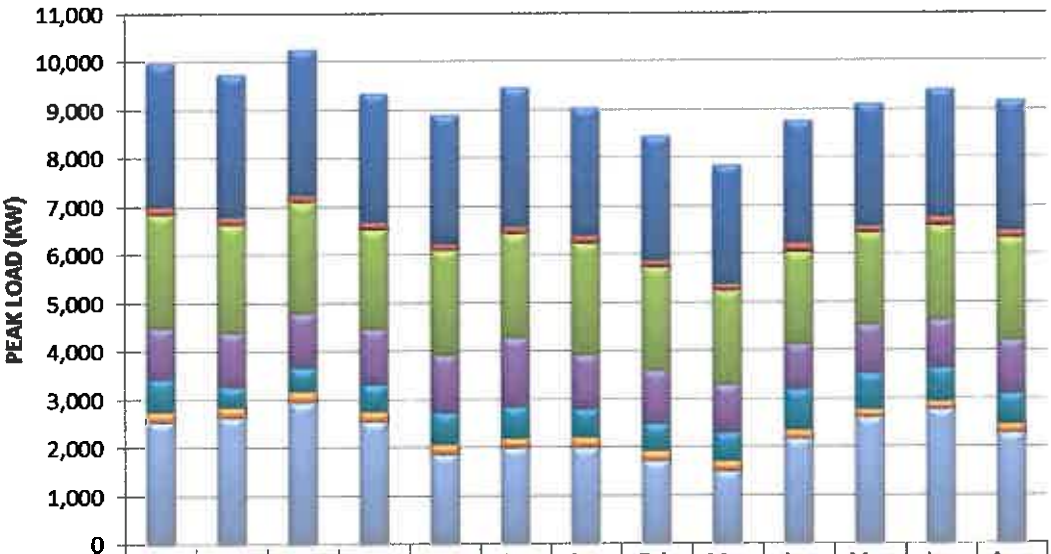
	07/08	08/09	09/10	10/11	11/12	12/13	13/14
RP-1	30,990	26,392	27,372	26,702	22,811	25,333	24,337
RP-4/IERCF	22,666	20,795	23,515	21,569	19,423	18,760	18,589
CCWRF	7,782	8,046	7,314	6,789	6,340	5,738	6,415
RP-2	2,198	1,924	1,950	2,019	2,035	1,635	1,541
RP-5/HQ	16,081	13,134	9,129	10,131	9,016	9,440	9,746
PS	616	748	1,483	1,438	1,445	1,496	1,343
RW	0	0	0	5,944	13,731	16,840	19,517
GWR	63	119	393	549	743	463	436

This figure illustrates the high energy intensity of RP-1 and RP-4/IERCF. In FY 2013/2014, these two sites combine to account for approximately 53 percent of the total Agency energy demand. As such, IEUA's Energy Management Plan has particularly focused on these facilities when exploring potential efficiency projects.

Recycled water pumping also contributes significantly to the Agency's electrical demand. RW usage in the region has grown steadily in recent years, and is expected to continue increasing moving forward. Due to the region's reliance on the Agency's RW distribution system, IEUA has begun to investigate projects that can optimize electrical consumption in the energy intensive process.

In addition to total electricity usage, the Agency monitors the electrical demand of each facility on an hourly basis. This information is required to assess the level of self -generation needed to pursue grid independence during peak periods. The electrical demand at IEUA's facilities fluctuates throughout the day and also varies by plant. As shown on Figure 7, the average hourly electrical demand across all IEUA facilities varies seasonally as well.

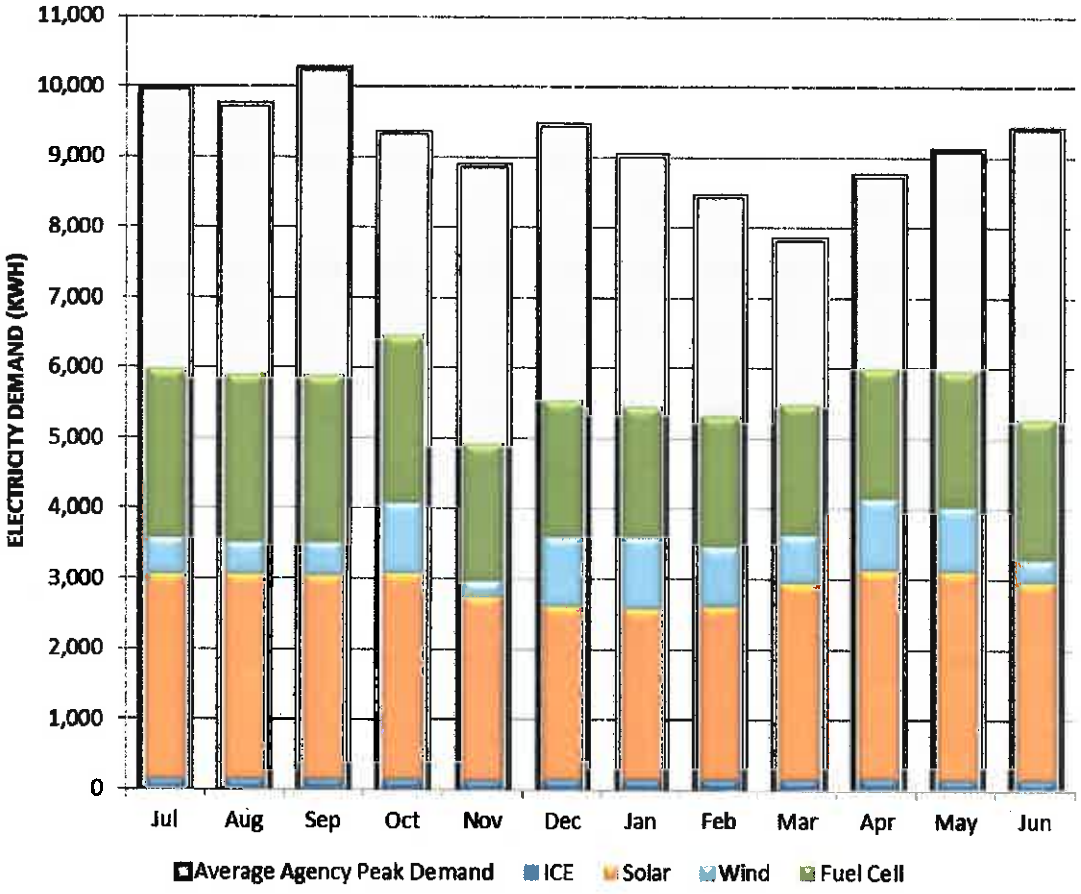
FIGURE 7. FY 13/14 AVERAGE PEAK FACILITY ELECTRICAL LOAD



	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Ave.
RP-1	2,954	2,949	3,007	2,646	2,651	2,851	2,638	2,560	2,443	2,530	2,509	2,634	2,698
RP-2	173	153	153	161	146	155	152	147	152	171	149	186	158
RP-4/IERCF	2,364	2,235	2,307	2,061	2,148	2,163	2,320	2,132	1,941	1,912	1,911	1,962	2,121
RP-5	1,050	1,127	1,115	1,155	1,211	1,426	1,116	1,101	980	950	1,000	979	1,101
CCWRF	681	438	501	559	664	663	588	575	594	831	765	721	632
PS	213	213	222	212	202	201	207	216	217	192	165	166	202
RW	2,548	2,633	2,959	2,555	1,873	1,999	2,015	1,723	1,513	2,177	2,611	2,774	2,282

For reasons explained in the following section, the Agency does not intend to install enough renewable energy technology to export electricity back to the grid. Instead, the goal of IEUA's Energy Management Plan is to procure sufficient renewable technology to meet the average load identified through historical and projected demand. Figure 8 compares the maximum hourly electrical generation by renewable sources during each month of FY 2013/2014 to the average peak load for all Agency facilities.

FIGURE 8. FY 13/14 MAXIMUM PEAK RENEWABLE GENERATION



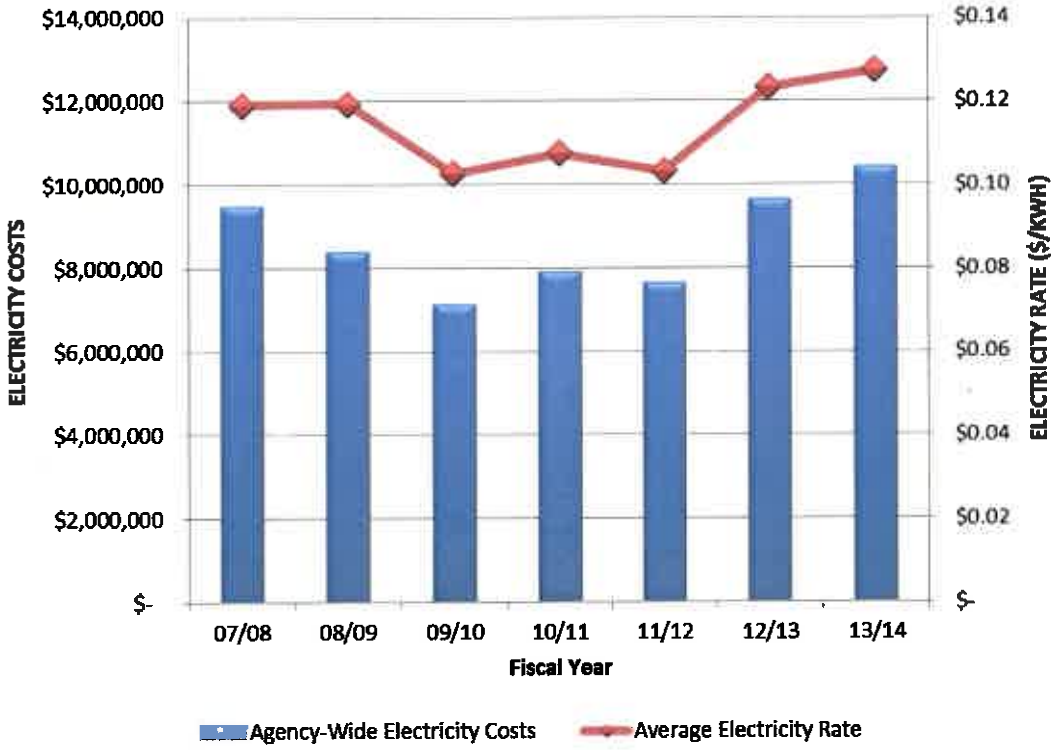
In FY 2013/2014, the Agency's renewable portfolio was capable of providing approximately 59 percent of the peak electrical demand for all facilities during summer months, and approximately 62 percent over the course of the entire year. Future energy efficiency projects and new technologies will be needed to grow the renewable portfolio and progress toward sustainability.

Unlike natural gas procurement, IEUA's electricity purchases are procured through a mixture of Direct Access and bundled service through SCE. The advantages of

bundled service (paying the local utility for both transmission and generation charges) through the IOU or DA (paying the local utility for transmission charges and a competing ESP for generation charges) vary greatly depending on many facility-specific factors.

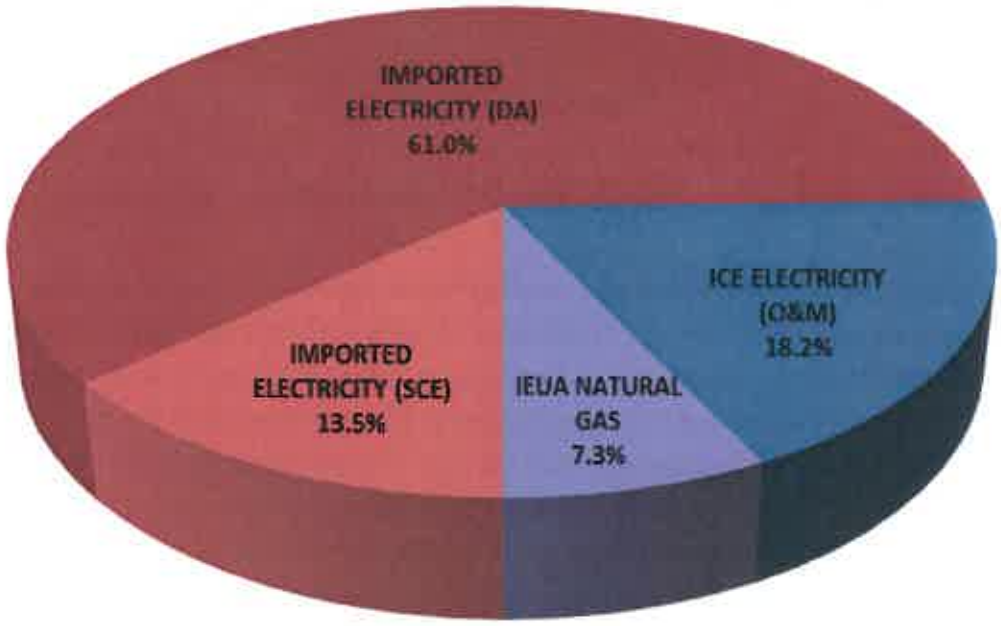
Typically, ESPs offer cost savings opportunities with simplified rates that vary with market trends and do not include expensive demand charges. SCE's electricity rates, although fixed, vary with time of use, and can include standby and departing load charges that vary by facility and inflate (or in some cases, decrease) costs. Due to the temporal and site-specific variability in energy rates, the Agency closely evaluates the procurement options at each facility regularly. Figure 9 displays cost data beginning in FY 07/08, including the overall average electricity rate, on a $/kWh basis, that the Agency paid. This rate is inclusive of all renewable, IOU, and ESP costs. Since there is no significant change over the years, the rate and usage data track each other fairly closely.

FIGURE 9. AGENCY-WIDE ELECTRICITY COSTS FROM FY 07/08 TO 13/14



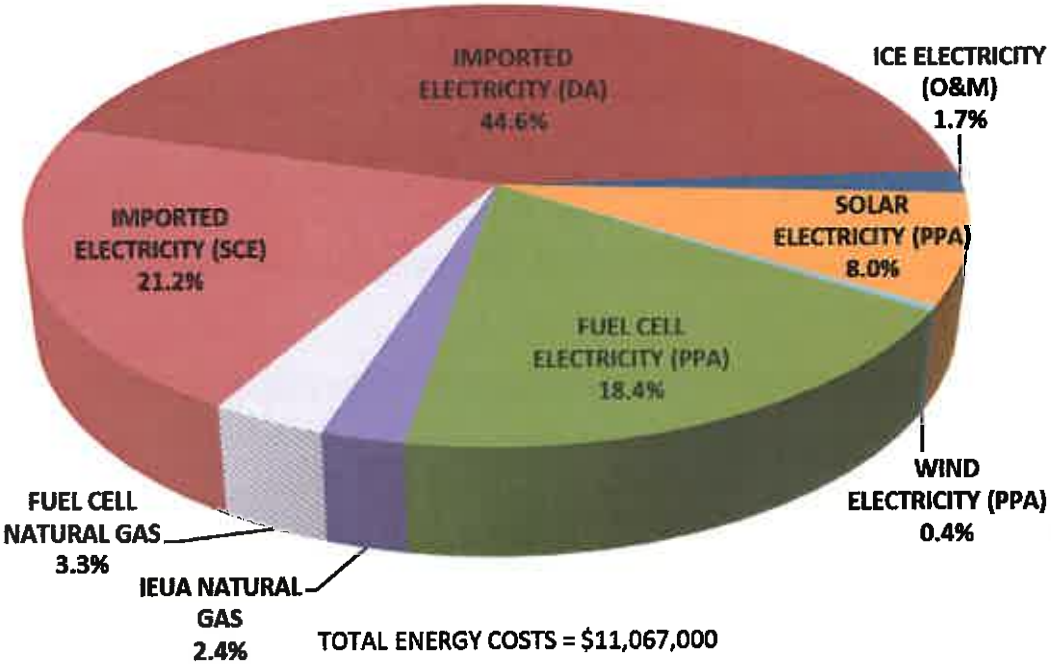
Figures 10 and 11 outline IEUA's overall energy costs for FY 07/08 and FY 13/14 respectively. In both bases, electricity costs account for over 90 percent of the total energy costs. Furthermore, current natural gas usage is almost exclusively tied to fuel cell consumption, which is highly sensitive to operational adjustments. Electricity usage, on the other hand, is widespread across all facilities and offers more opportunities for optimization and efficiency increases. Therefore, much of the focus of this Energy Management Plan and projects discussed herein will be on reducing electricity consumption or increasing on-site electricity generation through various means.

FIGURE 10. FY 07/08 AGENCY-WIDE ENERGY COSTS



TOTAL ENERGY COSTS = $10,248,000

FIGURE 11. AGENCY-WIDE ENERGY COSTS FOR FY 13/14



The financial impact of renewable installations is apparent when comparing the two fiscal years. In FY 13/14, approximately 30 percent of all energy procurement came from PPA sources (including natural gas paid for by PPA provider). Imported electricity costs were reduced by approximately 10 percent, though the percentage of bundled electricity purchased increased. The changes seen since FY 07/08 are the result of several factors, including energy tariffs and procurement options. To better understand the variance with each facility, the following section includes details on each site.

GREENHOUSE GAS EMISSIONS

Greenhouse Gases (GHGs) emitted in the state are regulated by the California Air Resources Board (CARB). CARB has also developed the Climate Change Scoping plan, most recently updated in March 2014, which targets industries and large facilities with high global warming potential and mandates reduction measures to in an effort to steadily decrease GHG emission levels. Wastewater treatment plants and composting facilities are not subject to the reduction measures addressed in the Scoping Plan. Furthermore, no IEUA facility emits GHGs at a level high enough to reach the regulated threshold for GHG reporting.

Despite the lack of any GHG reporting requirements, in February 2014, IEUA became a member of The Climate Registry (TCR), a nonprofit organization that develops standards and protocols for GHG calculations and reporting. Membership in TCR is voluntarily, and is a result of the Agency's aim to practice environmental stewardship as a regional leader. As a member of TCR, IEUA has committed to publicly report annual GHG emissions. The first Agency-wide reported inventory, spanning the 2013 calendar year, is shown in Table 3.

TABLE 3. 2013 GREENHOUSE GAS EMISSIONS BY SOURCE

Source	GHG Emissions (Metric Tons CO_2e)	Percentage of Total
Heavy Duty vehicles	10	0.0
Fleet vehicles	297	0.9
Biosolids Hauling	124	0.4
Emergency Generators	99	0.3
LPG Combustion	33	0.1
Digester Gas Combustion	9,341	27.9
Natural Gas Combustion	6,735	20.1
Purchased Electricity	16,868	50.3
Total	**33,506**	**100.0**

The reported emissions use TCR protocols to calculate the metric tons of carbon dioxide equivalents (CO_2e, a combination of CO_2, CH_4, and N_2O) emitted by IEUA processes. Both direct (i.e., stack emissions) and indirect (i.e., emissions associated with services procured by IEUA, such as purchased electricity) emissions were included in the calculations. 2013 GHG emissions were reported through TCR but not verified. IEUA has committed to pursuing verification for 2014 emissions.

In addition to annual reporting, IEUA aims to reduce these annual emissions moving forward in order to align with state and federal GHG reduction goals. An analysis of the reported data shows that an overwhelming majority of the Agency's GHG emissions came from electricity purchases and stationary combustion. Identifying the largest contributor to GHG emissions will also assist IEUA in determining where reductions can be most effectively achieved. Figures 12 and 13 compare the percentage of GHG emissions and electricity usage, respectively, for each facility.

FIGURE 12. 2013 GHG EMISSIONS BY FACILITY

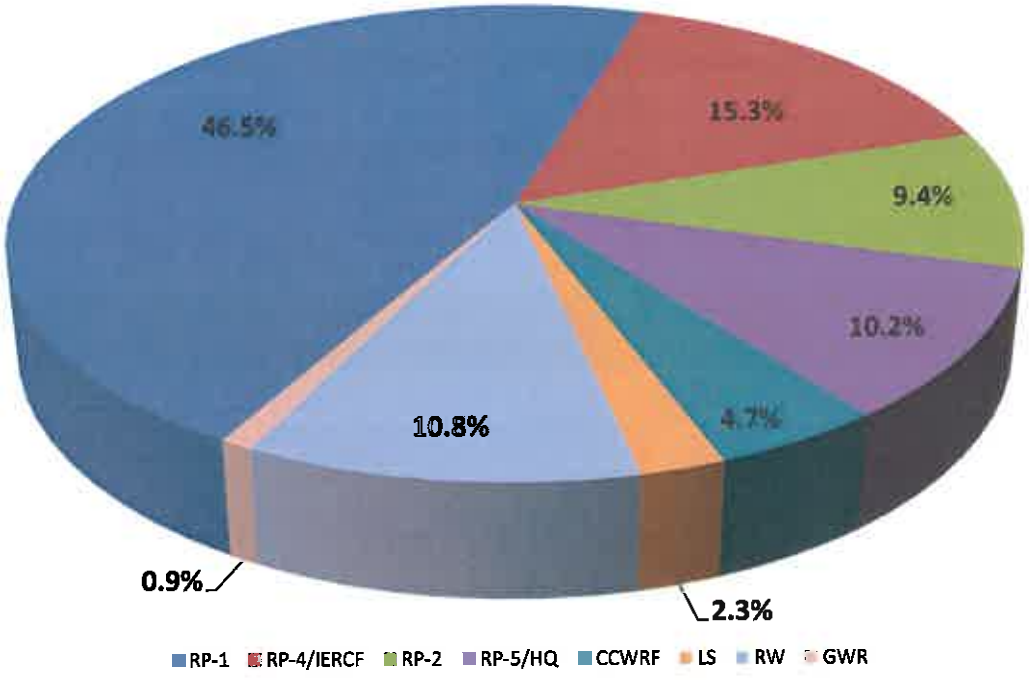
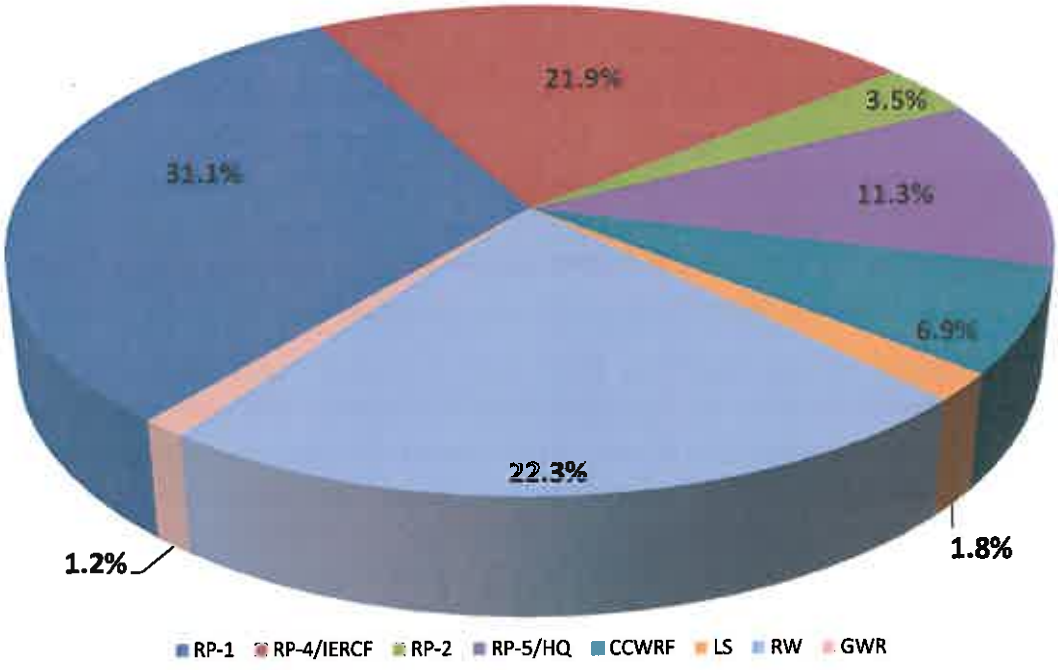


FIGURE 13. 2013 ELECTRICITY USAGE BY FACILITY



The contribution of gas combustion to GHG emissions is apparent when comparing the figures above. Three IEUA facilities (RP-1, RP-2, and RP-5) consume digester gas produced on-site. These facilities combine to account for approximately 66 percent of the Agency-wide GHG emissions. However, the same facilities accounted for only 46 percent of the electricity usage during the same time period.

RP-4/IERCF and the RW program, on the other hand, used a combined 46 percent of the Agency's electricity consumption in 2013, but only produced 29 percent of the GHG emissions. These data indicate that digester gas consumption is the major contributing factor to IEUA's carbon footprint.

The renewable installations and efficiency projects have had a significant impact on IEUA's GHG emissions profile. Although the Agency only began reporting GHG emissions in 2013, historical fuel usage and electricity purchase data can be used to determine emissions in previous years under the same standards. Due to the increase in on-site renewable generation and reduced cogeneration engine operation, IEUA has reduced GHG emissions by approximately 36 percent since 2008. Neither the 2008 or 2013 emissions have been verified by a certified third party.

TABLE 4. GREENHOUSE GAS EMISSIONS COMPARISON

2008 GHG Emissions (Metric Tons CO_2e)	2013 GHG Emissions (Metric Tons CO_2e)	Percent Reduction
52,400	33,506	36.1

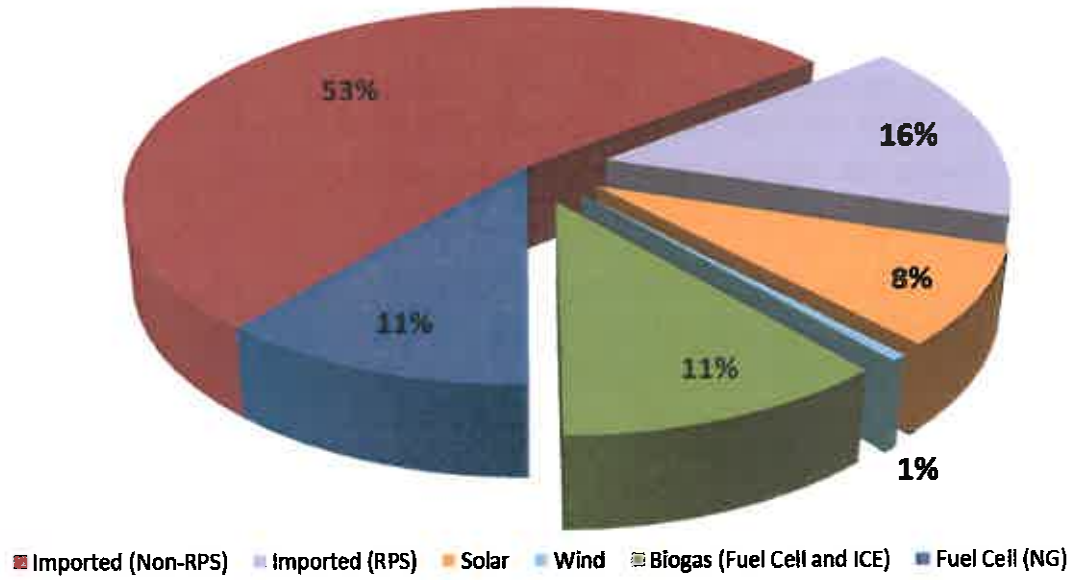
It should be noted that these emissions totals also include biogenic emissions, or GHGs that were recently contained in living organisms and are therefore considered carbon neutral. The Climate Registry requires these emissions to be reported, though they are distinguished from anthropogenic source emissions. Of the reported 2013 GHG emissions, approximately 28 percent are from biogenic sources.

Overall, approximately 36 percent of the electricity consumed at IEUA facilities during FY 2013/2014 was generated by carbon neutral sources (Figure 14). This value only considers the digester gas usage in the RP-1 fuel cell. Natural gas consumption in the equipment, though nearly devoid of criteria pollutant emissions, does result in anthropogenic GHG emissions. The carbon neutrality figure also accounts for the proportion of imported electricity that is obtained from renewable or hydroelectric sources, which were obtained from the IOU or DA

provider directly. As previously stated in the Introduction, IEUA strives to increase the carbon neutrality of electricity procurement to 100 percent by 2030. The long term is needed to account for the significant planning and engineering efforts involved in changing IEUA's generation and procurement strategies to permit 100 percent neutrality.

IEUA has developed a preliminary Carbon Management Plan, included in Appendix B, that identifies a proposed path to achieve 100 percent carbon neutrality. IEUA will work with third party consultants to further develop the Carbon Management Plan to include GHG reduction strategies and monitoring efforts.

FIGURE 14. CARBON NEUTRAL SOURCES OF FY 13/14 ELECTRICITY USAGE



Evaluations for new projects will consider potential GHG reductions that benefit the Agency's carbon footprint. Due to the relative infancy of the reporting protocols and emergence of new technologies, emission factors are not always readily available through TCR. In these cases, IEUA must perform independent research to estimate potential GHG emissions reductions.

Furthermore, IEUA has committed to assisting The Climate Registry to develop Water-Energy GHG Reporting Protocols. With the advent of these protocols, quantifying and verifying GHG emissions reductions can be standardized, an essential component in establishing GHG credits and measuring reductions.

IEUA is also aware of the impact its facilities can have in reducing emissions of methane, a short-lived climate pollutant (SLCP). In May 2015, CARB released a concept paper documenting the importance of decreasing SLCP emissions and potential measures that could achieve reductions. Wastewater treatment plants have the potential to reduce methane emissions through effective resource recovery. IEUA already utilizes anaerobic digestion and co-composting to minimize methane emissions at its facilities. In addition, the RP-5 SHF diverts organic food waste from landfills to further reduce methane emissions. This Energy Management Plan will consider additional ways that IEUA's facilities can minimize fugitive methane emissions from equipment and potentially divert more organic waste in a cost effective and reliable manner.

Facility Descriptions

REGIONAL PLANT NO. 1

RP-1 is IEUA's largest treatment plant and is capable of treating an average of 44 MGD of wastewater flow. The facility employs primary, secondary, and tertiary treatment to produce Title 22 compliant recycled water that is provided to end users and groundwater recharge basins. RP-1 contains anaerobic digesters and dewatering facilities that generate renewable digester gas from the sludge removed during the liquids phase wastewater treatment process.

Gas Production

RP-1 has seven digesters operated in a three-phase thermophilic process. In FY 13/14, the digestion operation produced an average of 560 standard cubic feet per minute (scfm) of digester gas, or approximately 800,200 scf per day. Approximately 14 percent of total gas production was acid phase gas, which is the product of the first phase of thermophilic digestion with a heat rating ranging from 200 to 300 Btu/scf. Due to its low quality, the acid phase gas is not consumed in the boiler or fuel cell. Instead, the gas is continuously flared.

The heating value of the remaining 86 percent of digester gas typically measures between 575 and 625 Btu/scf. The preferred destination for this gas is the 2.8 MW fuel cell operated on site. Prior to introduction to the fuel cell, the gas is directed through an extensive gas conditioning system that is designed to remove Volatile Organic Compounds (VOC), sulfides, and siloxanes that may prove harmful to the fuel cell catalyst. As part of the PPA, IEUA is required to deliver a minimum of 612,000 scf of digester gas per day to the fuel cell, averaged annually. This requirement accounts for approximately 90 percent of the total consumable (high Btu) gas produced at the facility daily.

RP-1's hot water boilers are the second option for the digester gas. The boilers are required to produce heat for the digestion process, and are capable of operating on either digester gas or natural gas, but not a blend. The boilers are operated on digester gas when production is high enough to operate both the fuel cell and

boiler, or when the fuel cell is operating exclusively on natural gas. In instances when the digester gas production exceeds both the fuel cell and boiler demands, the excess gas is combusted in the flare. The frequency of flare operation heavily depends on the status of the fuel cell's gas conditioning system. If the gas conditioning system is inoperable, the boilers can combust up to 420,000 scf per day, with the excess digester gas being flared.

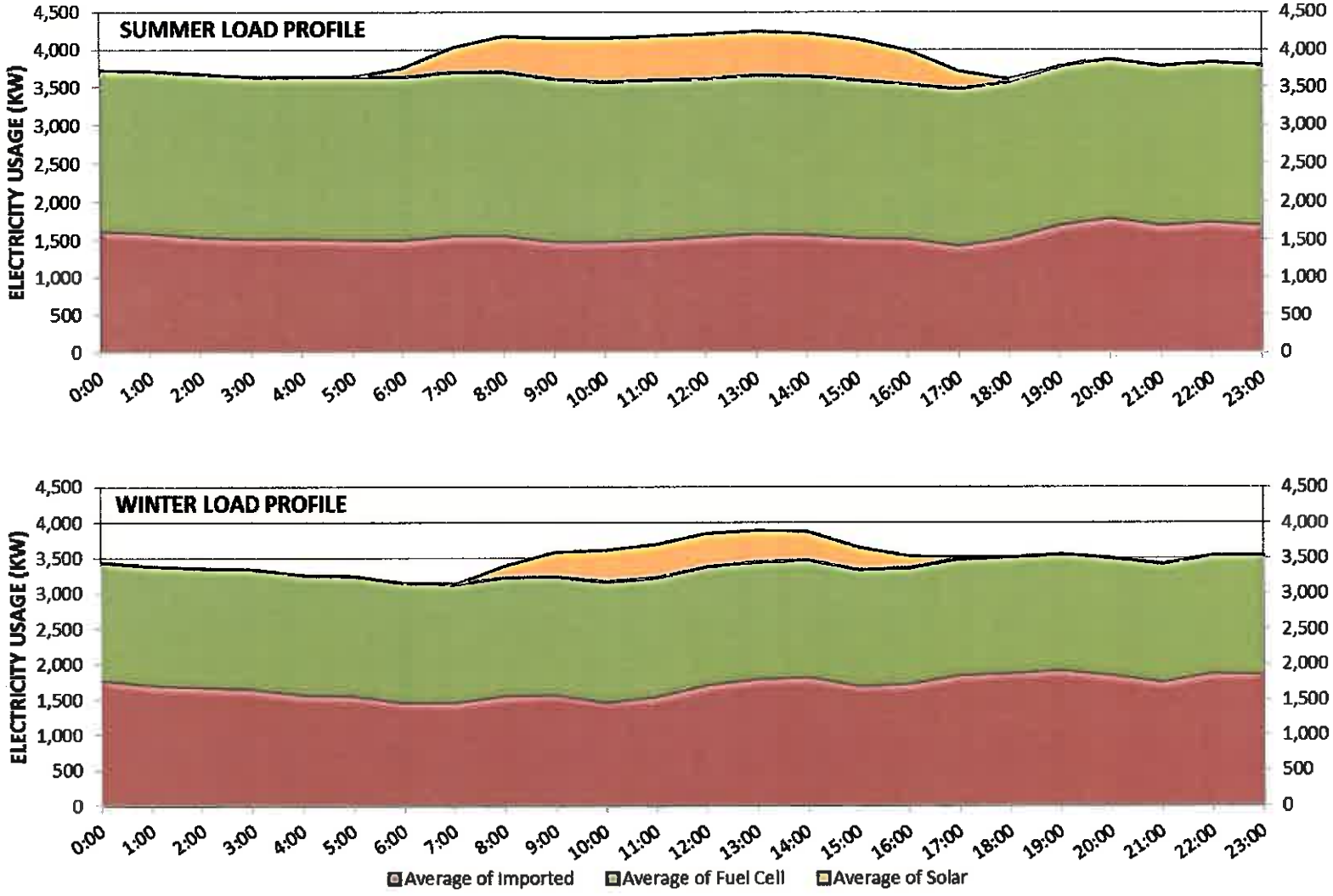
Facility Load

The average hourly electrical load for summer (June through September) and winter (December through February) months at RP-1 are shown on Figure 15. Imported electricity, fuel cell generation, and solar generation are all included on these two load profiles. The figure shows a slight reduction in overall load during colder months, with peak consumption is approximately 4.2 MW in summer and approximately 3.9 MW in the winter. In both cases, the peak electrical load occurs around 13:00 in the afternoon. The generated solar electricity also varies between seasons, as days are longer and sunnier in summer than winter.

The figure also shows that imported electricity consumption is fairly steady throughout the day, with RP-1 purchasing approximately 1.4-1.7 MW throughout the year. The amount of electricity imported was higher than expected, as the generation capacities of the fuel cell and solar systems should have accounted for more of the total facility load. In September 2013, a sulfides breakthrough in the fuel cell's gas conditioning system diminished the catalyst performance and constrained fuel cell operation to a reduced load. In FY 13/14, the fuel cell generated, on average, approximately 420 kW less during winter months than during summer months. However, since this limitation was operational in nature, the power output of the fuel cell is not expected to vary seasonally in the future.

The data charted on Figure 15 includes electricity used by the recycled water distribution pumps located on site. These pumping demands were removed in previous sections to highlight the increasing power requirements that IEUA faces in distributing recycled water. However, these recycled water distribution pumping demands must be included when considering the overall facility load because they impact the procurement and self-generation opportunities that IEUA can pursue (as described below).

FIGURE 15. FY 13/14 AVERAGE RP-1 LOAD PROFILE DURING SUMMER AND WINTER MONTHS



Electricity Procurement

RP-1 receives electricity from a mix of generation sources, which are listed in Table 5. RP-1's imported electricity purchases are obtained through Direct Access at day-ahead market pricing. The cost of generation is paid to an ESP, which means that RP-1 is not subject to high generation demand charges from SCE. Transmission costs, paid to SCE for the imported power, are determined by the applicable tariffs imposed by the IOU for large commercial customers with standby service (TOU-8-B-Standby). The facility is assessed demand charges as part of the transmission costs, although the demand is reduced by the nameplate rating of the fuel cell each month. RP-1 is also subject to departing load charges as a result of the on-site generation from the fuel cell.

TABLE 5. FY 13/14 RP-1 ELECTRICITY PROCUREMENT

Generation Source	Service Type	Rate Type	Percentage of Facility Load
Imported (as needed)	Direct Access	Market-priced	45
Fuel Cell (2.8 MW)	PPA	Fixed w/ annual escalator	50
Solar (0.83 MW)	PPA	Fixed w/ annual escalator	5

In FY 13/14, on-site generation, consisting of the fuel cell and solar array, accounted for 55 percent of the total facility load. This generation is lower than expected due to the fuel cell's extended operation at a reduced load. Table 6 shows the anticipated electricity procurement scenario assuming full operation from the fuel cell and 95 percent uptime.

TABLE 6. ANTICIPATED RP-1 PROCUREMENT WITH FULL FUEL CELL OPERATION

Generation Source	Service Type	Rate Type	Percentage of Facility Load
Imported (as needed)	Direct Access	Market-priced	34
Fuel Cell (2.8 MW)	PPA	Fixed w/ annual escalator	61
Solar (0.83 MW)	PPA	Fixed w/ annual escalator	5

From data graphed on Figure 15, the average hourly winter load at RP-1 varies from 3.1 – 3.8 MW, which means that RP-1's renewable installations are periodically capable of producing more than 100 percent of the facility's electrical demand during peak generation periods. As such, RP-1 was required to secure an export agreement with SCE to enable transmission of power back to the grid.

RP-1 was granted a multiple-tariff agreement that only compensates for power export from the solar array. The export agreement was completed by utilizing SCE's Net Energy Metering (NEM) program. However, because SCE's NEM program limits inclusion of fuel cells to systems below 1 MW, Since RP-1 is a DA customer, only the transmission portion of the power exported and attributed to the solar array will be compensated by SCE. The entire generation portion will be sold by the ESP at market price, effectively debiting the total electricity amount provided by the ESP per the DA contract.

Demand Response

RP-1 participates in the Demand Response program through ENERNOC. During a DR event, RP-1 staff is tasked with reducing the facility load by 50 kW through reduced operation of the recycled water pumps. This drop in load represents approximately four percent of the overall load reduction target of 1,230 kW that IEUA has agreed to across all Agency facilities. In FY 13/14, RP-1 exceeded 100 percent of its target in all six DR events and averaged a load reduction of 470 kW per event. The load reductions were achieved through limiting RP-1's recycled water pumping. In FY 13/14, RP-1's recycled water distribution increased to counteract the recycled water distribution that was lost due to a construction project at CCWRF. As a result, RP-1 had more flexibility to curtail RW load during DR events.

IEUA's DR contract with ENERNOC contains a provision that requires the delivered load capacity to be at least 75 percent of the target reduction. If the delivered capacity falls below 75 percent, IEUA does not receive any credit for reducing load during the DR event. As a result, IEUA is hesitant to increase the curtailment target until reliable load reduction measures can be identified.

Furthermore, the current DR program does not provide any incentive for additional power that is exported to the grid during DR events. RP-1's potential to export power is increased if load reductions are achieved during DR events. However, since only a portion of the power exported is compensated by SCE,

generating more energy than needed to meet the facility load provides no cost benefit to IEUA. If the DR program were to also incentivize power that is exported above the facility's baseline, IEUA could evaluate the potential for further reductions without fear of triggering cost prohibitive exports during DR events.

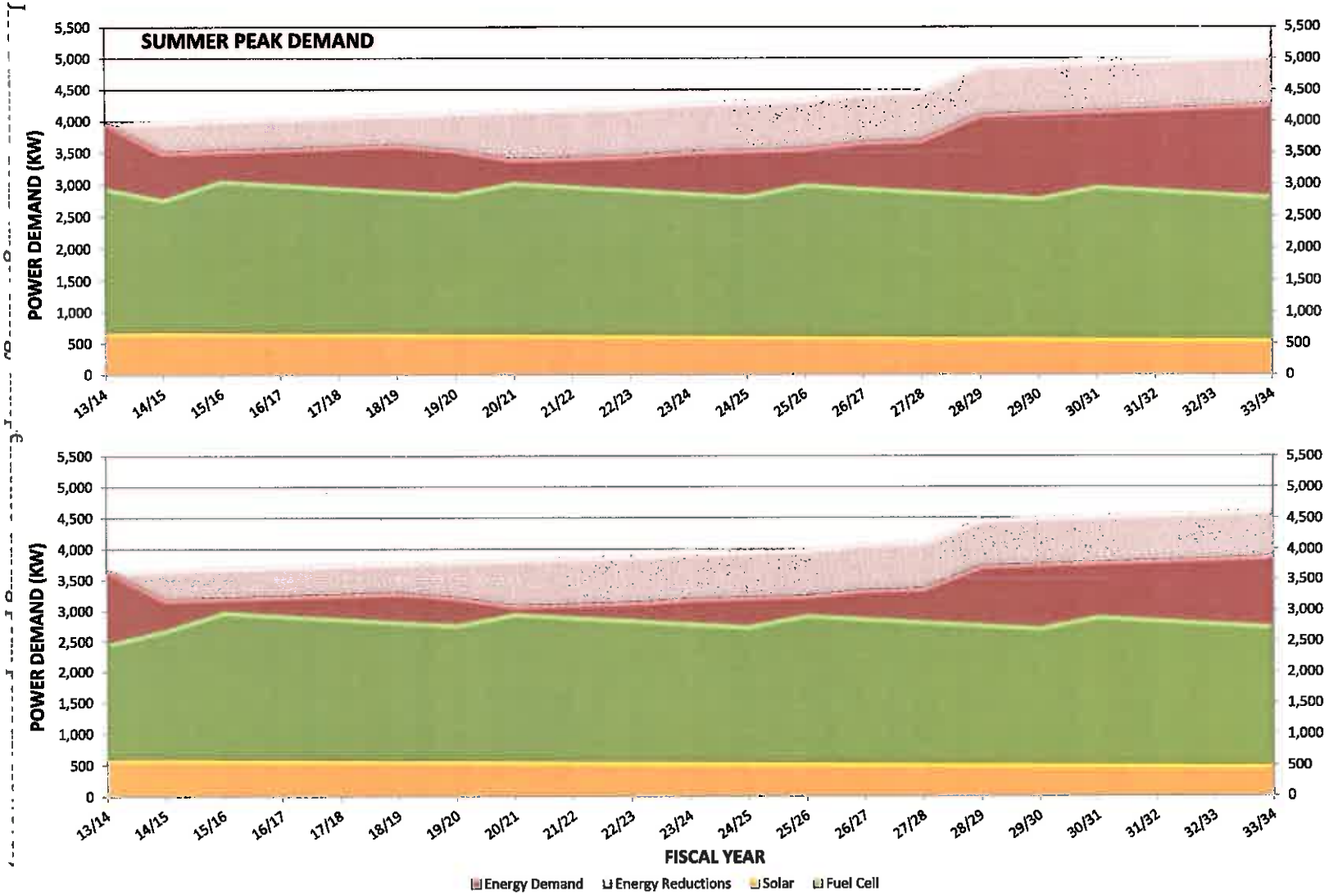
Energy forecast

IEUA's Wastewater Facilities Master Plan (WFMP) was developed to strategically prepare Agency facilities for forecasted flow demands. The WFMP is also used to recommend engineering projects that will modernize facilities to more effectively treat influent flows. The current WFMP forecasts flow projections and facility improvements through the year 2035. This EMP uses the same projections to forecast energy demands over the next 20 years to meet the anticipated flow increases and process changes. Figure 16 shows the forecasted demand for the summer and winter months, respectively.

The figure incorporates the expected renewable generation from the solar arrays and fuel cell with expected performance degradation and equipment (fuel cell catalyst) replacement factored in. The demand growth is proportional to expected flow increases of approximately 1 percent each year. The WFMP includes three major projects to be implemented at RP-1 within the 20-year period. The first two projects are modifications to the flow equalization process and installation of two additional anaerobic digesters, which will command a small increase in electrical demand. The third project involves the replacement of RP-1's aeration system with a membrane bioreactor (MBR) system and will result in a higher energy demand estimated at 10 percent. TYCIP projects included for implementation at RP-1 also considered in these projections.

The red shaded area in each figure represents the RP-1 demand exceeding the generation capabilities of RP-1's renewable portfolio. The red hatched area represents the anticipated energy reductions to be achieved through efficiency projects that are either under construction or included in the WFMP or TYCIP. The excess summer load ranges from approximately 500 kW in FY 15/16 to 1,400 kW in FY 33/34. The excess winter load fluctuates from approximately 200 kW in FY 15/16 to 1,100 kW in FY 33/34.

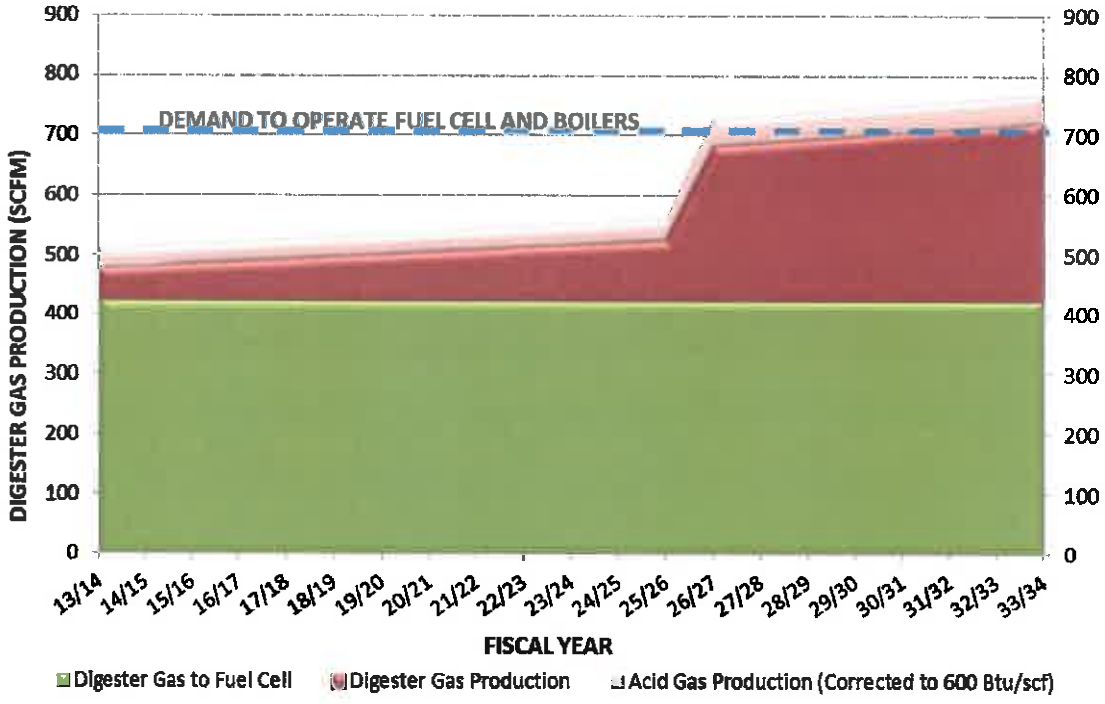
FIGURE 16. RP-1 20-YEAR POWER DEMAND FORECAST FOR SUMMER AND WINTER MONTHS



for a public agency with limited capital, it is essential to pursue self-generation projects that are cost effective. Renewable energy projects are typically cost effective at higher capacities and when the energy generated is used on-site. RP-1's renewable portfolio may be stagnant until the excess load during winter months approaches 1 MW, which is expected to coincide with the MBR installation. Alternatively, installing new distributed generation systems may make sense in the near term if IEUA can secure an export agreement with SCE that is economically favorable to power export from renewable sources. For these reasons, the focus on energy management at RP-1 over the next 10 years will be placed on conservation and efficiency projects.

RP-1's digester gas production also plays a vital role in the energy potential of the facility. In FY 13/14, the treatment plant produced an average of 560 scfm of digester gas. However, low BTU acid gas accounted for approximately 80 scfm of the production total. Figure 17 charts RP-1's anticipated gas production with expected flow increases, sludge thickening upgrades in the TYCIP, and two new digesters coming online over the next 20 years.

FIGURE 17. RP-1 20-YEAR GAS PRODUCTION FORECAST



Currently, the acid gas is combusted in the flare and only digester gas produced in

the second of third phases of the thermophilic process are utilized in the fuel cell. While there may be potential to use the acid gas phase in a future process, Figure 17 accounts for the difference in heat rating between the gases by converting the amount of acid gas to an equivalent quantity of digester gas with a heat rating of 600 Btu/scf (the average heat rating of digester gas used in the fuel cell).

The green shaded area represents the amount of digester gas that IEUA is contractually obligated to provide for the fuel cell operator. The dashed line shows the level of gas production needed to simultaneously operate the boiler and fuel cell at full load. Since RP-1's boilers are not currently capable of operating on a natural/digester gas blend, digester gas is only utilized in the boilers when the fuel cell is operating solely on natural gas due to gas conditioning restrictions. As a result, the facility is producing excess digester gas that cannot be used for energy generation. This EMP will explore several projects that can take advantage of the energy content in the digester gas.

Potential New Projects

RP-1's large electrical load and digester gas production offer a multitude of opportunities for additional self-generation and efficiency projects. Table 7 outlines projects that are being considered for implementation at RP-1 and discusses the feasibility of each. These projects may or may not align with the goals introduced in Table 2. The objective of this section is to evaluate any concept that could potentially result in energy conservation at IEUA facilities. Select projects in the table were evaluated in separate fact sheets, which are included in Appendix C.

TABLE 7. POTENTIAL RP-1 ENERGY PROJECTS

Project Type	Name	Description	Feasibility
Operational Efficiency	Energy Audit	Third party energy service companies can conduct comprehensive energy audits that not only evaluate potential savings from equipment retrofits, but also process modifications that can result in higher operational efficiencies.	IEUA has seen benefits from past audits, but has never committed to comprehensive evaluations of each facility. The Energy Network offers a no-cost audit service designed to assist public agencies with these types of evaluations. RP-1 would likely be the first facility considered for this service.
Operational Efficiency	Lighting Upgrades	RP-1 has extensive indoor and outdoor lighting systems that can be replaced with low-usage LEDs or outfitted with controls to increase efficiency.	The high volume of lighting systems at RP-1 means that energy conservation opportunities are likely to be cost effective. A comprehensive audit of existing lighting infrastructure will be required to assess the potential savings and cost effectiveness.
Operational Efficiency	HVAC Controls and Upgrades	The RP-1 facility houses many buildings that use HVAC units for climate control. Many of these units can be upgraded to more efficient models or outfitted with controls that limit HVAC operation to non-peak periods.	An assessment of RP-1's existing HVAC units is underway to identify which pieces of equipment can be replaced. Controls to limit HVAC operation to non-peak periods is not currently considered cost effective, since RP-1 imports electricity through DA and therefore is not subject to the high TOU charges that these controls are de-
Operational Efficiency	Compressed Air Optimization	Many of the treatment processes require compressed air. As a result, the facility contains multiple compressed air systems located throughout the facility. It is possible that energy savings could be achieved through centralizing or even downsizing the facility's compressed air systems.	An audit of the facility's compressed air system would be needed to assess the current infrastructure and determine if energy conservation measures are cost effective. This type of assessment could be achieved through a comprehensive energy audit.

Project Type	Name	Description	Feasibility
Operational Efficiency	Condense Operations Buildings	Operations and maintenance staff are scattered across the facility property, which requires multiple buildings, each requiring separate lighting and HVAC systems. The facility could potentially reduce overall electricity usage by condensing all staff offices into one building.	This measure would require significant planning and capital costs. IEUA will evaluate potential savings and operational impacts to determine feasibility.
Operational Efficiency	Aeration Basin Upgrades	Aeration is an energy intensive process, as it requires significant continuous air flow. Energy conservation could be achieved by upgrading the existing aeration system to higher efficiency blowers or diffusers with higher oxygen transfer efficiency.	IEUA would need to evaluate potential replacement options, identify cost effectiveness of the new equipment, and adjust operation schedules accordingly to allow for aeration retrofits.
Renewable Resources	Digester Mixing Optimization	The anaerobic digesters at RP-1 currently utilize gas mixing introduced at the base of the digesters to produce biogas. Alternative technologies or mixing strategies can be evaluated to determine if energy savings and/or increased gas production can be achieved.	Retrofitting the seven anaerobic digesters at RP-1 would be an expensive undertaking, and would potentially require subsidization from grants or other sources. Increased gas production could be used to eliminate natural gas in the boilers or to open an opportunity for further renewable technologies on site.
Renewable Resources	Digester Retrofit	Emerging technology focuses on retrofitting existing digesters with proprietary sludge mixing and thickening processes that are designed to increase the digestion capacity without increasing the digester footprint.	This retrofit project would require significant capital, unless pursued as a public-private partnership similar to existing PPAs. The innovative technology was recently implemented at other treatment facilities, so this project will be considered as further data becomes available.

Project Type	Name	Description	Feasibility
Renewable Resources	Install Gas Storage	The facility currently does not have the ability to store digester gas on site. Any gas that is not combusted in the boilers or processed in the fuel cell is combusted in the flare. Installation of low pressure gas storage tanks could provide cost effective storage and better utilize the facility's renewable resources. High pressure tanks could provide greater storage capacity, but would require more infrastructure for usage in facility equipment. This project could also include blending of the acid gas in order to increase the beneficial use of biogas.	Gas storage tanks would provide greater operational flexibility in utilizing the renewable digester gas at RP-1. However, an engineering evaluation would need to be conducted to determine how the additional stored gas would be utilized. This project may need to be considered in parallel with other projects that focus on increased gas production. Acid gas blending would require an evaluation of the gas quality to determine if the blended gas could meet the specifications required at the fuel cell. Any feasibility study conducted will also need to include potential gas compression costs.
Renewable Resources	Co-Digestion Project	RP-1 currently only accepts sludge from treated wastewater in its digestion process. Gas production could be increased with the introduction of food waste or Fats, Oils, and Greases (FOG) into the anaerobic digesters as well.	IEUA has explored food waste projects in the past and encountered operational challenges due to the lack of an appropriate automated food waste receiving and feeding station. Recent projects completed by other wastewater treatment facilities have shown positive results with co-digestion. Further evaluation would be required to identify influent sources, capacities, concentrations, and a potential receiving station.
Renewable Resources	Compressed Natural Gas (CNG) Installation	In addition to using digester gas in the boiler or fuel cell, IEUA staff has considered converting the biogas to CNG to be used in the Agency's fleet vehicles. Such a project would require retrofit of the fleet vehicles to operate on CNG. A CNG installation could take advantage of RP-1's location near several major highways and provide CNG for commercial use.	The scale of this project is currently not feasible, as a high majority of the biogas produced at RP-1 is processed in the fuel cell. IEUA is evaluating the viability of converting the acid phase gas to CNG as well. This project may become viable in the future with an increase in digester gas production and/or subsidized grant funding.

Project Type	Name	Description	Feasibility
Renewable Resources	Acid Phase Gas Turbine	The low heat content of the acid phase digester gas presents difficulties in producing renewable power. An emerging technology packages thermal oxidizers and gas turbines that can cost effectively utilize low quality biogas while producing electricity and heat.	While the technologies have been developed, there is little data indicating reliability. Unless such a project is heavily subsidized through grant funding, this project is likely infeasible until the technology is proven.
Renewable Resources	Expand Solar Installation	RP-1 currently has 0.83 MW of solar panels installed on site. The facility can evaluate the potential to install more solar on available land.	Any increase in solar generation at the facility would require a modified net metering agreement with SCE, which could take time considering the complexity of RP-1's current agreement. Additionally, the facility is subject to departing load charges, which would decrease the cost effectiveness of the technology. A feasibility study should consider that any new generation may result in power export at a low rate.
Renewable Resources	Electric Vehicle Charging Station	RP-1 can take advantage of its central location near major highways to install and operate an electric vehicle (EV) charging station powered by the on-site renewable installations. The station could be used by public and Agency fleet vehicles.	This project would require grant funding, as the charging station alone is not cost effective. The most viable route for project implementation would be as a component of a larger renewable energy project at the site or across Agency facilities.
Renewable Resources	Equalization Basin Cover and Solar Array	RP-1 currently uses flow equalization to temporarily store primary effluent during the treatment process, which can create odors. This project would install a cover over the basin with a solar array affixed atop the cover to generate electricity on-site.	Covering the equalization basin will require significant capital. Although costs may be offset by the solar installation, increasing the solar generating capacity of the facility could increase departing load charges and reduce the cost benefit.

Project Type	Name	Description	Feasibility
Energy Management	Purchase Existing Solar Installations	The power generated from the 0.83 MW of solar panels on site is currently sold to IEUA through a PPA. IEUA is considering purchasing the panels at fair market value to eliminate future electricity costs from solar generation.	IEUA has inquired about the potential purchase with the current project owner. However, the owner must be willing to sell the arrays at a value that is cost effective for the Agency. IEUA will continue to work with the PPA parties on this evaluation.
Energy Management	Convert Equalization Basin	RP-1 currently uses flow equalization to temporarily store primary effluent during the treatment process, which can create odors. Modifying the basins to store secondary or tertiary treated effluent may reduce odors while maintaining operational flexibility.	This project would require significant changes to the facility's piping infrastructure. Energy savings could be seen with reduced or off-peak pumping, though construction costs may be too high to be considered economical.
Energy Management	Energy Storage Installations	With the variation in load throughout the day and the potential for export during periods of peak renewable generation, RP-1 may benefit from the installation of energy storage technology to assist with load management. Storage could ensure that electricity purchases are minimized during peak periods and stored for later use on site when export would otherwise be required.	Current energy storage technology is not cost effective at RP-1 due to the facility's status as a DA customer. Load shifting, achieved through storing electricity during off-peak periods, has the potential to save on electricity costs by avoiding TOU demand charges. However, since RP-1 is not subject to these charges as a DA customer, the cost benefit is not enough to make the project viable without subsidization.

Project Type	Name	Description	Feasibility
Energy Management	Demand Response Energy Storage Installation	Energy storage as a demand response tool is an innovative approach that is currently in initial stages of development. The project would involve a third party installing battery storage at host sites that could be used by IOUs for demand response during periods of peak consumption a portion of the time, and by the host site for peak shaving at other times. Capital expenditures for the storage installations would be covered by the third party.	IEUA has been approached by a third party to develop Demand Response Energy Storage projects at Agency facilities. The lack of capital costs and benefit of load flexibility and cost savings are attractive. IEUA will evaluate the potential agreement to determine the project's impact on the Agency's existing infrastructure.

Project Forecasts

RP-1's procurement strategy, current demand, and limited capital eliminate many of these projects in the near term. Projects focusing on increasing operational efficiencies are more favorable to current conditions, assuming cost effective measures are identified. Table 7 includes broad areas of operation where energy reductions could be realized, but further work will need to be conducted to isolate and quantify savings from specific conservation measures. Tracking electrical demand with the facility's sub-meters will assist Agency staff IEUA in this endeavor. IEUA will work with a third party energy consultant within the next year to conduct a comprehensive energy audit of the RP-1 facility to develop a list of energy efficiency projects.

Despite the fact that RP-1 imported approximately 45 percent of the total electricity usage in FY 13/14, the potential to export power during periods of peak generation impacts the facility's ability to install new renewable generation projects. A revision of IEUA's net energy metering agreement with SCE would be required. Previous agreement revisions have proven to be costly and time consuming for Agency staff. Furthermore, any renewable technology utilizing digester gas would require an increase in gas production, as over 90 percent of RP-1's gas production is reserved for use in the fuel cell. The acid phase digester gas presents an opportunity for renewable technology on-site, but no reliable, cost effective solution has yet been found to properly utilize this gas.

Cost savings opportunities and operational flexibility could be achieved through gas storage projects. IEUA will conduct further evaluations to determine the potential savings opportunities from storing the gas, which will impact project viability. Energy storage projects that require IEUA to purchase battery storage are currently not cost effective because the facility purchases electricity through Direct Access. IEUA will continue to monitor energy storage technologies and pursue grant funding opportunities though, as the technology does present the benefit of operational flexibility and improved demand side management.

RP-1 contains a significant portion of the Agency's renewable portfolio that contributes toward the goal of peak power independence by 2020. Further evaluations will need to be conducted to determine the viability of expanding the facility's portfolio through increased digester gas production. In the short term, IEUA will commit to an energy audit to identify efficiency projects that can reduce the facility load and optimize the treatment processes.

REGIONAL PLANT NO. 4 AND INLAND EMPIRE REGIONAL COMPOSTING FACILITY

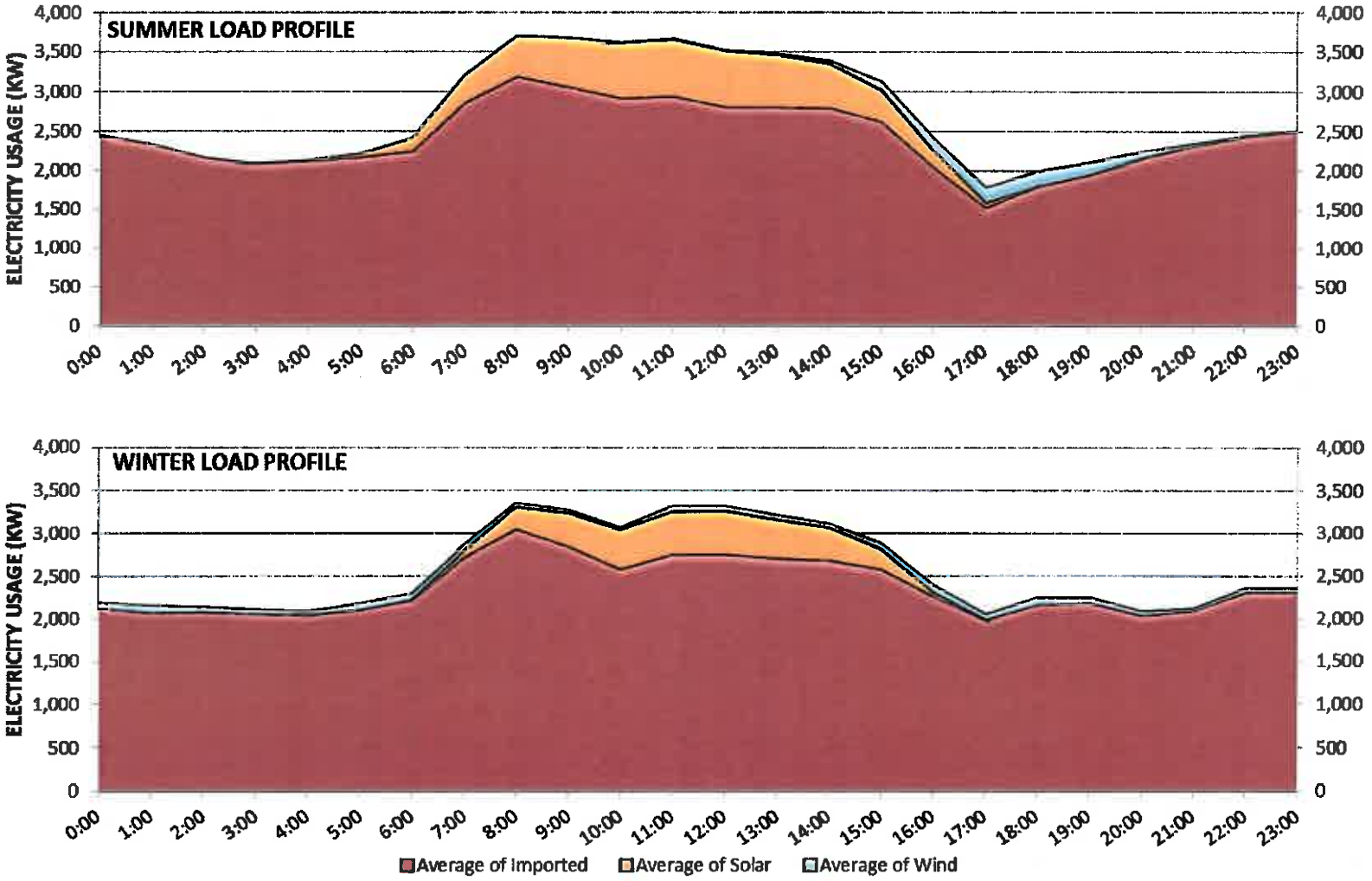
RP-4 and the IERCF are located adjacent to one another on 6th Street in Rancho Cucamonga. RP-4 is designed to treat an average of 14 MGD of wastewater flow. The treatment plant employs primary, secondary, and tertiary treatment to produce Title 22 compliant recycled water that is provided for direct use and groundwater recharge basins. Biosolids removed from the RP-4 treatment process are conveyed by gravity through the regional sewer system as influent to RP-1.

The IERCF is capable of recycling approximately 210,000 wet tons of biosolids and amendment per year into high quality compost. Although RP-4 and the IERCF operate independently of one another, the two facilities share the same electricity utility meter. For this reason, the EMP considers RP-4 and the IERCF together.

Facility Load

The average hourly electrical load for summer (June through September) and winter (December through February) months at RP-4 and the IERCF are shown on Figure 18. Imported electricity, wind turbine generation, and solar generation are all included in the load profiles. The figure shows a slight reduction in overall load during colder months, with peak consumption at approximately 3.7 MW in summer and approximately 3.3 MW in the winter. In both seasons, the peak electrical load is generally stable between 8:00 and 15:00. The generated solar electricity also varies between the two seasons, as generation increases in summer months having more sunlight hours each day. During winter months in FY 13/14, the wind turbine produced more consistently. However, the maximum power generated occurred during summer months from the late afternoon to early evening.

FIGURE 18. FY 13/14 AVERAGE RP-4/IERCF LOAD DURING SUMMER AND WINTER MONTHS



The figure also shows that imported electricity demand peaks between the hours of 7:00 15:00. This coincides with typical operations at the IERCF. Large fans are used to continuously exhaust the fully enclosed composting process. These fans operate at a higher flow rate during the day to achieve more frequent air exchanges for staff working within the enclosed facility. As a result, the facility experiences peak demand during the middle of the day.

The RP-4/IERCF load charts include electricity used by the recycled water pumps at RP-4. These pumping demands were not included in previous sections to illustrate IEUA's increasing power requirements in distributing recycled water. However, these demands must be included when considering the overall facility load because they influence the power procurement and self-generation opportunities that IEUA can pursue.

The existing single electricity meter for RP-4/IERCF requires that the two facilities be considered as a single power entity. However, load management of RP-4/IERCF varies due to operational differences and can be improved by using the sub-metering equipment installed in 2014. Future versions of the EMP will use the sub-meter data to analyze the demand at each facility independently and focus on specific site opportunities.

Electricity Procurement

RP-4/IERCF receives electricity from a mix of generation sources, as summarized in Table 8. Until April 2014, RP-4/IERCF received imported electricity through Direct Access at day-ahead market pricing. These facilities were required to withdraw from the Direct Access program as a result of the interconnection agreement for RP-5 that was obtained through the Renewable Energy Self-Generation Bill Credit Transfer (RES-BCT) program. As part of that agreement, exported power is compensated with bill credits on other utility accounts owned by the generating Agency. In order to qualify, IEUA had to identify non-RP-5 bundled accounts with sufficient load to credit the full RP-5 generation capacity. RP-4/IERCF was selected as a credit account and removed from the DA program.

Switching to bundled service has resulted in high generation demand charges from SCE during peak periods. Transmission costs, paid to SCE for the imported power, are determined by the applicable tariffs imposed by the IOU for large commercial customers with standby service (TOU-8-B-Standby). The facility is assessed demand charges as part of the transmission costs, although the demand is reduced

by the nameplate rating of the wind turbine each month. RP-4/IERCF is also subject to departing load charges as a result of the on-site generation from the wind turbine.

TABLE 8. FY 13/14 RP-4/IERCF ELECTRICITY PROCUREMENT

Generation Source	Service Type	Rate Type	Percentage of Facility Load
Imported	Bundled	TOU-8-B Standby	90
Solar (1 MW)	PPA	Fixed with annual escalator	8
Wind (1 MW)	PPA	Fixed with annual escalator	2

In FY 13/14, on-site generation, consisting of the wind turbine at RP-4 and solar array at the IERCF, accounted for 10 percent of the total load of these facilities. As shown on Figure 18, the minimum load at RP-4/IERCF was approximately 2.1 MW. Even assuming peak generation, the wind turbine and solar array are not capable of matching the minimum RP-4/IERCF load. As such, RP-4/IERCF is not required to have an export agreement with SCE.

Demand Response

RP-4/IERCF participates in the DR program through EnerNOC. During a DR event, RP-4 staff reduces operation of the recycled water pumps and IERCF staff reduces fan operation. These practices aim to achieve reductions of 830 kW, which represents 67 percent of the overall Agency DR target. Additional reliable load reductions at RP-4 have been difficult to identify. IEUA's DR contract with EnerNOC contains a provision that requires the delivered load capacity to be at least 75 percent of the target reduction. If the delivered capacity falls below 75 percent, IEUA does not receive any credit for reducing load during the DR event. In FY 13/14, RP-4/IERCF reached 100 percent of their target in only one of six DR events. On average, RP-4/IERCF achieved 85 percent of its reduction goal, which is enough to achieve the minimum delivered capacity, but too low to commit to any additional reductions in the near future.

Energy forecast

Figure 19 shows 20 years of forecasted demands at RP-4/IERCF for the summer and winter months, based on the WFMP projections. The figure includes the expected renewable generation from the solar arrays and wind turbine with expected performance degradation factored in. The demand growth is proportional to an expected flow increase of approximately 2 percent each year at RP-4 and an expected 0.5 percent increase in energy demand each year at the IERCF. TYCIP and WFMP projects expected to affect the power demand were included in the forecast. However, the only significant project demand involves the replacement of RP-4's aeration system with a membrane bioreactor (MBR) system. This installation will result in a higher energy demand estimated at 10 percent.

The red shaded area in the two graphs represents the facility demand exceeding the generation capabilities of the solar and wind turbine installations. The red hatched area represents the anticipated energy reductions to be achieved through efficiency projects that are either under construction or included in the WFMP or TYCIP. The excess summer load ranges from approximately 1,500 kW in FY 14/15 to 3,700 kW in FY 33/34. The excess winter load fluctuates from approximately 1,400 kW in FY 14/15 to 3,600 kW in FY 33/34. Figure 19 shows that the peak demand at RP-4/IERCF does not have much seasonal difference.

FIGURE 19. RP-4/IERCF 20-YEAR POWER DEMAND FORECAST FOR SUMMER AND WINTER MONTHS

Despite the rated capacity of the solar and wind turbine installations, data have shown that RP-4/IERCF relies heavily on imported electricity during peak periods. This reliance is expected to increase steadily over the next 20 years. The amount of imported power indicates that the facility is capable of increasing the amount of renewable generation on site. Depending on the size and timing of any new renewable technology installed, it is possible that SCE would require an export agreement to be established. If the rated capacity of new distributed generation installations, when combined with the 2 MW generation capacity of the existing solar and wind installations, is more than or equal to the minimum demand of the facility at the time of installation, then IEUA will need to secure an export agreement with SCE.

Potential New Projects

The large electrical load and bundled service at RP-4/IERCF offer an array of opportunities for further self-generation, energy management, and efficiency projects. Table 9 outlines projects that have been considered for implementation at RP-4 and IERCF and discusses the feasibility of each.

TABLE 9. POTENTIAL RP-4/IERCF ENERGY PROJECTS

Project Type	Name	Description	Feasibility
Operational Efficiency	Energy Audit	Third party energy service companies can conduct comprehensive energy audits that not only evaluate potential savings from equipment retrofits, but also process modifications that can result in higher operational efficiencies.	IEUA has seen benefits from past audits, but has never committed to comprehensive evaluations of each facility. The Energy Network offers a no-cost audit service designed to assist public agencies with these evaluations. This service could yield several cost-saving measures at RP-4.
Operational Efficiency	Lighting Upgrades	RP-4 has extensive indoor and outdoor lighting systems that can be replaced with low-usage LEDs or outfitted with controls to increase efficiency. Lighting within the IERCF may not be as conducive to retrofit. Worker safety is paramount within the composting building, as visibility can be diminished without enough light.	A comprehensive audit of the existing lighting infrastructure will be required to assess the potential savings and cost effectiveness.
Operational Efficiency	HVAC Controls and Upgrades	RP-4 and IERCF have many buildings that use HVAC units for climate control. Many of these units can be upgraded to more efficient models or outfitted with controls that limit HVAC operation to non-peak periods.	An assessment of RP-4's existing HVAC units is underway to identify equipment that can be replaced. Controls to limit HVAC operation to non-peak periods can be cost effective because RP-4/IRCF is subject to high demand charges as a bundled service customer. IEUA will pursue an HVAC control project at the site.
Operational Efficiency	Compressed Air Optimization	Many of the RP-4 treatment processes require compressed air. As a result, the facility contains multiple compressed air systems located throughout the facility. It is possible that savings could be achieved through centralizing or even downsizing the facility's compressed air systems.	An audit of the facility's compressed air system would be needed to assess the current infrastructure and determine if energy conservation measures are cost effective. This type of assessment could be achieved through a comprehensive energy audit.

Project Type	Name	Description	Feasibility
Operational Efficiency	Aeration Basin Upgrades	Aeration is an energy intensive process, as it requires significant continuous air flow. Energy conservation could be achieved at RP-4 by upgrading the existing aeration system to higher efficiency blowers or diffusers with higher oxygen transfer efficiency.	IEUA would need to evaluate potential replacement options, identify cost effectiveness of the new equipment, and adjust operation schedules accordingly to allow for aeration retrofits.
Renewable Resources	Expand Solar Installation	The IERCF currently has 1 MW of solar panels installed on the roof of the composting building. There is additional space available for further arrays to be installed. The facility can evaluate the potential to expand the existing solar system using available roof space. Land space at RP-4 could also be utilized for additional arrays.	Any increase in solar generation at the facility would require a modified net metering agreement with SCE. Additionally, the facility is subject to departing load charges, which would decrease the cost effectiveness of the technology. A feasibility study will be conducted to determine the cost effectiveness of adding more solar panels to the site.
Renewable Resources	RP-4 Electric Vehicle Charging Station	RP-4 can take advantage of its central location near major highways to install and operate an electric vehicle (EV) charging station powered by the on-site renewable installations. The station could be used by public and Agency fleet vehicles.	This project would require grant funding, as the charging station alone is not cost effective. The most viable route for project implementation would be as a component of a larger renewable energy project at the site or across Agency facilities.
Energy Management	IERCF Purchase Existing Solar Installations	The power generated from the 1 MW of solar panels on site is currently sold to IEUA through a PPA. IEUA is considering purchasing the panels at fair market value to eliminate future electricity costs from solar generation.	IEUA has inquired about the potential purchase with the current project owner. However, the owner must be willing to sell the arrays at a value that is cost effective for the Agency. IEUA will continue to work with the PPA parties on this evaluation.

Project Type	Name	Description	Feasibility
Energy Management	Energy Storage Installations	Considering the facility load is highest during the middle of the day, when TOU pricing is highest from the IOU, RP-4/IERCF may benefit from the installation of energy storage technology to assist with load management. Storage could ensure that renewable installations could be used to charge batteries (or similar storage technology) outside of peak periods and then used on site when IOU rates are highest.	IEUA has received proposals from energy storage vendors and found that current technology is not cost effective at RP-4/IERCF. IEUA will continue to pursue the technology, as storage can provide invaluable management flexibility. The project may be viable with grant subsidization.
Energy Management	Separate RP-4 and IERCF with two utility meters	RP-4 and IERCF operate independently of one another but share an electrical utility meter. Separating the sites into two metered facilities could improve resource management and renewable incentive opportunities.	IEUA has received cost estimates from SCE for metering the two facilities independently and found the project to be cost prohibitive. However, the cost effectiveness would be different since the switch to bundled service. Separating the facilities would also mean the elimination of departing load charges, but also reduced benefit from standby demand pricing. Further evaluation is required to determine the cost impact of this project.
Energy Management	Increase Service Voltage	RP-4/IERCF currently operates on a 12 kV system. Facilities operating at service voltages above 50 kV can purchase electricity from SCE at tariffs that have lower transmission and generation rates.	Retrofitting the electrical distribution system at RP-4 and IERCF would require significant engineering and capital. A feasibility study would need to be conducted to evaluate the cost savings that could be achieved through such a project. Future cost savings would decrease with the implementation of additional renewable installations or energy storage.

Project Forecasts

Based on RP-4/IERCF's high electrical demand, current generation capacity, and status as a bundled service customer, there are many opportunities to improve energy management at these sites. Cost effectiveness will be the main consideration when determining the feasibility of potential new projects. Available space can also be a limiting factor when considering expansion of the solar system.

As RP-4/IERCF is IEUA's second largest user of electricity, IEUA will work with a third party energy consultant to conduct a comprehensive energy audit of the RP-4 and IERCF facilities once the RP-1 audit has been completed. Such an audit would be required to develop focused energy efficiency measures and reduce power consumption cost effectively.

RP-4/IERCF, as a bundled service customer, is an ideal candidate for energy management technologies that reduce load during peak periods. The load profile shows that IERCF's peak usage coincides with SCE's on-peak rates. Reducing imported electricity during these periods could result in savings from time-related generation and demand charges.

Improved HVAC controls could improve energy management and reduce the overall consumption across the facility during peak hours. IEUA staff intends to pursue the HVAC control technology for implementation at RP-4 and IERCF. Based on the project results, the technology could be used at other facilities as well.

Energy storage could have a large impact on load and cost management. As mentioned in Table 6, current storage technologies have proven cost prohibitive in IEUA's BCEs. IEUA is pursuing grant opportunities that will utilize energy storage with existing or new renewable technologies. Implementing energy storage on site is considered a valuable asset that can improve energy management capabilities, reduce operating costs, and provide relief for the grid during peak periods.

Solar costs and land-use efficiency have changed considerably since IERCF entered into its PPA in 2008. As a result, there may be the potential to add up to 1 MW of additional capacity between IERCF and RP-4. IEUA will pursue proposals for new solar installations at each site.

CARBON CANYON WATER RECYCLING FACILITY

CCWRF is designed to treat an average of 11.4 MGD of wastewater flow. The treatment plant employs primary, secondary, and tertiary treatment to produce Title 22 compliant recycled water that is provided to end users. Biosolids removed from the treatment process are pumped to RP-2 for processing.

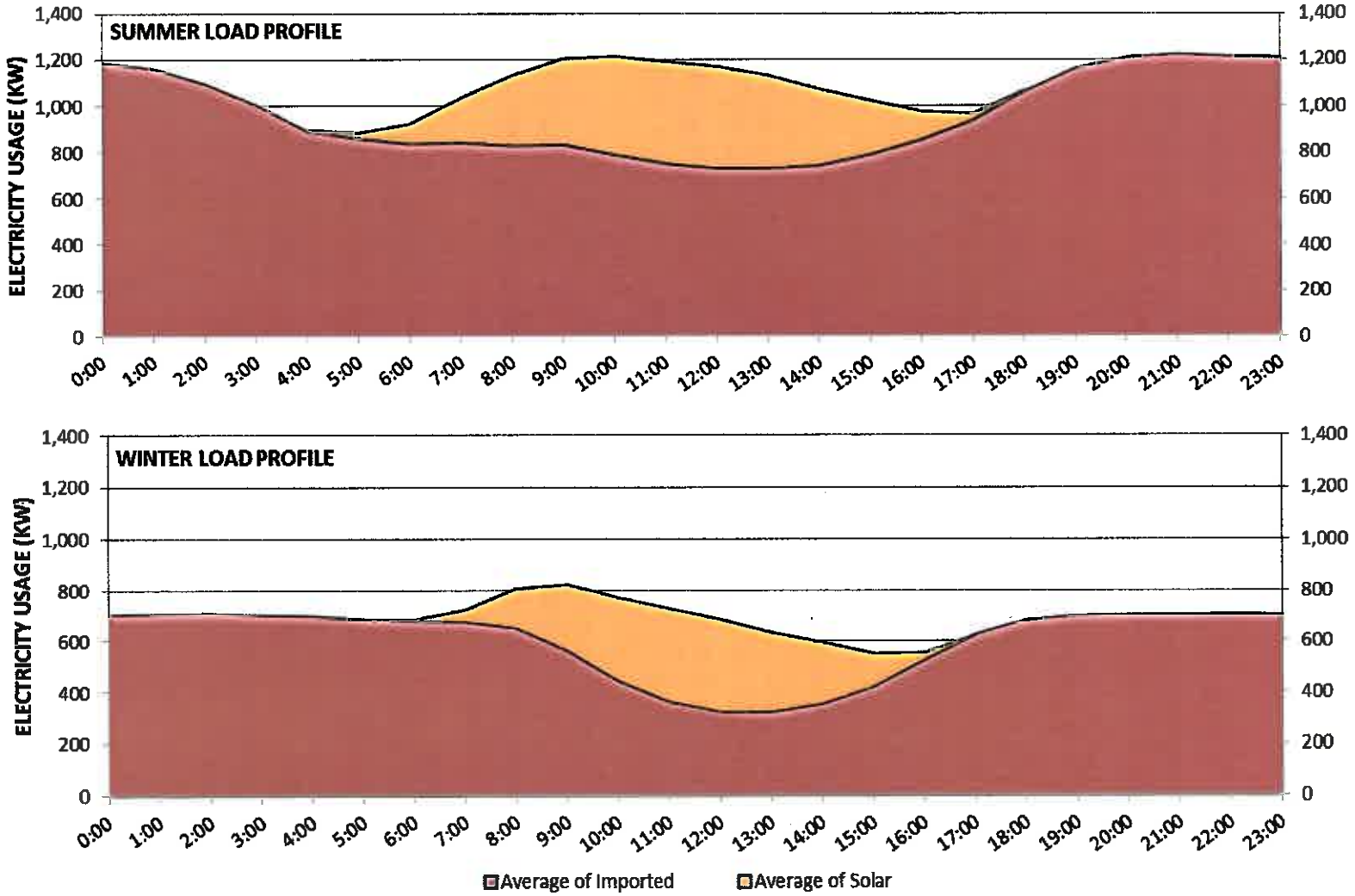
Facility Load

The average hourly electrical load for summer (June through September) and winter (December through February) months at CCWRF are shown on Figure 20. Imported electricity and solar generation are included in the load profiles. The figure shows energy consumption is 30 to 40 percent lower during winter months than summer months. Peak summer consumption is approximately 1,200 kW and peak winter consumption is approximately 820 kW.

The variation is due to the operation of CCWRF's recycled water pumps. During the winter months in FY 13/14, the RW distribution system at CCWRF was under construction and did not operate. However, the operation of these pumps typically varies seasonally because RW direct usage is lower during winter months. When RW demand is low, IEUA is able to satisfy direct use customer needs through RP-1's supply system. As a result, the CCWRF RW pump distribution system can be non-operational for weeks or months at a time. Therefore, despite the lack of pump station operation, the FY 13/14 facility load is considered characteristic of operations during the summer and winter months.

The CCWRF load profiles are unique in that two peak usage periods occur, one during the morning (between 8:00 and 9:00) and the other during the evening (20:00 to 24:00). During summer months, the daily electrical load varies based on recycled water pumping demand. The load profile shows peak usage around 1,200 kW at 10:00 and a minimum consumption of approximately 880 kW at 5:00. During winter months, when the recycled water pumps are typically non-operational, the electrical load is consistent during the evening, then peaks in the morning. Peak usage (approximately 820 kW) occurs between 8:00 and 10:00, and the facility load is at a minimum (approximately 560 kW) between 15:00 and 16:00.

FIGURE 20. FY 13/14 AVERAGE CCWRF LOAD DURING SUMMER AND WINTER MONTHS



CCWRF receives electricity from two generation sources, as listed in Table 10. CCWRF purchases imported electricity through Direct Access at day-ahead market pricing. In FY 13/14, imported purchases accounted for approximately 83 percent of the total electricity consumed. The remaining consumption was generated from the solar array.

TABLE 10. FY 13/14 CCWRF ELECTRICITY PROCUREMENT

Generation Source	Service Type	Rate Type	Percentage of Facility Load
Imported	Direct Access	Market-priced	83
Solar (625 kW)	PPA	Fixed with annual escalator	17

As shown on Figure 20, CCWRF's winter power demand can drop below 600 kW in the afternoon. This demand could potentially be met with peak generation of the solar array, which would result in a small amount of power being exported. CCWRF does not currently have an export agreement with SCE. No export agreement will be pursued considering the infrequency and small amount of power that could be exported. However, if any additional distributed generation projects were installed at CCWRF, IEUA would need to enter into an export agreement with SCE.

Demand Response

CCWRF participates in the DR program through EnerNOC. During a DR event, CCWRF staff reduces operation of the recycled water pumps. The load reduction goal of 290 kW represents 24 percent of the overall Agency DR target. Due to the seasonal nature of CCWRF's recycled water operations, IEUA's ability to meet the reduction target varies. The DR program uses data from the ten working days immediately prior to a DR event to calculate the baseline for each DR event. If CCWRF did not utilize its recycled water pumps during these times, which is likely during winter months, then meeting a winter reduction goal at CCWRF is impossible.

In FY 13/14, CCWRF failed to reach 100 percent of its target in all six DR events and actually saw a load increase in two events. This was a result of the recycled water pumping system's non-operation during reconstruction. The Agency's total cumulative curtailment of 1,230 kW can be achieved through a combination of the enrolled facilities. In FY 13/14, RP-1 reduced recycled water pumping loads to

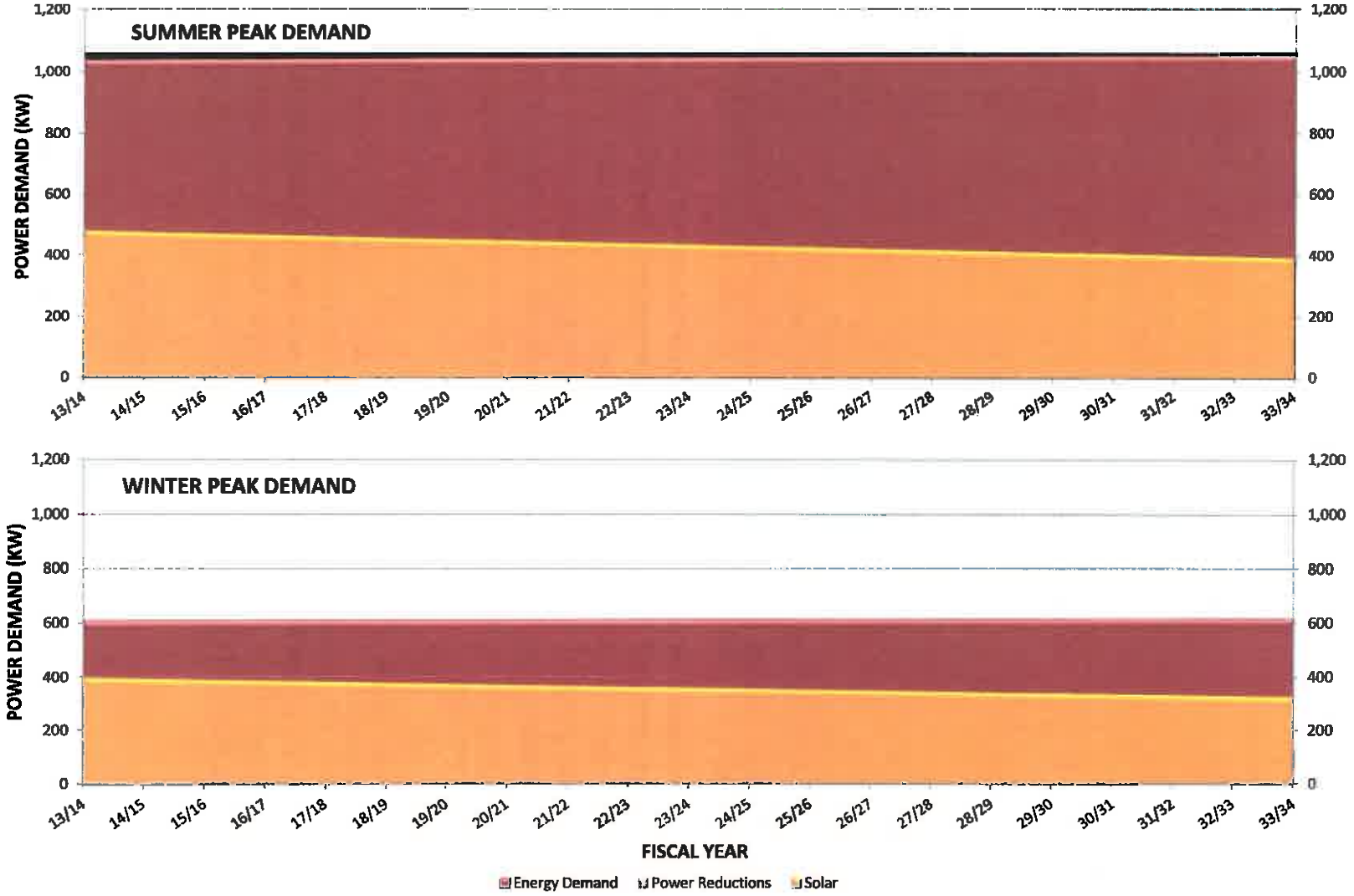
compensate for CCWRF's inability to drop load.

Energy forecast

Figure 21 shows the 20-year forecasted demand at CCWRF for the summer and winter months, respectively, based on the WFMP projections. The figure incorporates the expected renewable generation from the solar arrays, with expected performance degradation factored in. Flow projections at CCWRF are consistent with current operation, as the WFMP only predicts a cumulative increase of 0.1 MGD over the 20-year period. As such, there are no significant demand reduction projects expected at CCWRF. Existing equipment is expected to be capable of providing the treatment necessary to produce and distribute Title 22 quality water until at least 2034.

The red shaded area in each graph represents the facility demand exceeding the generation capabilities of the solar installation. There is no red hatched area on the figure because IEUA has not yet identified efficiency projects to reduce energy consumption. The seasonal difference in load at CCWRF is again apparent on Figure 21. Imported power demand during summer months ranges from approximately 560 kW in FY 14/15 to 660 kW in FY 33/34. The excess winter load fluctuates from approximately 130 kW in FY 14/15 to 220 kW in FY 33/34. The increase in these demands over the 20-year period is not a result of increased flow projections. Rather, it reflects the amount of imported electricity that is expected to increase each year because of the expected performance degradation of the solar arrays (estimated to be 1 percent annually).

FIGURE 21. CCWRF 20-YEAR POWER DEMAND FORECAST FOR SUMMER AND WINTER MONTHS



CCWRF projections indicate a reliable demand over the next 20 years. The amount of imported electricity during winter months is not well-suited toward adding additional renewable power projects, as installations in the 100-200 kW range are typically cost prohibitive. Furthermore, expansion of the current solar system on site is infeasible due to a lack of available space. Should a cost-effective distributed generation project be identified, it would almost certainly require an export agreement with SCE.

Potential New Projects

Opportunities for further self-generation, energy management, and efficiency projects at CCWRF are limited due to the consistent electrical load, existing solar generation, and status as a Direct Access customer. Table 11 lists projects that have been considered for implementation at CCWRF and discusses the feasibility of each.

TABLE 11. POTENTIAL CCWRF ENERGY PROJECTS

Project Type	Name	Description	Feasibility
Operational Efficiency	Energy Audit	Third party energy service companies can conduct comprehensive energy audits that not only evaluate potential savings from equipment retrofits, but also process modifications that can result in higher operational efficiencies.	IEUA has seen benefits from past audits, but has never committed to comprehensive evaluations of each facility. The Energy Network offers a no-cost audit service designed to assist public agencies with these types of evaluations. This service could yield cost-saving measures at CCWRF.
Operational Efficiency	Lighting Upgrades	CCWRF has indoor and outdoor lighting systems that can be replaced with low-usage LEDs or outfitted with controls to increase efficiency.	A comprehensive audit of the existing lighting infrastructure will be required to assess the potential savings and cost effectiveness.
Operational Efficiency	HVAC Controls and Upgrades	CCWRF has a handful of buildings that use HVAC units for climate control. Many of these units can be upgraded to more efficient models or outfitted with controls that limit HVAC operation to non-peak periods.	An assessment of CCWRF's existing HVAC units is underway to identify equipment that can be replaced. Controls to limit HVAC operation to non-peak periods will likely not be cost effective because CCWRF is a Direct Access customer and is not subject to high demand charges from SCE.
Operational Efficiency	Compressed Air Optimization	Many of the CCWRF treatment processes require compressed air. As a result, the facility contains multiple compressed air systems located throughout the facility. It is possible that energy savings could be achieved through centralizing or even downsizing the facility's compressed air systems.	An audit of the facility's compressed air system would be needed to assess the current infrastructure and determine if energy conservation measures are cost effective. This type of assessment could be achieved through a comprehensive energy audit.

Project Type	Name	Description	Feasibility
Operational Efficiency	Aeration Basin Upgrades	Aeration is an energy intensive process, as it requires significant continuous air flow. Energy conservation could be achieved by upgrading the existing aeration system to higher efficiency blowers or diffusers with higher oxygen transfer efficiency.	IEUA would need to evaluate potential replacement options, identify cost effectiveness of the new equipment, and adjust operation schedules accordingly to allow for aeration retrofits.
Energy Management	Purchase Existing Solar Installations	The power generated from the 625 kW solar array is currently sold to IEUA through a PPA. IEUA is considering purchasing the panels at fair market value to eliminate future electricity costs from solar generation.	IEUA has inquired about the potential purchase with the current project owner. However, the owner must be willing to sell the arrays at a value that is cost effective for the Agency. IEUA will continue to work with the PPA parties on this evaluation.
Energy Management	Energy Storage Installations	CCWRF may benefit from the installation of energy storage technology to assist with load management. Storage could ensure that electricity purchases are minimized during peak periods and stored for later use on site when export would otherwise be required.	Load shifting, achieved through storing electricity during off-peak periods, has the potential to save on electricity costs by avoiding TOU demand charges. Current energy storage technology is not cost effective at CCWRF due to the facility's status as a DA customer. However, subsidization or modifying the DA rate could potentially yield a cost effective project. IEUA will continue to evaluate potential energy storage projects.
Energy Management	Demand Response Energy Storage Installation	Energy storage as a demand response tool is an innovative approach that is currently in initial stages of development. The project would involve a third party installing battery storage at host sites that could be used by IOUs for demand response during periods of peak consumption a portion of the time, and by the host site for peak shaving at other times. Capital expenditures for the storage installations would be covered by the third party.	IEUA has been approached by a third party to develop Demand Response Energy Storage projects at Agency facilities. The lack of capital costs and benefit of load flexibility and cost savings are attractive. CCWRF would likely need to switch to bundled service to take advantage of peak period cost savings. IEUA will evaluate the potential agreement to determine the project's impact on the Agency's existing infrastructure.

Project Forecasts

IEUA's ability to install new renewable energy projects at CCWRF is limited by available land and low import demand. In the near term, IEUA will focus on energy efficiency projects to optimize the treatment process and minimize the electrical demand. IEUA will work with a third party energy consultant to conduct a comprehensive energy audit of CCWRF that will identify potential efficiency projects.

REGIONAL PLANT NO. 2

RP-2 has been in operation since 1960. Originally designed to treat both liquids and solids, the facility has exclusively treated biosolids since 2002. At RP-2, all solids removed from RP-5 and CCWRF are thickened and digested. RP-2 contains digesters and dewatering facilities that generate renewable digester gas from the solids that have been removed during the liquids phase wastewater treatment process.

RP-2 is operated under a lease with the United States Army Corps of Engineers. With the lease term set to expire in 2035, IEUA plans to remove RP-2 from service within the next eight to ten years and relocate the solids processing to RP-5. As a result, the energy management opportunities at RP-2 are limited to projects with short payback periods without significant infrastructure.

Gas Production

RP-2 has three anaerobic digesters in operation and an aerobic digester that is only put in service during emergencies. In FY 13/14, the digestion operation produced an average of 160 standard cubic feet per minute (scfm) of digester gas, or approximately 229,100 scf per day. The acid phase gas, which is the product of the first phase of mesophilic digestion, cannot be consumed in the boiler or cogeneration engine due to its low quality. Unlike RP-1, RP-2's acid phase gas is not continuously flared. The acid phase gas is sent to gas mixers and injected into the second phase of the digestion system. After assisting with solids mixing, the acid phase gas is combined with the digester gas from the second phase and is combusted as needed in RP-2's boilers, engine, or flare. The acid phase gas can also be sent directly to the flare if operating pressures of the second phase digesters are too high.

The heating value of the digester gas typically measures between 550 and 625 Btu/scf. The preferred destination for this gas is RP-2's 580 kW cogeneration engine. This ICE is operated and maintained by IEUA staff on site. In FY 13/14, the ICE consumed an average of 116 scfm. The ICE is subject to SCAQMD Rule 1110.2, which requires that stationary digester gas-fueled engines meet stringent emissions limits by January 1, 2016 for VOC, nitrogen oxides (NO_x), and carbon monoxide (CO). While there has been discussion of extending this implementation deadline to January 1, 2017, no rule language has been promulgated indicating as

such. Retrofitting the RP-2 ICE with sufficient emissions control technology to meet these standards would prove to be cost prohibitive. Therefore, IEUA plans to remove the ICE from service by the end of the 2015 calendar year.

RP-2's hot water boilers are the second option for the digester gas. The boilers are required to produce heat for the digestion process, and are capable of operating on either digester gas or natural gas, but not a blend. The boilers are operated on digester gas when production is high enough to operate both the ICE and boiler, or when the ICE is down for maintenance. When the digester gas production exceeds both the ICE and boiler demands, the excess digester gas is combusted in the flare.

Facility Load

The average hourly electrical load at RP-2 for summer (June through September) and winter (December through February) months are shown on Figure 22. Imported electricity and ICE generation are included on these two load profiles. The figure shows a slight reduction in overall load during summer, with peak consumption around 180 kW in summer and approximately 165 kW during winter. The load at RP-2 is so low that approximately 40 percent of the electricity generated from the ICE was used on site in FY 13/14, while 60 percent was exported.

FIGURE 22. FY 13/14 AVERAGE RP-2 LOAD PROFILE DURING SUMMER AND WINTER MONTHS

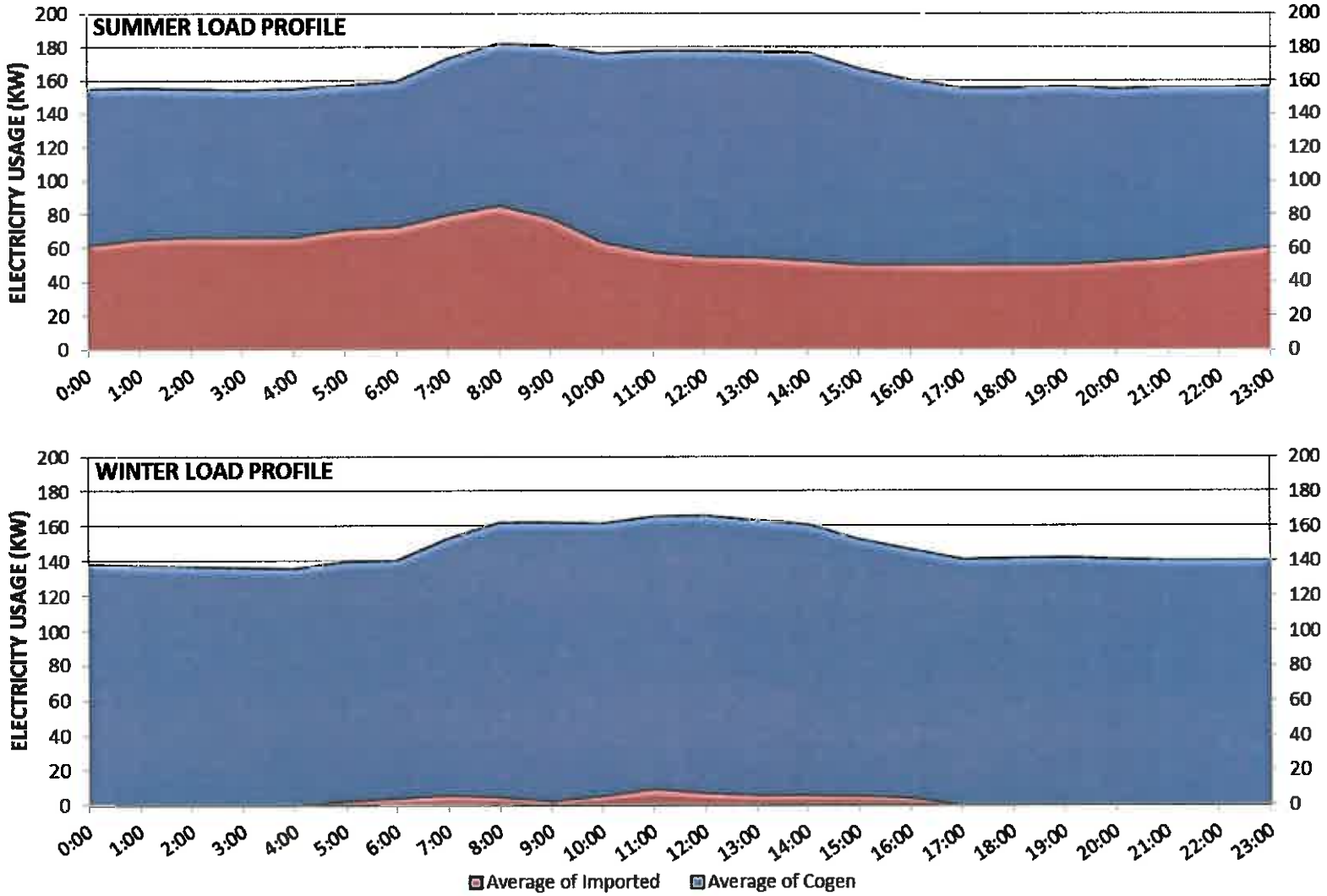


Figure 22 also shows that imported electricity consumption is much higher at RP-2 during summer months. RP-2 has two electrical meters with SCE. One meter serves the control room building, which typically imports electricity to power the lighting and HVAC needs of the building. The second meter services the rest of the treatment plant. With the two meter configuration, the ICE may be exporting power while RP-2 still receives imported electricity for the control room needs. Imported electricity is significantly lower during winter months, when the HVAC system is not operated as frequently.

Electricity Procurement

Table 12 lists the two sources of electricity at RP-2. Imported electricity purchases are obtained through general bundled service with SCE. The cost of the electricity generated by the ICE is determined by the average O&M costs IEUA spends to keep the ICE in operation divided by the total electricity produced. Electricity costs generated by the ICE have historically been estimated at $0.08/kWh. The compensation that IEUA receives for exported power fluctuates each month. In FY 13/14, SCE paid IEUA an average of $0.052/kWh for electricity exported from RP-2.

TABLE 12. FY 13/14 RP-2 ELECTRICITY PROCUREMENT

Generation Source	Service	Rate	Percentage of Facility Load
Imported	Bundled	General Service	22
ICE (580 kW)	-	O&M Costs	78

In FY 13/14, on-site generation accounted for 78 percent of the total facility load. As expected with the engine size, the amount of electricity generated on site regularly exceeds RP-2's total consumption. However, power generated by the ICE cannot be used in the control room building due to the separate utility metering. As a result, 22 percent of RP-2's power needs are met through importing electricity.

Demand Response

RP-2 participates in the DR program through EnerNOC. During a DR event, RP-2 staff is tasked with reducing the facility load by 10 kW, a nominal value that was selected in order to include RP-2 in the Agency's DR portfolio. This drop in load represents less than one percent of the overall load reduction target of 1,230 kW that IEUA has agreed to across all Agency facilities. In FY 13/14, RP-2 exceeded 100 percent of its target in two of the six DR events and averaged a load reduction of 6 kW per event.

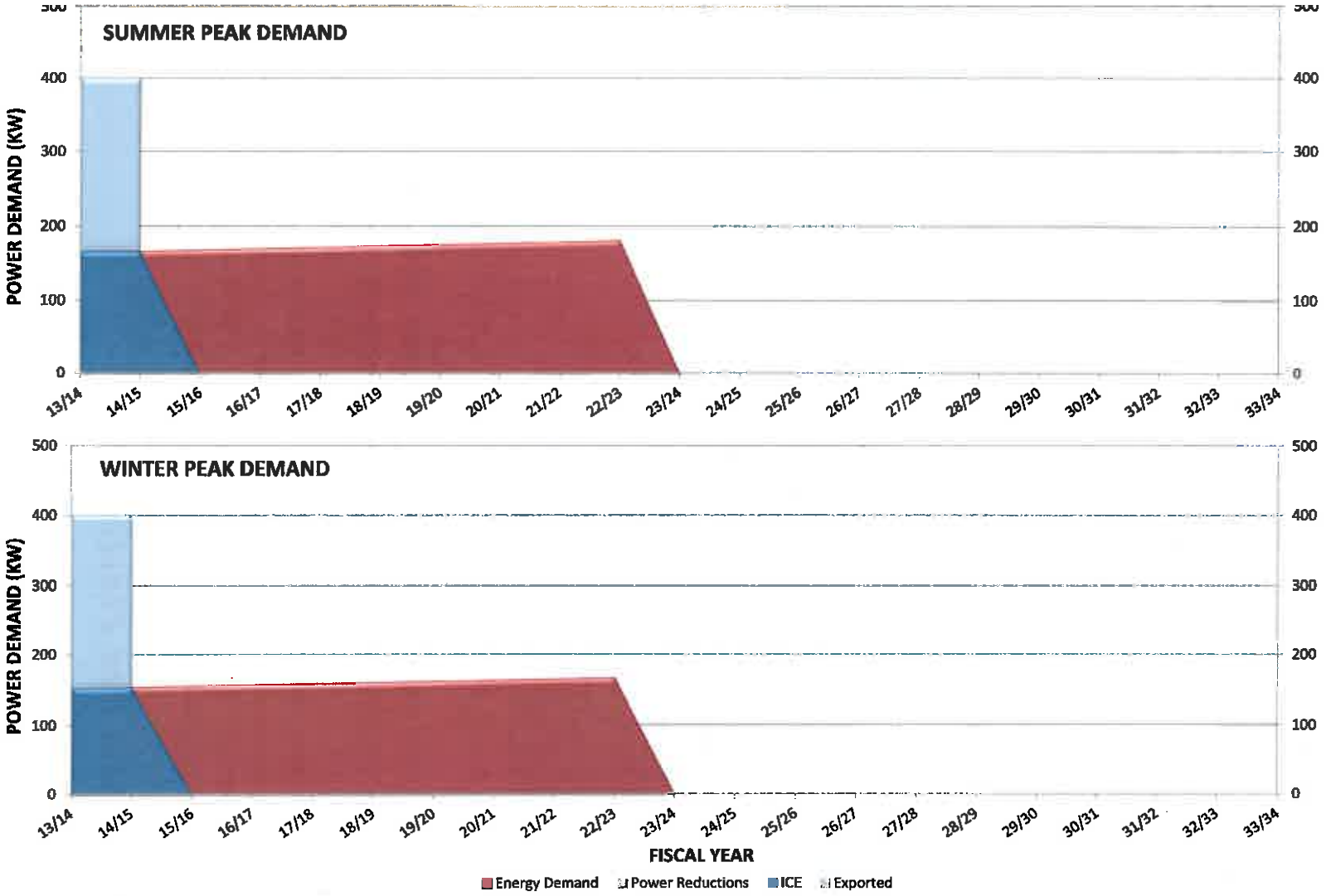
RP-2 could contribute additional load during demand response events in the form of exported power. Increasing the ICE output could have the same grid effect as dropping load at the facility, but exported power is not compensated in the current DR program. If the DR program were to incentivize power that is exported above the facility's baseline, IEUA could temporarily increase ICE load to maximize the power output.

Energy forecast

Figure 23 shows the 20-year energy forecast for RP-2. There are no significant energy demand projects planned for the facility because the solids processing is expected to be relocated within ten years. Figure 23 incorporates the expected renewable generation from the ICE through December 2015. The demand growth is assumed to be proportional to expected flow increases at CCWRF and RP-5.

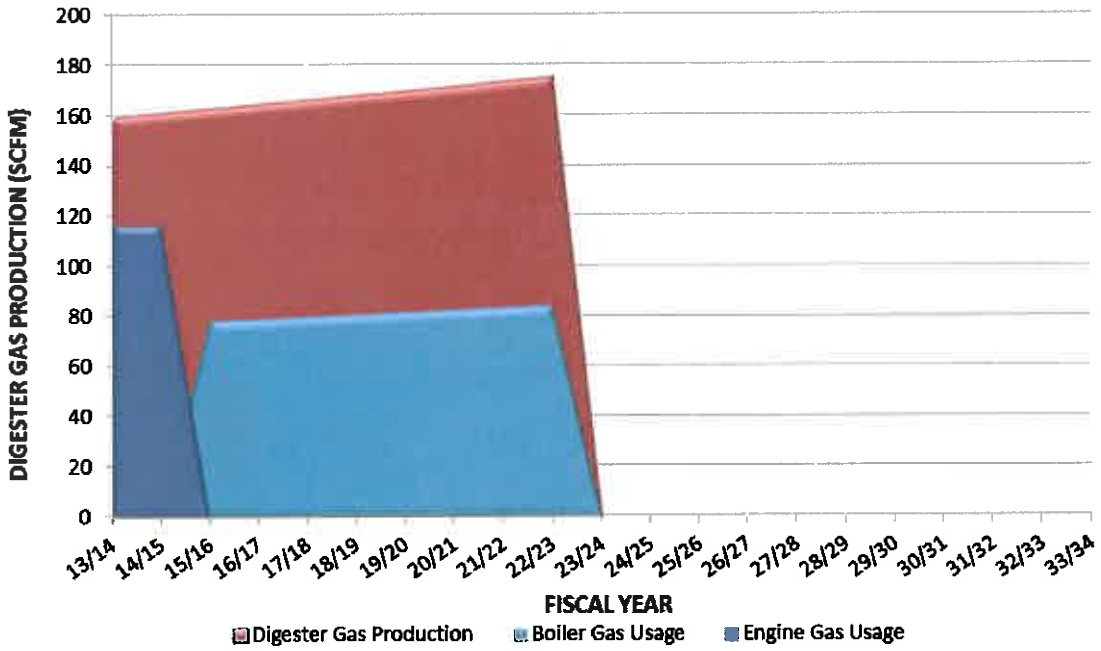
The blue shaded area in each figure represents the anticipated generation from the RP-2 ICE, which exceeds the RP-2 demand when operational. With the ICE operation terminated by the end of 2015, RP-2 will import electricity for all of its power needs beginning in 2016. The maximum summer load of approximately 180 kW occurs in FY 23/24, RP-2's expected final year of operation. The maximum winter load of approximately 170 kW occurs in FY 23/24 also. RP-2 is expected to remain in full operation until the solids processing operation is complete and active at RP-5.

FIGURE 23. RP-2 20-YEAR POWER DEMAND FORECAST FOR SUMMER AND WINTER MONTHS



Despite the ICE shutdown at the end of 2015, RP-2 will continue to produce digester gas. In FY 13/14, the treatment plant produced an average of 160 scfm of digester gas. Figure 24 charts RP-2's anticipated gas production based on expected flow increases to RP-5 and CCWRF. The projected ICE gas usage is shown in dark blue. Once the ICE is shut down, digester gas will primarily be consumed by the boiler. Boiler gas usage, shown in light blue, is estimated to meet the average heat demand of the facility beginning in 2016. RP-2's digestion process does not require the amount of heat generated by the boilers operating at full load, so there will be a portion of digester gas combusted in the flare as well.

FIGURE 24. RP-2 20-YEAR GAS PRODUCTION FORECAST



RP-2 is in a unique position as a generator of renewable digester gas as it will no longer be able to operate the existing ICE due to environmental restrictions. IEUA's Business Goals identify the need to beneficially use digester gas and strive toward energy independence during peak periods. However, these goals must be achieved cost effectively. New self-generation projects are difficult to justify for a facility that is only expected to be in operation for an additional eight to nine years.

Potential New Projects

RP-2's digester gas production offers several opportunities for distributed generation and efficiency projects, as shown in Table 13.

TABLE 13. POTENTIAL RP-2 ENERGY PROJECTS

Project Type	Name	Description	Feasibility
Operational Efficiency	Lighting Upgrades	RP-2 has many indoor lighting systems that can be replaced with low-usage LEDs or outfitted with controls to increase efficiency.	It is likely that lighting upgrades or retrofits would only be pursued if they carried a short payback and did not require significant work for staff. An audit of existing lighting infrastructure will be required to assess the potential savings and cost effectiveness.
Renewable Resources	Install Post-Combustion Control on ICE	This project would take advantage of the existing ICE by installing a gas conditioning system upstream of the ICE and emissions control technology downstream. Currently, only selective reduction catalyst (SCR) systems coupled with catalytic oxidizers have been proven to be effective at reducing emissions low enough to meet the 2016 emissions limits imposed by AQMD Rule 1110.2.	The facility layout, gas quality, and engine size all present complications when considering an SCR/ catalytic oxidizer installation for the RP-2 engine. IEUA received proposals for such installations in the past and determined that the project would be cost prohibitive. Alternative control technologies are currently being demonstrated on digester gas-fueled engines, but nothing has yet proven to be effective.
Renewable Resources	Fuel Cell Installation	Once the ICE is shut down at the end of 2015, IEUA could install a digester gas fuel cell to generate heat and power from the gas produced on site. Based on proposals provided, a 300 kW fuel cell would be the optimal size for operation at RP-2. Emissions from the fuel cell would be low enough that they would not be regulated by the SCAQMD.	IEUA received a proposal for a 300 kW fuel cell installation. The estimate was determined to be cost prohibitive, even with government incentives. The technology would also be very difficult to relocate once the solids processing is moved to RP-5. This project was determined to be infeasible for implementation at RP-2.

Project Type	Name	Description	Feasibility
Renewable Resources	Microturbine Installation	This project would replace the cogeneration engine with a 600 kW microturbine and gas conditioning system. The microturbine would not be subject to emissions limitations under SCAQMD Rule 1110.2, and could utilize all of the gas produced by the facility to generate electricity and heat.	IEUA received a proposal for a 600 kW microturbine installation and is currently evaluating the feasibility of the project. Installation of the microturbine and gas conditioning systems would be designed with the intent of relocating after 7 to 8 years.
Renewable Resources	Compressed Natural Gas (CNG) Installation	IEUA staff has considered converting the biogas to CNG to be used in the Agency's fleet vehicles. Such a project would require retrofit of the fleet vehicles to operate on CNG. Based on the amount of digester gas available, RP-2 would generate enough CNG to develop a fueling station on site.	Although digester gas utilization is preferred, developing a CNG fueling station does not necessarily fit within IEUA's typical operations. Furthermore, relocating a fueling station would carry significant costs and difficulties. This project is currently infeasible at RP-2.
Renewable Resources	Natural Gas Pipeline Injection	This project would require conditioning the digester gas produced at the facility to a quality sufficient for direct injection into the Southern California Gas Company's (SCGC) pipeline. Significant sampling and recordkeeping would be required to document the gas quality. Costs of pipeline injection include gas conditioning, interconnection, and ongoing maintenance costs.	SCGC previously provided a biomethane injection evaluation to POTWs. Injection costs were considered so costly that only treatment plants consistently producing in excess of 1,000 scfm of digester gas were incentivized. As a result, IEUA facilities did not qualify for the proposed project. However, several grant opportunities are being considered, so IEUA will continue to evaluate this option.

Project Forecasts

The relocation of solids processing from RP-2 to RP-5 within the next ten years eliminates many energy projects from consideration. Efficiency projects with short paybacks may be warranted, but the introduction of large pieces of equipment is difficult to justify. Removing the cogeneration engine from service by the end of December 2015 complicates RP-2's energy forecast. RP-2 will continue to generate renewable biogas with valuable energy content, but investing capital into a facility expecting to cease operation within ten years has limited value.

IEUA evaluated several projects that could utilize RP-2's existing digester gas production and comply with the stringent air quality regulations. Of the projects identified, installation of a microturbine appears to be the most feasible based on cost and portability. However, project success would rely on meeting strict schedules and budgets. Deviating from either could drastically affect the cost effectiveness of the microturbine installation. IEUA will consider all aspects of this project before determining whether to invest in the technology.

REGIONAL PLANT NO. 5 AND IEUA HEADQUARTERS

RP-5 is designed to treat an average of 15 MGD of wastewater flow. The treatment plant employs primary, secondary, and tertiary treatment to produce Title 22 compliant recycled water that is provided to direct use end users. Biosolids removed from the RP-5 treatment process are pumped to RP-2 for thickening, digestion, and dewatering.

RP-5 SHF is located adjacent to the RP-5 treatment plant and is designed to process up to 705 tons per day of food waste and dairy manure. IEUA currently leases the RP-5 SHF property and equipment to Inland Bioenergy, LLC (IBE). IBE operates and maintains the facility with the goal of producing sufficient biogas to operate two 1.5 MW cogeneration engines. IEUA has the option to purchase all of the power purchased by the engines. Any excess power produced will be exported to SCE. Currently, RP-5 SHF only processes food waste in two anaerobic digesters. The first cogeneration engine began to produce power in February 2015. Currently, IBE plans to operate only one ICE at any time.

IEUA's two Headquarters (HQ) buildings are located directly west of the treatment plant. The electricity used at the buildings and Central Plant (designed for heating and cooling the HQ) is metered with the same utility meter as RP-5. For this reason, energy efficiency projects considered for implementation in the HQ buildings and Central Plant will be considered with RP-5.

Facility Load

The average hourly electrical load for summer (June through September) and winter (December through February) at RP-5 are shown on Figure 25. Imported electricity and solar generation are included in the load profiles. The figure shows a slight reduction in average load during winter, with peak consumption at approximately 2.0 MW in summer and approximately 1.7 MW in the winter. The load reduction during winter months is a result of reduced HVAC operation and recycled water pumping. The generated solar electricity also varies between the two seasons, as generation increases in summer months, which have more sunlight hours each day than winter months.

FIGURE 25. FY 13/14 AVERAGE RP-5 LOAD DURING SUMMER AND WINTER MONTHS

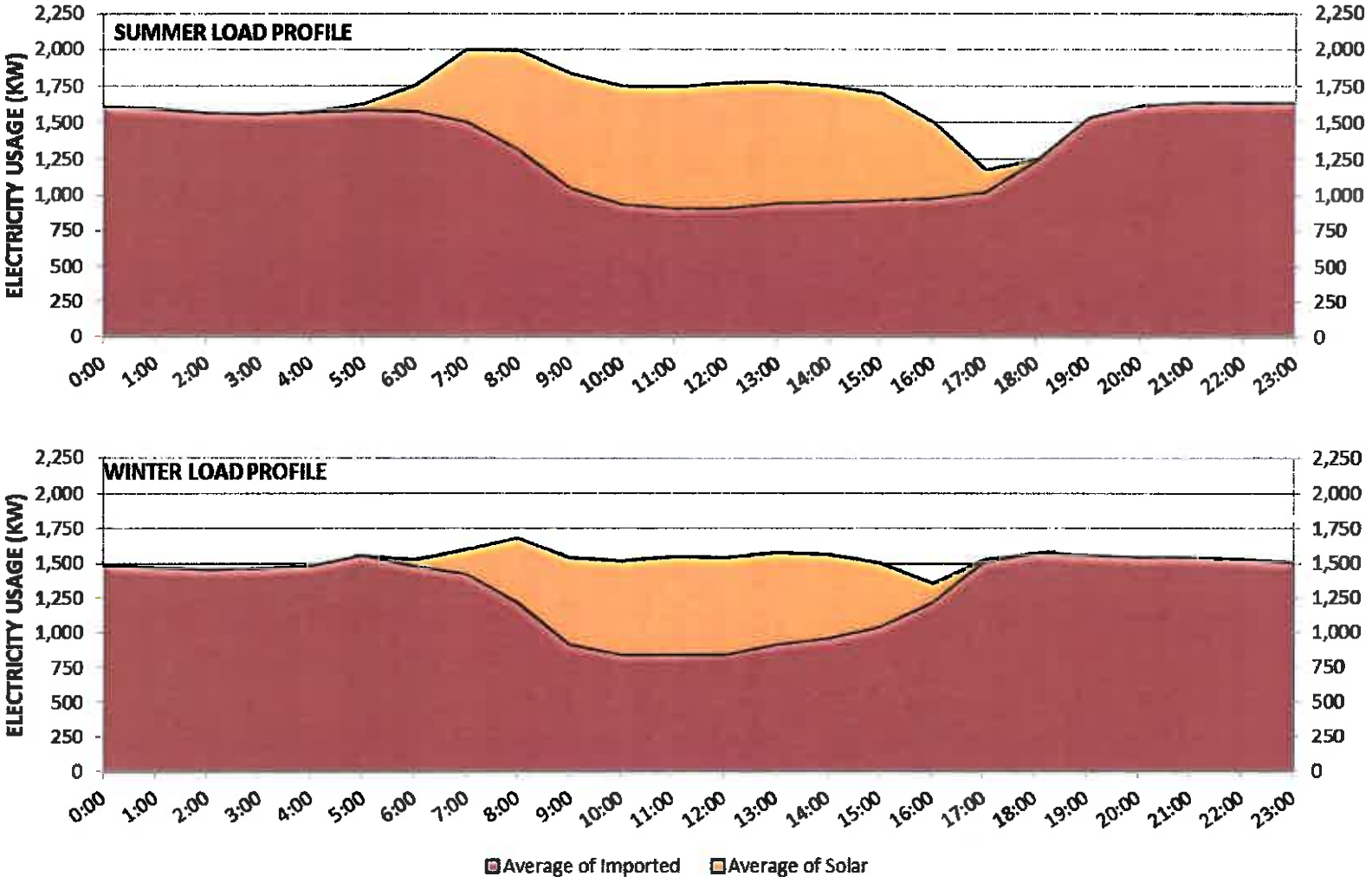


Figure 25 also shows that total electricity consumption is fairly steady throughout the day with the exception of a peak between the hours of 6:00 and 8:00 and a drop in consumption between 16:00 and 18:00. The variability in overall electrical consumption is more dramatic in summer months, as the average load fluctuates between 1,200 – 2,000 kW. In winter months, the average load varies between 1,400 – 1,700 kW. The amount of electricity imported is expected to decrease in FY 14/15 with the introduction of the cogeneration engines at RP-5 SHF.

Figure 25 includes electricity used by the recycled water pumps. These pumping demands were not included in previous sections to illustrate IEUA's increasing power requirements in distributing recycled water. However, these demands must be included when considering the overall facility load because they influence the power procurement and self-generation opportunities that IEUA can pursue.

Electricity Procurement

RP-5 receives electricity from the mix of generation sources listed in Table 14. Electricity imported to RP-5 is procured through bundled service with SCE. RP-5 also utilizes two distributed generation sources in addition to SCE import. The combination of 3 MW from the ICEs and the existing 1 MW of generation from the solar array results in a renewable generation capacity that exceeds the typical facility load. SCE required IEUA to obtain an interconnection agreement through the RES-BCT program, which compensates exported electricity through bill credits at other Agency facilities that are on bundled service. RP-5 distributed generation projects began to export power in March 2015.

TABLE 14. FY 13/14 RP-5 ELECTRICITY PROCUREMENT

Generation Source	Service Type	Rate Type	Percentage of Facility Load
Imported	Bundled	TOU-8-B Standby	82
Solar (1 MW)	PPA	Fixed with annual escalator	18
ICEs (3 MW)	PPA	89% of equivalent Import cost	0

IEUA did not purchase power from IBE in FY 13/14 because the ICEs were not yet operational. The procurement rate under the PPA with IBE allows IEUA to purchase the electricity generated by the engines at a rate equal to 89 percent of what IEUA would have otherwise paid SCE. A third-party energy service contractor developed the appropriate tariff structure for power generated from the engines.

The contractor will also annually reconcile the billing to ensure that the PPA provisions are met.

Demand Response

RP-5 participates in the SCE DR program through EnerNOC. During a DR event, RP-5 staff reduce operation of the recycled water pumps. The RP-5 reduction target of 50 kW represents 4 percent of the Agency's DR obligation. Achieving the DR target is difficult during winter months because RW pumping and demands are already reduced. In FY 13/14, RP-5 participated in four summer DR events and two winter DR events. During the summer events, RP-5 reached 100 percent of its target in all four events and averaged load reductions of 349 kW. However, during the winter events, RP-5's load increased by an average of 186 kW. Due to the seasonal demand variations, it is unlikely that IEUA will commit to additional load reduction measures.

If the ICEs are operated at full load, RP-5 will likely consistently export to the grid. Under this scenario, RP-5's participation in the DR program would be minimal because reductions could not be achieved from a facility with no appreciable load. Until the operational nature of the ICEs is known, RP-5's DR contribution will remain static.

Energy forecast

Figure 26 shows 20 years of forecasted average demands at RP-5 for the summer and winter months, based on the WFMP projections. The figure includes the expected renewable generation from the cogeneration engines and solar array including expected solar performance degradation. Although the engines have a combined capacity of 3 MW, their actual generation is limited by RP-5 SHF's digester gas production from the food waste feedstock available for processing. Because RP-5 SHF has yet to achieve full operation, this plan assumes a consistent output of 500 kW at the end of FY 14/15 and an increase of 500 kW every two years thereafter until reaching a maximum sustained generation of 1.5 MW in FY 18/19.

The energy demand growth at RP-5 is proportional to an expected flow increase of approximately 1 percent each year. TYCIP and WFMP projects expected to affect the power demand were included in the forecast. The relocation of RP-2 solids processing is expected to be completed in FY 23/24. This project is expected to

increase the facility load by over 50 percent. There are currently no energy reduction projects planned at RP-5.

Figure 26 shows that the peak energy demand at RP-5 does not have much seasonal difference. The red shaded area in the two graphs represents the facility demand exceeding the generation capabilities of the solar and cogeneration installations. Assuming the food waste digestion project is capable of generating approximately 800 kW, RP-5's renewable portfolio is expected to result in continuous energy export. Once RP-5 is expanded to include RP-2's solids processing, the facility load is expected to exceed the energy generated on site.

FIGURE 26. RP-5 20-YEAR POWER DEMAND FORECAST FOR SUMMER AND WINTER MONTHS

Potential New Projects

RP-5's imported electricity consumption depends heavily on the success of IEUA's food waste digestion project with IBE. With no generation from the engines, RP-5 will continue to import electricity and be subject to high SCE demand charges during peak periods. If the engines consistently produce more than 800 kW, RP-5 will likely become a continuous exporter of electricity.

Due to the high variability of RP-5's energy forecast, RP-5 would be best served by taking a cautious approach to new energy projects. Potential projects will also be evaluated as part of the RP-5 expansion and RP-2 relocation Pre-design Reports. Cost effective efficiency measures are most likely to be implemented in the short term. Table 15 outlines projects that have been considered for implementation at RP-5 and discusses the feasibility of each.

TABLE 15. POTENTIAL RP-5 ENERGY PROJECTS

Project Type	Name	Description	Feasibility
Operational Efficiency	Energy Audit	Third party energy service companies can conduct comprehensive energy audits that not only evaluate potential savings from equipment retrofits, but also process modifications that can result in higher operational efficiencies.	IEUA has seen benefits from past audits, but has never committed to comprehensive evaluations of each facility. The Energy Network offers a no-cost audit service designed to assist public agencies with these types of evaluations. This service could yield cost-saving measures at RP-5.
Operational Efficiency	RP-5/HQ Lighting Upgrades	RP-5 and HQ have extensive indoor and outdoor lighting systems that can be replaced with low-usage LEDs or outfitted with controls to increase efficiency. IEUA HQ buildings were designed as a LEED Platinum building, which required a level of lighting efficiency measures. However, a retrofit to LED technology could result in more energy savings.	A comprehensive audit of the existing lighting infrastructure will be required to assess the potential savings and cost effectiveness.
Operational Efficiency	HQ Central Plant Improvements	The heating and cooling for HQ is achieved through a central plant located at RP-5. Improving the efficiency of the plant through retrofits, controls, or modified operation could result in energy savings.	A project focusing on improving the reliability of the central plant was completed in 2014. As part of this project, a new, efficient electric chiller was installed. Due to the recent investment, retrofits are not likely to be considered, but an evaluation of the current operation is recommended to determine if the process can be optimized.

Project Type	Name	Description	Feasibility
Operational Efficiency	RP-5 Compressed Air Optimization	Many of the RP-5 treatment processes require compressed air. The facility contains multiple compressed air systems located throughout the facility. It is possible that energy savings could be achieved through optimizing the facility's compressed air systems.	An audit of the facility's compressed air system would be needed to assess the current infrastructure and determine if energy conservation measures are cost effective. This type of assessment could be achieved through a comprehensive energy audit.
Operational Efficiency	RP-5 Aeration Basin Upgrades	Aeration is an energy intensive process, as it requires significant continuous air flow. Energy conservation could be achieved by upgrading the existing aeration system to higher efficiency blowers or diffusers with higher oxygen transfer efficiency.	IEUA would need to evaluate potential replacement options, identify cost effectiveness of the new equipment, and adjust operation schedules accordingly to allow for aeration retrofits.
Renewable Resources	RP-5 Decrease Solar Installation	RP-5 currently has 1 MW of solar panels installed on the southwest portion of the facility, covering nearly 10 acres of land. With the relocation of solids processing to RP-5, land use is expected to be a concern when designing the plant modifications. An understanding of IEUA's options to remove or relocate a portion of the solar panels would be beneficial prior to project design.	Because the solar array is owned by a third party, IEUA will need to coordinate with the PPA provider to determine the feasibility of removing or relocating the panels. An option to retrofit existing panels with new, more efficient panels with smaller footprints should also be explored.
Renewable Resources	HQ Electric Vehicle Charging Stations	IEUA HQ is already equipped with several EV charging stations that can be used by public vehicles. IEUA can take advantage of the increased renewable energy by installing more EV charging stations powered by RP-5's distributed generation projects. Retrofitting the Agency vehicle fleet to EVs would also result in GHG reductions.	This project would require grant funding, as the charging station alone is not cost effective. The most viable route for project implementation would be as a component of a larger renewable energy project at the site or across Agency facilities.

Project Type	Name	Description	Feasibility
Energy Management	RP-5 Purchase Existing Solar Installations	The power generated from the 1 MW of solar panels on site is currently sold to IEUA through a PPA. IEUA is considering purchasing the panels at fair market value to eliminate future electricity costs from solar generation. Ownership of the solar panels would also expand the Agency's options once solids processing is relocated to RP-5.	IEUA has inquired about the potential purchase with the current project owner. However, the owner must be willing to sell the arrays at a value that is cost effective for the Agency. IEUA will continue to work with the PPA parties on this evaluation.
Energy Management	RP-5 Energy Storage Installations	As a bundled service facility, RP-5 may benefit from the installation of energy storage technology to assist with load management. Storage could ensure that renewable installations could be used to charge batteries (or similar storage technology) outside of peak periods and then used on site when IOU rates are highest.	IEUA has received proposals from energy storage vendors and found that current technology is not cost effective at RP-5. IEUA will continue to pursue the technology, as storage can provide invaluable management flexibility. The project may be viable with grant subsidization.
Energy Management	RP-5 Demand Response Energy Storage Installation	Energy storage as a demand response tool is an innovative approach that is currently in initial stages of development. The project would involve a third party installing battery storage at host sites that could be used by IOUs for demand response during periods of peak consumption a portion of the time, and by the host site for peak shaving at other times. Capital expenditures for the storage installations would be covered by the third party.	IEUA has been approached by a third party to develop Demand Response Energy Storage projects at Agency facilities. The lack of capital costs and benefit of load flexibility and cost savings are attractive. IEUA will evaluate the potential agreement to determine the project's impact on the Agency's existing infrastructure.

Project Forecasts

Forecasting the energy future of RP-5 is difficult with the uncertainty surrounding the food waste digestion project at RP-5 SHF. The cogeneration engines fueled by the digester gas from RP-5 SHF are rated at 3 MW. The facility has secured an interconnection agreement with SCE that compensates the Agency for exported power, but the food waste project has yet to prove that sustained operation.

Projects focusing on energy efficiency and load flexibility should yield positive results regardless of the food waste digestion project's success. IEUA will work with a third party energy consultant to conduct a comprehensive energy audit of the RP-5 and HQ facilities to develop energy efficiency measures and reduce power consumption cost effectively.

As a bundled service customer with distributed generation, RP-5 is an ideal candidate for energy storage that could reduce utility costs during peak periods and optimize load management. Pursuing the Demand Response Energy Storage project could improve RP-5's resource flexibility and lower utility bills without committing capital outlay.

The relocation of RP-2's solids processing and RP-5 expansion will significantly impact RP-5's infrastructure and energy profile. The pre-design phase of the relocation project is expected to begin in July 2015. Given the large area currently dedicated to the solar array, IEUA will evaluate the available options for modifying the array if the land is needed for new solids processing equipment.

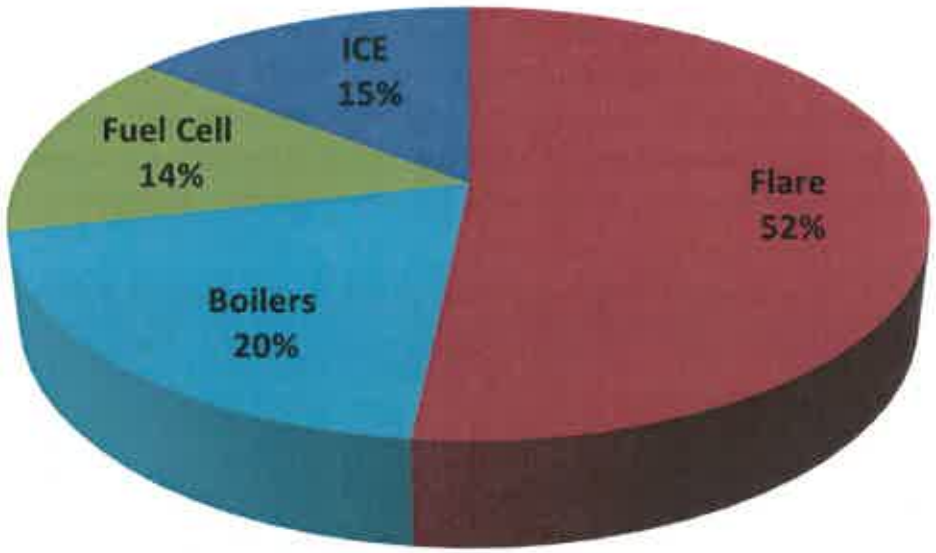
ALL IEUA FACILITIES

Overall, IEUA has the capacity to treat an average of 84.4 MGD of wastewater flow. In FY 13/14, the RP-1, RP-4, RP-5, and CCWRF combined to produce 38,252 AF of Title 22-compliant recycled water for indirect reuse and groundwater recharge and the biosolids processed at RP-1 and RP-2 accounted for approximately 36 percent of the 147,800 wet tons of biosolids composted at the IERCF. In addition to the treatment plants and composting facility, electrical consumption from the pump stations and GWR facilities are included in this section as well.

Gas Production

IEUA generates renewable digester gas from solids processing at RP-1 and RP-2. In FY 13/14, the two facilities combined to produce over 375 million cubic feet of biogas at an average of 715 scfm. One of the Agency's energy goals is to effectively manage the renewable digester gas by maximizing its beneficial use. Figure 27 categorizes the gas consumption at IEUA facilities in FY 13/14.

FIGURE 27. FY 13/14 DIGESTER GAS CONSUMPTION BY EQUIPMENT

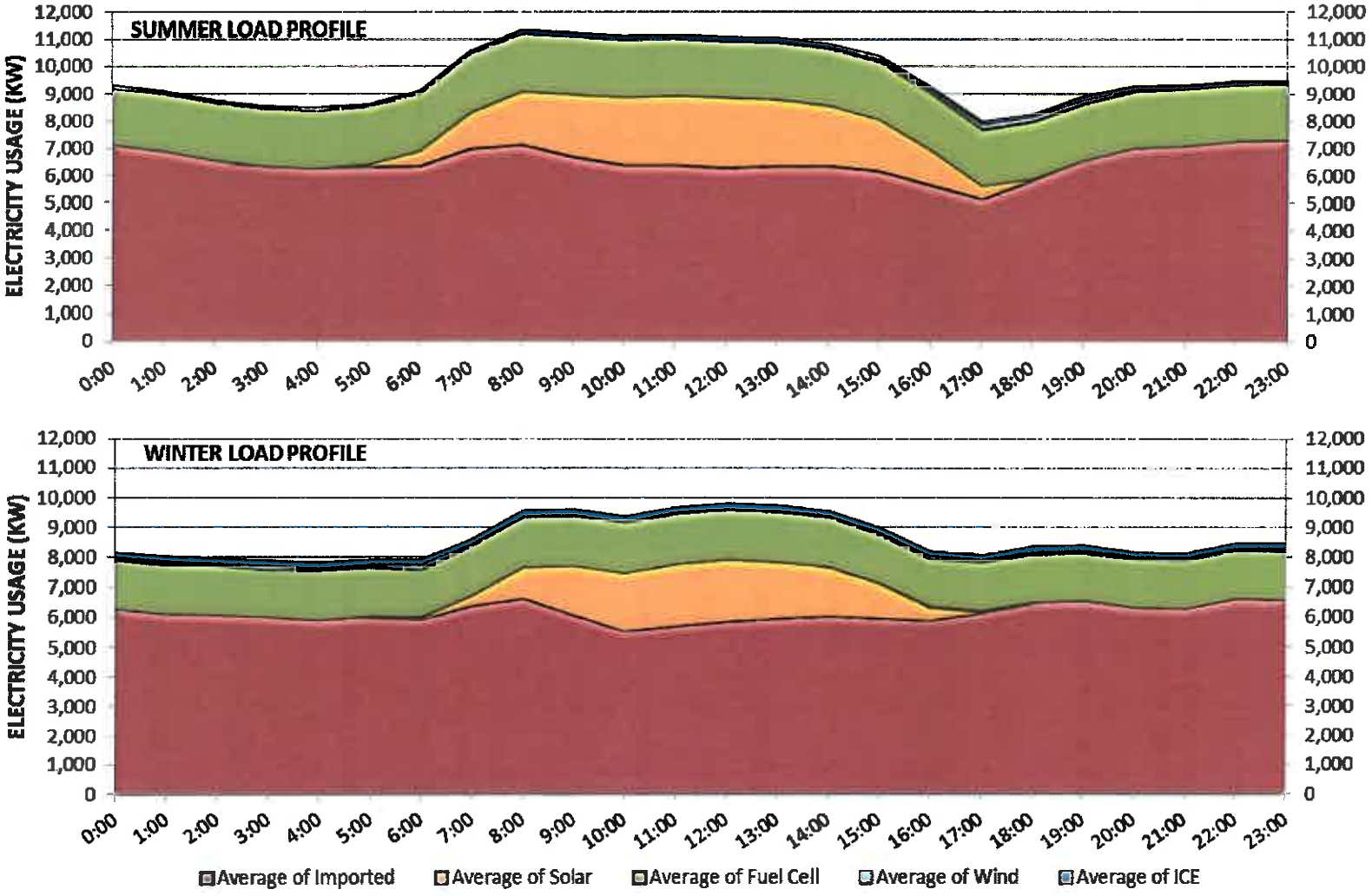


In FY 13/14, over half of the digester gas produced by IEUA facilities was flared. Ideally, the flares at RP-1 and RP-2 should be utilized as emergency relief valves for the gas loop, rather than serving as the primary consumer. However, the amount of gas flare in FY 13/14 was largely due to the complications with the fuel cell's gas conditioning system. Because the gas conditioning system was unable to sufficiently treat the digester gas for consumption in the fuel cell, the fuel cell operated strictly on natural gas during the majority of year. At RP-2, the ICE proved more reliable as a consumer of digester gas. In FY 13/14, only 34 percent of the digester gas produced at RP-2 was flared, while 58 percent of RP-1's gas was consumed by the flare. Predicting the Agency's gas consumption with full fuel cell operation will be shown in the Energy Forecast section of this plan.

Agency Load

The average hourly electrical load for summer (June through September) and winter (December through February) months at all IEUA facilities are shown on Figure 28. Imported electricity, energy reductions, and generation from solar, wind, fuel cell, and ICE installations are included on these two load profiles. Beginning in 2016, the RP-2 ICE will no longer operate, but the two 1.5 MW ICEs at RP-5 SHF are expected to be operational. The figure shows an average load reduction of 1.1 MW during colder months. Peak consumption is around 11,300 kW in summer and approximately 9,800 kW in the winter. In FY 13/14, on average, approximately 68 percent of the Agency's summer load was imported from the grid, and approximately 72 percent of the electricity consumed during winter months was imported. During peak periods, imported electricity accounted for 62 percent and 70 percent, respectively.

FIGURE 28. FY 13/14 AVERAGE IEUA LOAD PROFILE DURING SUMMER AND WINTER MONTHS



Electricity Procurement

IEUA's diverse generation portfolio results in a number of procurement strategies and sources. Table 16 lists the various sources of generation that provide power to the Agency. The fuel cell costs in Table 16 include IEUA's natural gas costs that are required for the fuel cell operation. The cost of the electricity generated by the cogeneration engines is determined by the average O&M costs IEUA spends to keep the ICE in operation. These costs have historically been estimated at $0.08/ kWh.

TABLE 16. FY 13/14 IEUA ELECTRICITY PROCUREMENT

Generation Source	Service Type	Rate Type	Percentage of Overall Load	Percentage of Overall Costs
Imported	Bundled	Various	23.0	21.7
Imported	Direct Access	Market-prices	45.8	45.7
Fuel Cell (2.8 MW)*	PPA	Fixed with annual escalator	19.6	22.3
Solar (3.5 MW)	PPA	Fixed with annual escalator	8.2	8.0
Wind (1 MW)	PPA	Fixed with annual escalator	0.6	0.4
ICE (0.58 MW)	-	O&M Costs	2.8	1.7

*Includes IEUA's natural gas costs for fuel cell operation.

In FY 13/14, on-site generation accounted for 31 percent of the total facility load and 33 percent of the Agency's electrical costs. The load from each generation source only includes electricity. Thermal generation from the fuel cell and cogeneration engine is not included in this table. The table shows that the fuel cell electricity costs are the most expensive generation sources in IEUA's portfolio. It is likely that the proportionate cost of power generated from the fuel cell will decrease in future years because the PPA's annual escalation rate is lower than historically averaged imported rate increases.

Demand Response

IEUA participates in the DR program through EnerNOC. During a DR event, IEUA staff is tasked with reducing the overall Agency load by 1,230 kW. In FY 13/14, IEUA exceeded 100 percent of its target in three of the six DR events and averaged

a load reduction of 1,355 kW per event. IEUA's ability to meet its reduction target depended heavily on the time of year. Over the four warm weather DR events, IEUA facilities averaged a load reduction of 1,619 kW per event. Over two events during colder months, the average load reduction was 828 kW. The difference is reduction ability is due to the seasonal RW pumping demands to which IEUA is subject.

IEUA will further refine its demand response capabilities by evaluating the treatment processes that can be turned off during DR events. In coordination with Operations staff, IEUA's Energy Management group will use the sub-metering data to quantify the load required for each process, then formulate a DR plan that details which processes can be called upon for load reductions throughout the year. Seasonal variation will be avoided to the extent possible to ensure that DR load reduction targets can be reliably met.

For the time being, IEUA's inability to meet its DR reduction targets during colder months means that the Agency is unlikely to increase the target in the next DR contract. However, if SCE would consider compensating facilities for increased export during DR events, IEUA could optimize its renewable resources to increase the load available to the grid during demand response events.

IEUA will also evaluate Demand Response Energy Storage projects at several facilities. Using energy storage to reduce grid demand is a favorable alternative to taking facility processes offline. Stored electricity not used for grid dispatches can then be used for peak shaving, resulting in cost savings for the Agency. The proposed concept would also allow for more frequent demand response events, which means the IOU would benefit as well.

Energy forecast

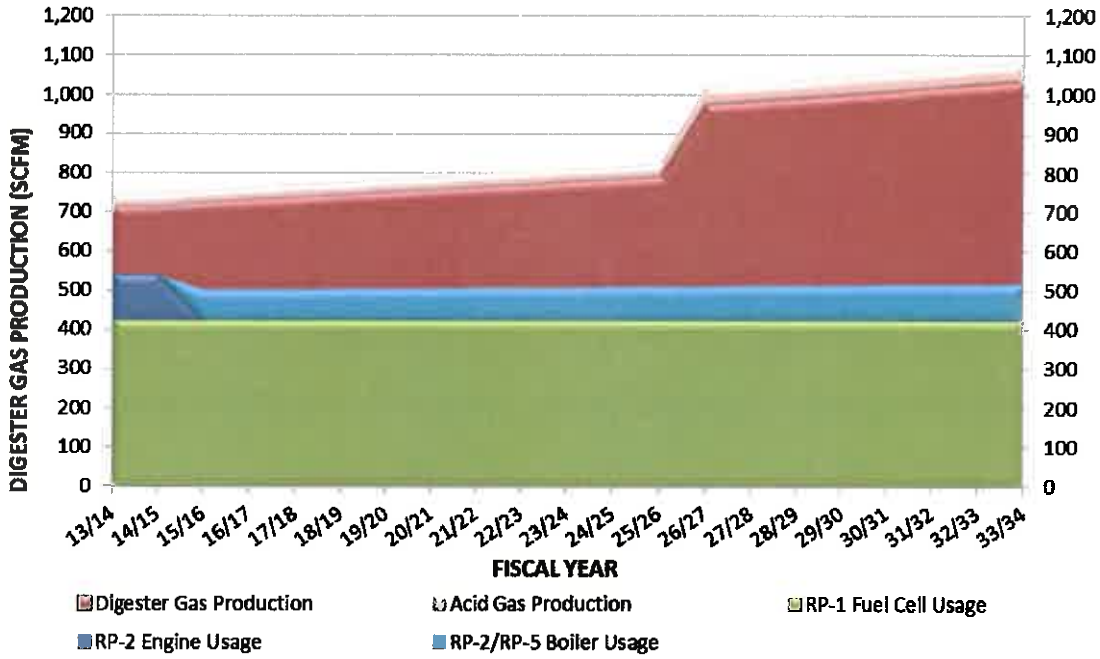
Figure 29 shows the 20-year energy forecast for the treatment plants, pump stations, and composting facility. Energy efficiency projects currently planned are anticipated to reduce peak consumption by approximately 875 kW. On site renewable generation is expected to account for a minimum of 49 percent of the Agency's load in FY 33/34, and a maximum of 72 percent of Agency load in FY 18/19.

The difference between summer and winter demand ranges from 830 kW to 920 kW. The minimum Agency load over the next 20 years is expected to occur in the winter of FY 14/15. In both summer and winter forecasts, the Agency demand is expected to increase by approximately 4 MW over the course of the next 20 years, with the largest demand increases coinciding with the solids expansion and MBR installation projects.

FIGURE 29. IEUA 20-YEAR POWER DEMAND FORECAST FOR SUMMER AND WINTER MONTHS

Gas production forecasts for the entire agency are shown on Figure 30. The figure estimates changes in gas production at RP-1, RP-2, and RP-5, as well as anticipated gas usages in the RP-1 fuel cell, RP-2 engine, and RP-2 boiler. The relocation of RP-2's solids handling process to RP-5 will result in the removal of the RP-2 boiler. However, because the heat demand is not expected to change with the solids handling relocation, an equivalently sized boiler is expected to begin operation at RP-5. For this forecast, the RP-2 and RP-5 boilers are estimated to use the same amount of digester gas.

FIGURE 30. IEUA 20-YEAR GAS PRODUCTION FORECAST



The dark red shaded area on the figure shows the average digester gas production that exceeds the needs of the digester gas-consuming equipment on site. IEUA will evaluate potential projects that can utilize this digester gas beneficially in order to minimize flaring and optimize renewable resources.

Potential New Projects

This EMP has presented and assessed the feasibility of potential new projects at each facility. Table 17 summarizes the potential projects considered to be feasible based on available resources, facility load, and cost effectiveness. The projects listed in this table will be evaluated further for implementation at IEUA's facilities.

TABLE 17. IEUA ENERGY PROJECTS TO BE CONSIDERED FOR IMPLEMENTATION

Facility	Name	Project Type	Description	Path to Implementation	Estimated Budget
All	Comprehensive Energy Audits	Operational Efficiency	Third party energy service companies can conduct comprehensive energy audits that not only evaluate potential savings from equipment retrofits, but also process modifications that can result in higher operational efficiencies.	IEUA has signed up with The Energy Network and initiated the audit process in February 2015. IEUA engineering, operations, maintenance, and planning staff will coordinate efforts with The Energy Network to identify cost-effective energy conservation measures that can be implemented at each facility.	None (measures identified in audits will require future funding)
All	Lighting Upgrades	Operational Efficiency	All IEUA facilities can benefit from lighting retrofits and increased controls. A preliminary evaluation showed that retrofitting indoor and outdoor lighting systems with LEDs could reduce demand by over 550 kW and yield a payback of five years or less.	An audit of existing lighting infrastructure will be required to assess the potential areas of retrofit and/or control and identify the optimal equipment. Lighting efficiency will be a priority of the audits conducted by The Energy Network.	$400,000
All	Purchase Existing Solar Installations	Energy Management	All of the existing solar arrays at IEUA are owned and maintained by a third party. If IEUA would like to purchase the arrays at fair market value in order to terminate ongoing costs of purchasing the power generated by the solar systems.	IEUA inquired with the PPA provider regarding a potential purchase of the arrays, but has not received any proposals. IEUA staff will continue to reach out to the PPA provider to pursue the purchase option. Once a proposal is received, IEUA will perform a cost-benefit analysis to determine if the arrays will be purchased.	$7,500,000

Facility	Name	Project Type	Description	Path to Implementation	Estimated Budget
All	Install 5 MW Solar Array	Renewable Resources	SCE's RES-BCT program allows for exported electricity from renewable energy projects to act as credits on other accounts held by the same organization. This project would involve the installation of a solar array at one IEUA facility that could export enough electricity to offset utility costs at IEUA's other facilities.	IEUA will evaluate potential sites that can accommodate large solar arrays. Following site selection, a request for proposals will be issued to solar energy providers. A Business Case Evaluation will be conducted to determine the feasibility of the proposals received.	$20,000,000
RP-1, RP-5, and CCWRF	Demand Response Energy Storage Installation	Energy Management	The DRES project would involve a third party installing battery storage at IEUA facilities (at no cost to IEUA) that could be used by IOUs for demand response during periods of peak consumption a portion of the time, and by the host site for peak shaving at other times.	IEUA entered into a Memorandum of Understanding with a third party to develop DRES projects at IEUA facilities. IEUA planning, engineering, maintenance, and contract services staff will collaborate to develop an agreement for a DRES project that meets IEUA's needs.	None (staff time only)
RP-1	Digester Gas Mixing	Renewable Resources	Acid phase gas produced at RP-1 is currently directed to the flare. Projects utilizing the gas for beneficial use have shown to be cost prohibitive. An evaluation will be conducted to determine the most cost efficient way to mix the acid phase gas with the digester gas loop so that all of the gas produced at RP-1 is beneficially used. The project could involve gas storage,	IEUA engineering, planning, operations, and technical services staff will collaborate to identify several options designed to incorporate the acid phase gas into the digester gas loop. Once all options have been assembled, a business case evaluation will be conducted to determine the cost effectiveness and operational feasibility of each option.	$1,500,000

Facility	Name	Project Type	Description	Path to Implementation	Estimated Budget
RP-4/ IERCF	HVAC Controls and Upgrades	Operational Efficiency	RP-4 and IERCF have many buildings that use HVAC units for climate control. Many of these units can be upgraded to more efficient models or outfitted with controls that limit HVAC operation to non-peak periods.	An assessment of RP-4's existing HVAC units is underway to identify equipment that can be replaced. IEUA has met with a vendor to supply controls designed to limit HVAC operation to non-peak periods. IEUA will continue to work with the vendor to pursue implementation at RP-4 and IERCF.	$125,000
RP-4/ IERCF	Expand Solar Installation	Operational Efficiency	The power generated from the 1 MW of solar panels on site is currently sold to IEUA through a PPA. IEUA is considering installing additional panels on the roof of IERCF or on available land at RP-4 to expand the solar generation capacity.	IEUA will consult with vendors to determine the potential generation capacity that could be achieved with the available land use. Following this consultation, a request for proposals will be issued and a Business Case Evaluation performed.	$4,000,000
RP-4/ IERCF	Energy Storage Installation	Energy Management	Considering the facility load is highest during the middle of the day, when TOU pricing is highest from the IOU, RP-4/IERCF can benefit from the installation of energy storage technology to assist with load management. Storage could ensure that renewable installations could be used to charge batteries (or similar storage technology) outside of peak periods and then used on site when IOU rates are highest.	Previous proposals for the purchase of energy storage installations were cost prohibitive. IEUA has continued to pursue energy storage options and found energy service providers that offer cost share agreements or utilize government subsidies to make projects cost effective. IEUA will continue to discuss options with these providers to identify potential energy storage projects.	$1,500,000

Facility	Name	Project Type	Description	Path to Implementation	Estimated Budget
RP-2	Microturbine Installation	Renewable Resources	This project would replace the RP-2 ICE with a 600 kW microturbine and gas conditioning system. The microturbine would not be subject to emissions limitations under SCAQMD Rule 1110.2, and could utilize all of the gas produced by the facility to generate electricity and heat.	IEUA received a proposal for a 600 kW microturbine installation and is currently conducting a Business Case Evaluation of the project. Installation of the microturbine and gas conditioning systems would be designed with the intent of relocating after 7 to 8 years.	$3,000,000
RP-5	Decrease Solar Installation	Renewable Resources	RP-5 currently has 1 MW of solar panels installed on the southwest portion of the facility, covering nearly 10 acres of land. With the relocation of solids processing to RP-5, land use is expected to be a concern when designing the plant modifications. An understanding of IEUA's options to remove or relocate a portion of the solar panels would be beneficial prior to project design.	Assuming the solar panels cannot be purchased, IEUA will coordinate with the PPA provider to determine the feasibility of removing or relocating the panels. Available options will be evaluated in parallel with the predesign phase of the solids handling facility relocation project, which is expected to begin in July 2015.	TBD

Project Forecasts

Implementing all of the projects listed in Table 13 is estimated to require $38,025,000 in capital expenditures. However, these projects will require further evaluation before funds can be committed to the Agency's budget. Efficiency projects with low payback periods are most likely to be implemented. IEUA will depend on The Energy Network's comprehensive energy audits to identify potential efficiency projects at each facility. Measures identified will be assessed by IEUA staff for feasibility and operational impacts prior to implementation.

IEUA will investigate several new solar projects. Evaluating the cost effectiveness of purchasing the existing solar arrays is a current priority, although it requires collaboration from the PPA provider and equipment owner. Purchasing the

existing panels will also impact the Agency's ability to remove or relocate a portion of RP-5's solar array, if deemed necessary as part of the RP-2 solids processing relocation project. Potential solar system expansion will be considered at RP-4/ IERCF, in addition to a new multi-megawatt capacity array that can benefit from SCE's RES-BCT program by crediting IEUA's SCE costs at Agency's facilities through export.

Energy storage will be heavily pursued to improve IEUA's demand side management capabilities. IEUA will pursue energy storage installations through two separate avenues: 1) as a demand response tool employed collaboratively with SCE, and 2) through direct purchase with subsidization. Introducing energy storage to IEUA's portfolio would allow progression toward the goal of peak period independence without devoting resources to new distributed generation projects.

Retrofitting inefficient HVAC equipment and installing controls to limit peak period operation will target cost reductions at RP-4/IERCF. This project will be closely monitored to determine actual savings based on system performance. If the project proves to be a success, it will be considered for implementation at other IEUA facilities that experience high demand charges.

Optimizing digester gas utilization will be addressed at RP-1 by evaluating options to allow for the beneficial use of acid phase gas. IEUA staff will coordinate with industry professionals to investigate several operational modifications that would permit RP-1's equipment to operate on a fuel mixture that includes the acid phase gas. At RP-2, removal of the ICE by the end of 2015 signals the end of distributed generation using digester gas. IEUA evaluated several projects that could utilize RP -2's existing digester gas production and comply with the stringent air quality regulations. Of the projects identified, installation of a microturbine appears to be the most feasible based on cost and portability. IEUA will perform a detailed BCE of this project before determining whether to invest in the technology.

Path to Implementation

Evaluating potential energy projects at each IEUA facility produced several viable projects to be considered for implementation. The process also uncovered complexities that frequently affected the viability of potential projects. This section aims to foster understanding of new project implementation by delineating the typical incentives and disincentives.

NEW PROJECT DRIVERS

Electrical Demand

Any energy project considered for implementation should cost effectively achieve at least one of two goals: 1) reduce the facility load through efficiency measures, process modification, or new technology, and/or 2) increase the Agency's self-generation capacity. These goals can be achieved in several ways, but in each case, the facility demand must be considered. Furthermore, recognition of the facility's electrical requirements alone is not enough. Since new projects are typically evaluated for feasibility over a ten to twenty year period, each evaluation must include current and future electrical loads. Forecasts should include anticipated demand increases as well as efficiency measures. The EMP also considers facility demands during summer and winter months because of seasonal variation in operations. For reasons described below, new project may be designed to avoid power export. In such cases, the lowest facility demand must be considered when determining the facility's available load.

The scope of potential projects at IEUA facilities will vary widely depending on the percentage of electrical load at each facility that is being supplied by an external source (through either bundled or Direct Access service). Evaluations conducted in this EMP have shown that projects focused on efficiency measures alone are more likely to be considered when the imported contribution to facility load is below 1 MW. Distributed generation projects below 1 MW typically carry long payback periods and/or risks that hinder viability.

Available Resources

New project implementation, especially for distributed generation projects, is also driven by the facility resources available. Renewable digester gas production at RP -1 and RP-2 opens up a multitude of projects that can take advantage of the heat content in the gas or optimize its use through more efficient processing. Increasing IEUA's renewable portfolio through additional solar or wind installations would require available land space, which is increasingly more difficult to attain as regional development grows.

Regulatory Impact

Environmental regulations must also be considered when evaluating a potential project. As a public agency located in Southern California, IEUA is located in a region that contains some of the more stringent regulatory air and water quality measures in the country. IEUA's ability to install renewable energy projects has been greatly affected by air quality regulations for digester gas-fueled engines. SCAQMD Rule 1110.2 played a role in IEUA's decision to pursue fuel cell technology at RP-1, and compliance with the rule will also factor into future ICE operations at RP-2 and RP-5 SHF.

Assembly Bill 32 (AB 32), the California Global Warming Solutions Act of 2006, requires industries to implement GHG reduction measures in order to achieve 1990 emissions levels by 2020 in the state. Although wastewater treatment plants have not been identified in the state's scoping plans and no IEUA facility emits GHGs above the reporting thresholds identified in the bill, the Agency has proactively begun to track GHG emissions and consider global warming potential of new projects. IEUA recently joined the Climate Registry to voluntarily report GHG emissions across the agency on an annual basis.

Cost Effective Sustainability

While each of these factors can drive potential projects toward or away from feasibility, IEUA's Business Goals dictate that new projects must be cost effective. This EMP strives to work within the confines of Southern California's environmental regulations and modest capital as a public agency to achieve sustainability at peak periods through efficiency projects and renewable generation. New projects often require subsidization from outside sources to be considered cost effective. As such, IEUA staff is continually pursuing grant

opportunities that can be applied toward beneficial projects.

IEUA has utilized several sources of grant funding since 2002 to develop energy efficiency projects. Both SCE and SCGC offer incentives for efficiency projects, although IEUA has partnered with SCE more regularly due to the amount of electricity usage at the Agency and greater potential for reductions. IEUA also received funding from the Department of Energy (DOE) and the Natural Resources Conservation Service to complete renewable generation projects in the past. The most significant source of grant funding has historically come from the California Energy Commission, which has provided nearly $20 million to fund various energy projects across Agency facilities over the past 12 years.

NEW PROJECT BARRIERS

In its experience installing and evaluating energy projects, IEUA has observed several barriers that can detrimentally affect project feasibility. Identifying these difficulties and offering solutions is imperative to fostering sustainable growth and a key component of this EMP.

Grid Interconnection

Generating facilities in SCE's service area are required to obtain an interconnection agreement under SCE's Rule 21 tariff. All of IEUA's renewable energy installations have interconnection agreements, each achieved with varying levels of difficulty depending on the level of project complexity.

The 3.5 MW of solar arrays were granted interconnection with SCE in 2008. Interconnection of the 1 MW wind turbine was approved in 2010. The installations were not complex, so the interconnection agreements were obtained quickly and without difficulty. Because the nameplate capacities were designed to use 100 percent of the generated electricity on site, the interconnection agreements did not contain export provisions, which simplified the process.

RP-1's fuel cell installation proved to be a more complex interconnection process than previous agreements. The combined nameplate capacities of the fuel cell and solar array resulted in potential export during times of peak generation. In December 2012, IEUA submitted an interconnection application for the fuel cell and solar installations that would compensate IEUA for any electricity exported. SCE's NEM program allows for export from solar electrical generating facilities with capacities below 1 MW. However, SCE's fuel cell NEM schedule contains the

same 1 MW limit, which means that IEUA cannot export electricity from the fuel cell installation.

The combination of two renewable energy installations at the same facility with opposing export capabilities presented difficulties in the interconnection process. In April 2014, following extensive discussions with SCE staff, IEUA executed a multiple tariff interconnection agreement that would allow IEUA to export a maximum of 3.5 MW; however, only the portion generated by the solar facility would be eligible for compensation. Tracking the electricity from the renewable installations would be achieved through Net Generation Output Meters (NGOMs).

IEUA evaluated the proposed NGOM project and determined that installing the meters would be cost prohibitive. Considering RP-1's load and renewable generation capacity, the amount of electricity exported is expected to be minimal and sporadic. As of April 2015, IEUA was in discussions with SCE to allow for export from RP-1 without compensation, while maintaining the ability to install NGOMs in the future if the project is later deemed to be cost effective.

IEUA also encountered difficulties obtaining an interconnection agreement at RP-5 that would allow for export from the REEP ICEs. IEUA initially applied for an interconnection agreement for the ICEs in 2006 under SCE's biogas NEM program, but the agreement was never finalized because the ICEs were never commissioned. As a result, IEUA was required to submit a new application for interconnection under SCE's RES-BCT program, which would allow for exported electricity to be compensated as bill credits on IEUA's other SCE accounts. IEUA submitted the RES-BCT application in June 2013 and executed the interconnection agreement in May 2014. The REEP ICEs were commissioned in January 2015 and first exported to the grid the following month.

Based on these experiences, IEUA considers the process of obtaining interconnection agreements with SCE to be unfavorable toward new renewable projects. When progress stalled on both RP-1's NEM and RP-5's RES-BCT agreements, IEUA held conference calls with SCE staff twice per week to ensure that information was processed as quickly as possible and that the application evaluation continued in a timely manner. The recommendations and requirements provided by SCE to comply with interconnection standards were costly, and in the case of RP-1, were considered cost prohibitive. For a public agency attempting to expand renewable generation with a limited project budget, the interconnection process contains significant expenditures, both in capital outlay and staff time.

In both experiences at RP-1 and RP-5, the interconnection process was complicated because one renewable installation exceeded the 1 MW limit established in the NEM tariff. Increasing this limit to allow for larger renewable installations to be considered in the NEM program could reduce the time and costs involved in obtaining interconnection agreements. Furthermore, IEUA noticed a marked improvement in progress once regular conference calls were scheduled to maintain communication with SCE staff. Although this contributed to the considerable staff time devoted to the interconnection process, the conference calls reduced the overall duration of the application evaluation. Establishing frequent communication with SCE staff during the entirety of the evaluation process will be considered an essential component of any future interconnection agreement.

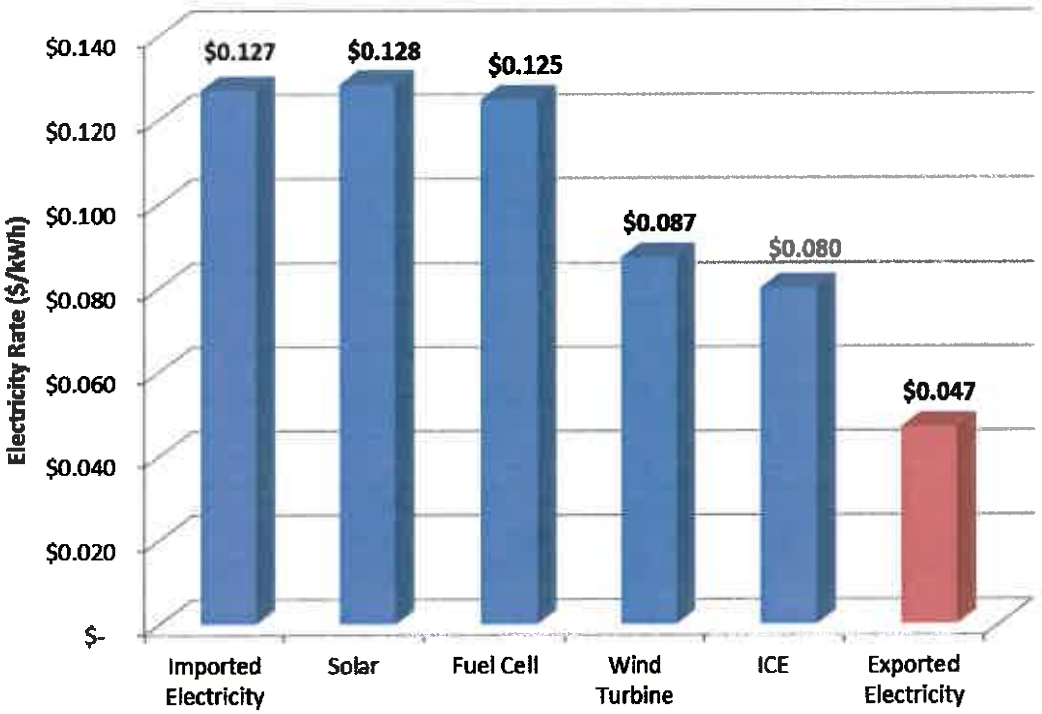
IEUA is currently working with BAC and CASA to open a dialogue with the CPUC regarding interconnection concerns. By communicating past difficulties to the CPUC, the IEUA is attempting to help identify straining areas of the interconnection process and hopefully foster discussion on potential paths to improvement.

Renewable Energy Economics

Consistent with IEUA's Business Goals, projects that improve sustainability during peak periods will only be pursued if they are determined to be cost effective after thorough analysis and evaluation. Most of the renewable installations at IEUA's facilities were designed to avoid exporting electricity when facility demand is lowest. Although inadvertent export is allowed under SCE's Rule 21 and IEUA is compensated for electricity exported at RP-2 and RP-5, the economics of exporting electricity to the grid are not favorable to IEUA. IEUA's average costs of electricity, on a $/kWh basis, in FY 13/14 are shown on Figure 31. For comparison, SCE's average compensation rate for exported electricity from NEM customers is shown in red on the same figure.

The figure shows that current renewable installations are cost effective because they supplement imported electricity at a lower rate. Although the average cost of solar was $0.001 higher per kWh in FY 13/14, the fact that solar panels generate power during SCE's peak periods means that the solar installations are cost effective on a TOU basis since they supplement imported electricity that would otherwise carry high demand charges.

FIGURE 31. FY 13/14 AVERAGE ELECTRICITY COST BY SOURCE



Because the export compensation rate is anywhere from $0.033-0.081 lower per kWh than IEUA's electricity procurement rate (based on FY 13/14 data), IEUA cannot recover the procurement costs of exported electricity through compensation alone. Compensation rates for NEM customers are calculated using a market-based mechanism derived from hourly day-ahead electricity pricing, similar to the mechanism used by ESPs that provide electricity to IEUA through the Direct Access program. The rate reflects the costs that SCE avoids in procuring power during the time that it is produced by the generating facility. It is unlikely that SCE will substantially increase the compensation rate to accommodate facilities desiring more robust renewable portfolios with the ability to regularly export. As such, revised economic models must focus efforts elsewhere.

An alternative solution would rely on modifications to the CEC's RPS, which mandates that all electric service suppliers provide at least 33 percent of their energy from renewable sources by 2020. These suppliers can achieve the mandated limits by purchasing RECs that satisfy one of three content categories, often referred to as buckets. Because IEUA uses the renewable energy it generates on site, any RECs generated fall into Bucket 3, which carries the lowest value on the trading market.

IEUA's experience in pursuing RECs for its renewable installations found that the cost of obtaining the certificates often negated the potential profits of any sale. However, the California assembly, with assistance from CASA, is pursuing legislation that would allow for renewable installations at wastewater facilities to be eligible for Bucket 1 status as part of Assembly Bill 1144. This designation could drastically improve renewable project economics. IEUA is in support of AB 1144 and will track its progress closely.

In addition to export compensation, project economics also depend heavily on the capital expense required for installation. Although IEUA was able to avoid capital expenditures for the solar, wind, and fuel cell installations by entering into PPAs, the cost of installation was factored into the electricity procurement rate for each agreement. The procurement rate was also affected by potential government incentives, grant subsidizations, and for the wind and fuel cell installations, transfer of RECs to the PPA provider.

Whether IEUA pursues PPAs or outright purchase, the cost of installing renewable technologies greatly affects the project feasibility. In the past, IEUA evaluated several technologies for implementation that were determined to be cost prohibitive, including gas storage, energy storage, fuel cells, biogas conversion to compressed natural gas, small hydropower, geothermal, and biogas conditioning to inject into the natural gas pipeline. IEUA's resources allow for a wide array of energy projects, many of which are simply too expensive to implement at present. However, with additional government incentives or further subsidization opportunities, some of these technologies may be considered cost effective if the capital required is sufficiently reduced.

Furthermore, greater incentive and subsidization opportunities could result in more applications of new technology across the industry. The renewable resources utilized at IEUA are not unique to its facilities. With wider application of new technologies leading to greater market saturation, projects that were once cost prohibitive could now be considered cost effective.

Energy Forecasting

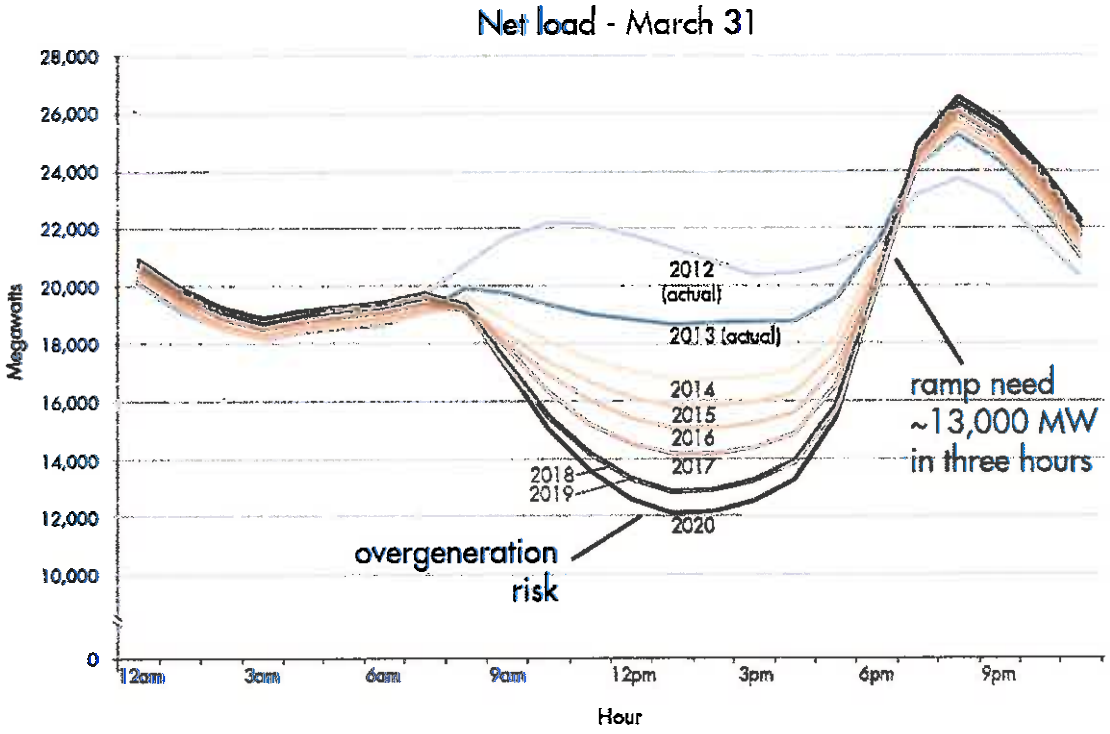
IEUA's BCEs rely on energy forecasts to determine potential savings over the life of the project being evaluated. IEUA uses the historical rates published by SCE to estimate average rate increases moving forward. Historically, SCE's rates for commercial customers have increased by an average of six percent per year, which

includes the rate of inflation. To remain conservative, IEUA uses annual utility increases of four and six percent when evaluating new projects, which provides a range of potential savings.

The California Independent System Operator (CAISO) operates the bulk of the state's wholesale energy market. CAISO's operation of the power grid allows insight and open access into the energy industry. As part of its activities, CAISO tracks the average net load for the state each day. In 2013, CAISO identified that California's solar installations have had a combined effect on the net load that could significantly influence the energy needs of the state in years to come.

Figure 32, often referred to as the "duck curve," shows CAISO's actual net loads for March 31 in 2012 and 2013, along with projections each year until 2020[3]. Between the hours of 7:00 p.m. and 7:00 a.m., the figure shows slight energy increases that closely track the previous year. Between the hours of 7:00 a.m. and 7:00 p.m., or during daylight hours, the demand on the grid declines sharply each year. Figure 32 estimates that mid-day grid demand in 2020 could be as much as 9,000 MW less than the actual demand in 2012. The reason for the drop in demand is the widespread installation of solar energy systems across the state, which will further reduce grid demand during daylight hours if solar installation trends continue.

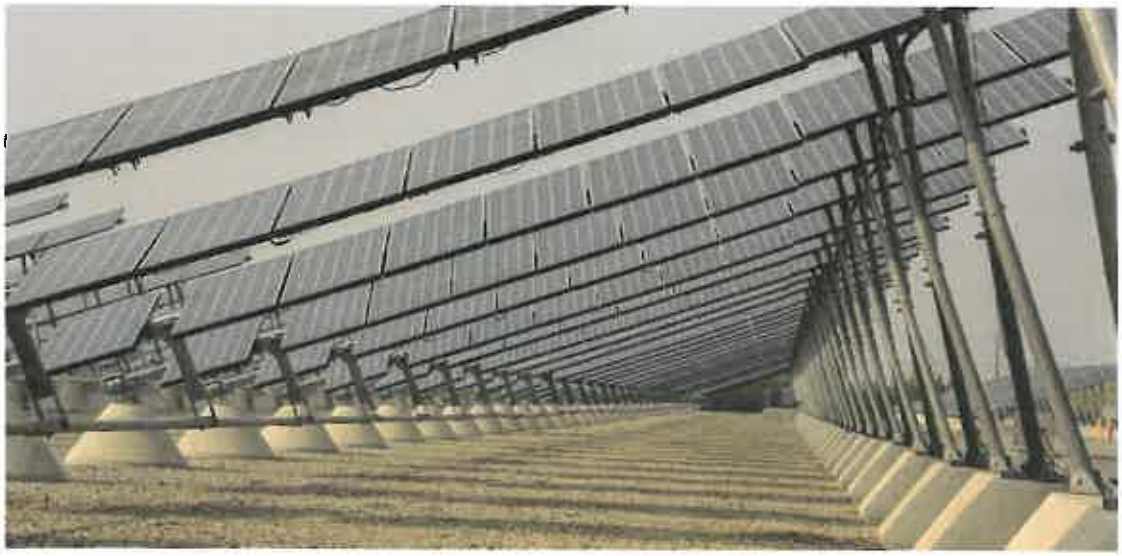
FIGURE 32. CA'S NET LOAD PROJECTIONS THROUGH 2020 (DUCK CURVE)



[3]*Source: "What the Duck Curve Tells us about Managing a Green Grid," CAISO, 2013*.

This new load profile carries significant concern for the state's energy generators. Between the hours of 5:00 p.m. and 8:00 p.m. in 2020, grid demand is expected to increase by 80 percent over the course of three hours. The problems presented by this curve will require creative solutions by energy generators, and will involve employment of energy storage in large quantities. Nevertheless, the scope of this concern extends beyond IEUA's influence.

However, the Agency could be impacted by the resulting change in tariffs that utilities can implement in response to the duck curve. New projects are evaluated under the assumption that tariffs structures will be similar over the next 20 years. Certain potential projects, such as solar installations, rely on avoiding or reducing demand charges from the electrical utility to achieve an economic benefit. If the peak period is shifting from mid-day to late evening to match the expecting net load peak, project economics could be greatly affected. Other projects that increase efficiency or can be programmed to adjust to varying peak periods may not be affected by potential modifications to SCE's tariffs. IEUA will continue to monitor discussion of the duck curve, as well as SCE's plan to respond to the changing net load.



Management Practices

In addition to tracking energy usage and evaluating potential projects, IEUA's EMP includes several measures that are applied throughout the year to optimize resources and better understand the Agency portfolio.

PROCUREMENT

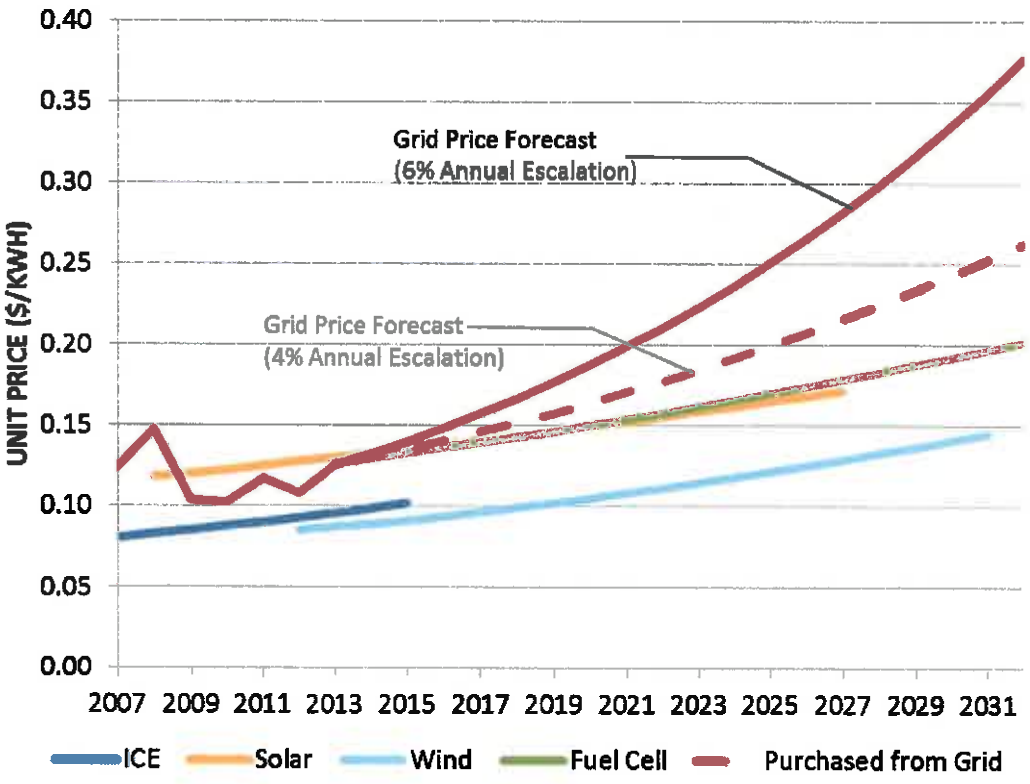
With the exception of RP-4 and RP-5, IEUA has the option of procuring electricity through IOUs or separate ESPs. Natural gas is procured through an ESP for IEUA's larger usage needs (core accounts), as well as its smaller accounts (non-core). IEUA currently purchases electricity through unbundled service, or DA, at three of its five largest accounts, and bundled service at the remaining two and all smaller

accounts (standalone RW and GWR facilities). The Agency has realized considerable savings during the summer months utilizing direct access (DA) agreement.

The pricing structure for electricity generated from IEUA's renewable installations varies between each agreement. The PPA rates are structured similarly, with fixed rates and annual escalators that were negotiated to produce long-term financial benefits for the Agency. Considering the large historical variation in grid pricing from year to year, establishing a fixed energy pricing forecast for much of the Agency's demand is a valuable planning tool for energy management.

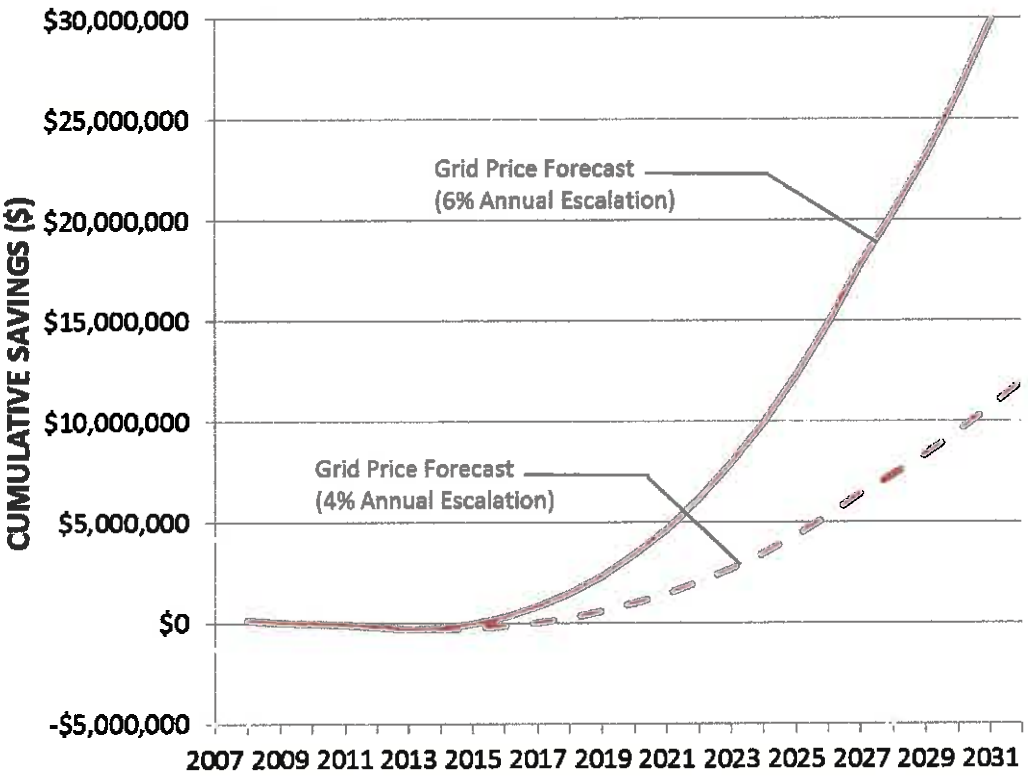
Prospective cost savings depend on the negotiated electricity purchase price of each PPA, anticipated rate increases from the electrical grid, and expected power generation from the installations. The negotiated purchase pricing (Figure 33), on a $/kWh basis, generally compares favorably to grid purchase pricing.

FIGURE 33. PPA RATE COMPARISON TO GRID FORECASTS



Current PPA purchase rates are competitive with the grid purchase rates, but the long-term benefits become apparent when comparing the annual escalating scales between the two costs. Based on energy industry forecasts, grid electricity costs are expected to increase between four and six percent, on average, over the next 20 years. Since each PPA's annual escalation rate is below four percent, the Agency anticipates that all PPA installations will realize annual savings within the next two to three years. The amount of savings achieved can vary widely, as shown on Figure 34.

FIGURE 34. CUMULATIVE SAVINGS ESTIMATE FROM RENEWABLES



Each agreement also contains the option of purchasing the equipment rather than continue as a PPA customer. IEUA is continually evaluating this opportunity, as well as imported energy procurement options, annually to determine the most cost effective solution in both the short and long term.

INCREASED MONITORING

With the advent of sub-metering at each facility, IEUA will have the capability of tracking electricity usage by process. As of April 2015, the Agency's sub-meter

equipment was still undergoing modifications to reliably provide electrical usage data. Once the installation is complete, IEUA will be able to identify the energy intensity of each treatment process. As aforementioned, the sub-meters will be used to quantify energy usage for each process and identify potential load reductions that can be incorporated in the DR program.

Several resources have made strides in recent years in establishing energy metrics for wastewater treatment processes. The Agency can use these resources to compare the sub-meter data and gauge potential areas for improvement. Rather than targeting processes that are simply energy-intensive, efficiency projects should focus on processes that use more energy than is considered necessary or standard within the industry.

Moreover, tracking energy usage from each process will benefit IEUA's Operations and Maintenance staff, as sudden variations in energy usage can signal the need for repair or replacement. To the extent allowed by currently available data, performance management tools (i.e., Key Performance Indicators (KPI) and Unit Production Costs (UPC)) are being used to monitor energy use and energy generation at the facilities. These tools are important components of an effective energy management program. As more data on energy use become available through sub-metering, the KPI and UPC tools will be expanded to take full advantage of the information collected from the meters. IEUA staff will be tasked with incorporating the process energy usage into regular Operations and Maintenance staff responsibilities.

EDUCATION

In addition to tracking data and identifying programs, the Agency must educate its employees on their role in improving energy management. Raising awareness of energy usage and cost impacts can empower staff to conserve and even recommend process changes that might otherwise be overlooked by an auditor unfamiliar with process details.

IEUA's external affairs staff produces a monthly newsletter that is distributed to all employees at the Agency. Beginning in May 2015, the monthly newsletter will include a regular update focusing on energy management, conservation opportunities, or education. Additionally, IEUA Operations and Maintenance employees will be given annual training that explains IEUA's energy procurement strategy, cost impacts, and how they can help reduce energy usage.

NEW PROJECT SOLICITATION

IEUA has the ability to include specific standards or performance objectives in project scopes whenever issuing RFPs. Beginning in FY 15/16, RFPs issued by IEUA will require vendors to include high-efficiency equipment in any project, as warranted. New project evaluations will also consider the impact on energy consumption and management. Proposals that improve energy management will be prioritized over similar proposals that are neutral or adverse to energy management.

AUDITING

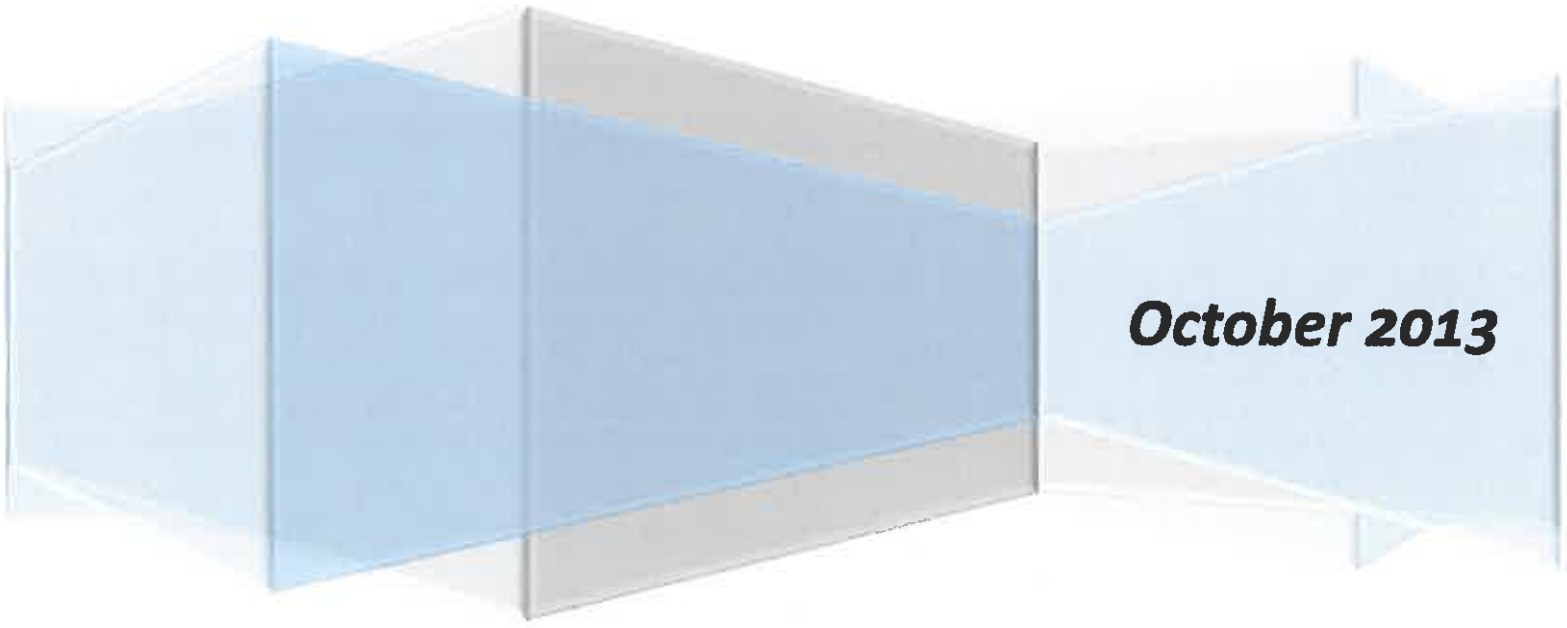
Along with sub-metering information data, an energy audit can help identify efficiency opportunities within the treatment plants. Agency staff regularly audits equipment through the Asset Management Plan to determine if processes can be optimized through equipment retrofit/replacement or operational adjustments. IEUA will utilize The Energy Network to conduct comprehensive energy audits of each of the treatment plants by the end of FY 15/16.

Furthermore, the Energy Management Plan, updated every two years, will serve as an annual analysis of energy usage with the goal of targeting energy intensive processes and uncovering potential conservation opportunities.

Appendix A

IEUA Business Goals

IEUA Business Goals



October 2013

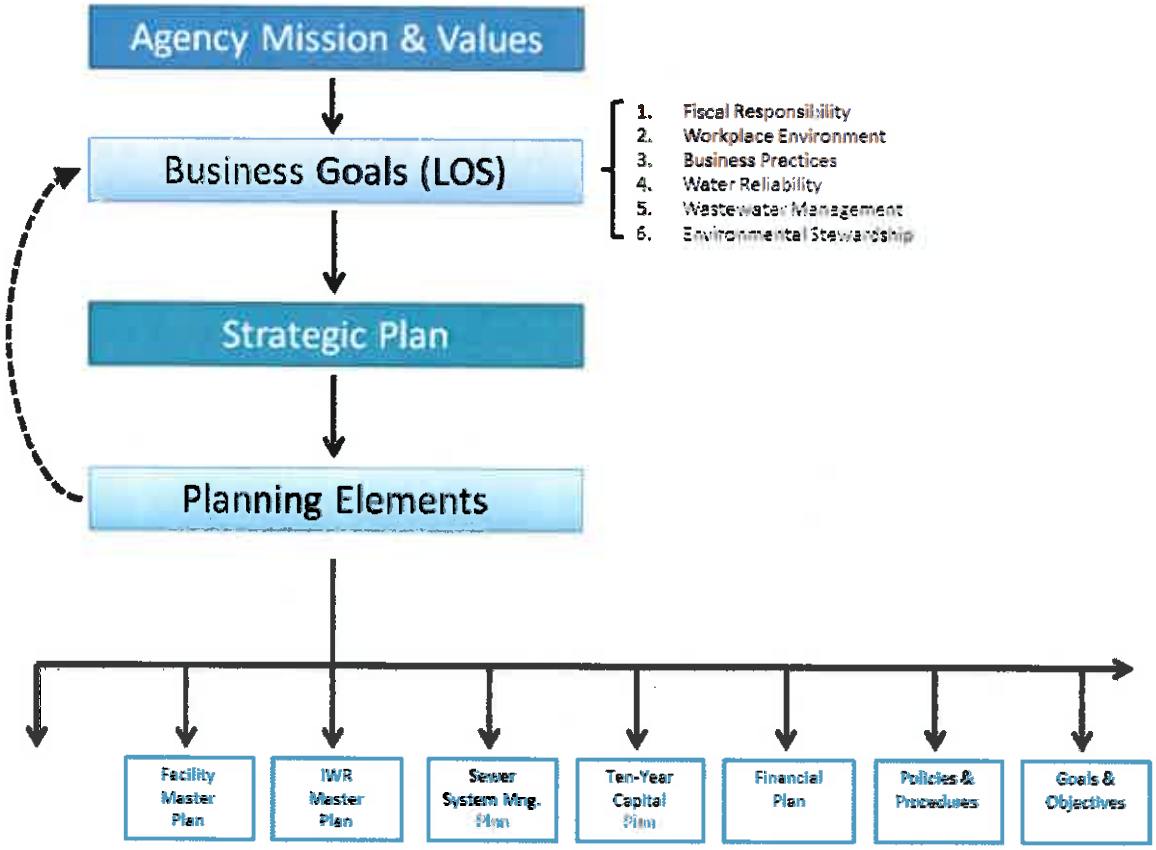
Business Goal Development

PURPOSE: It is critical that IEUA Business Goals align with the Agency's Mission, Vision & Values which are defined by the needs of our Stakeholders and the value provided to the Public. The Business Goal Development process includes a review of existing Agency-wide policy goals and their refinement based on current and future needs. It is also critical in setting the framework for the development of the IEUA Strategic Plan that will shape and guide the Agency's fundamental decisions and actions over the next several years.

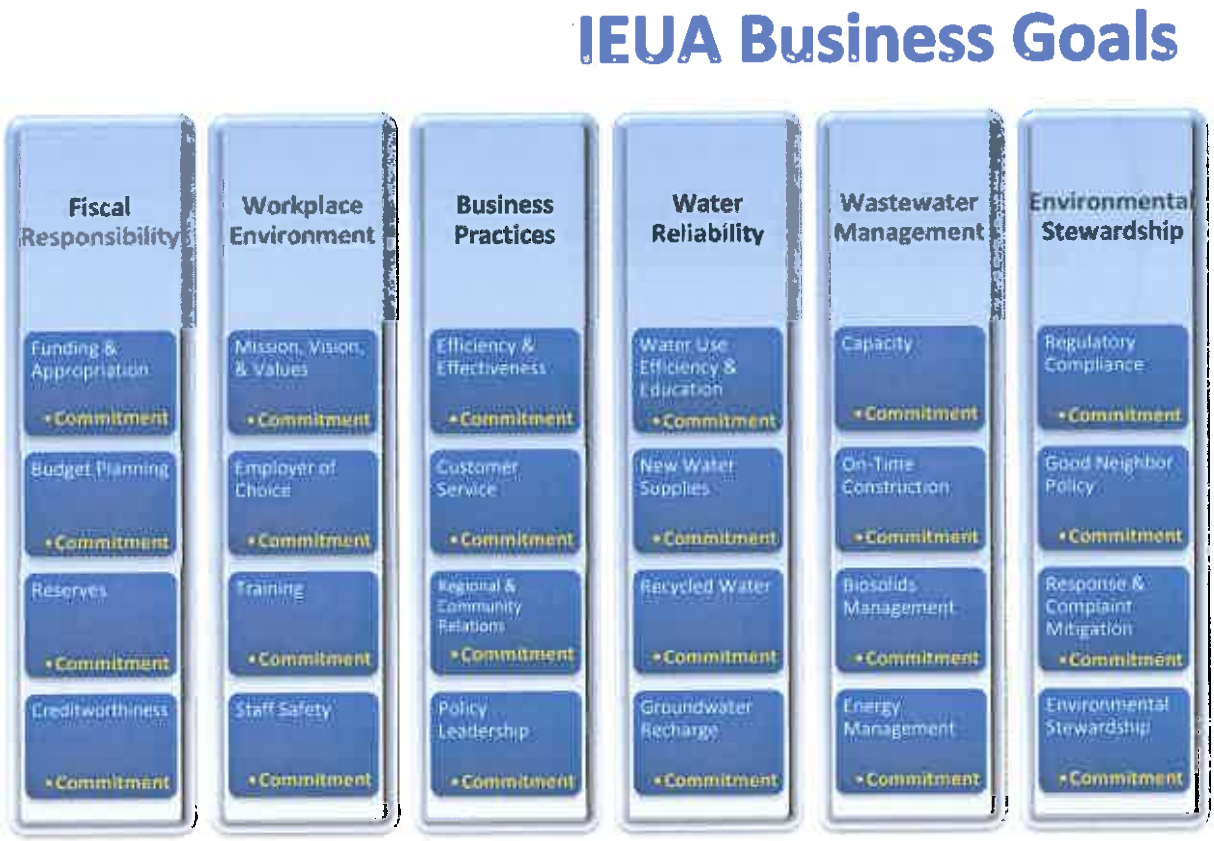
BACKGROUND: Over the last several years, the Agency-wide policy goals, which have guided the Agency's decisions and actions in executing its mission and attaining its vision, have been categorized into nine major thematic areas: Conservation & Water Quality, Technological Innovation, Rate Stabilization and Cost Effectiveness, Operational and Maintenance Efficiency, Strategic Planning and Capital Implementation, Waste Management and Resource Utilization, Interagency Relationships and Community Partnerships, Fiscal Accountability and Regulatory Compliance, and Staff Training, Development and Well Being.

These Agency-wide policy goals guide the development of the capital improvement program, operational budget, and organizational goals and objectives each budget cycle. As a way to further define the Agency's levels of service (LOS), several workshops were held with the IEUA Board of Directors in 2011. However, the LOS developed as part of these workshops were primarily focused on the Agency's operational functions. In early 2013 staff recommended the LOS be expanded into more broad based IEUA Business Goals to also include the following topics: water reliability, fiscal accountability and employee wellbeing. It was also determined that the development of the IEUA Business Goals should include input from Stakeholders including: IEUA Board of Directors, IEUA staff, Technical Committee members and Policy Committee members.

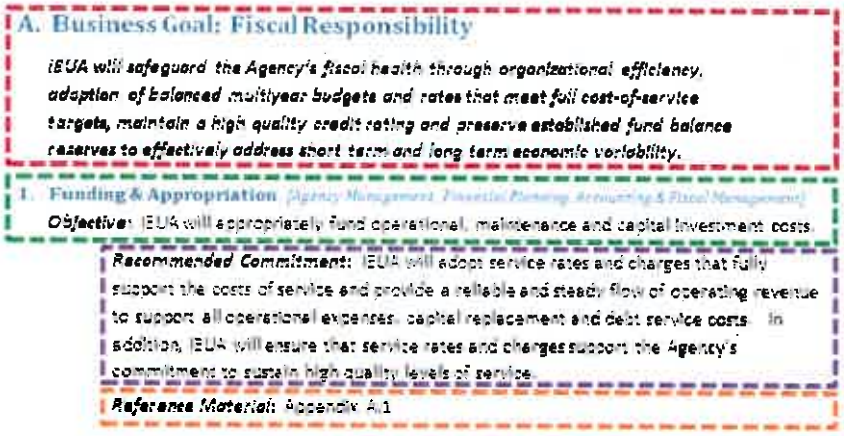
BUSINESS GOALS FUNCTION: For any organization to remain relevant and effective, its ability to adapt and prepare for change is essential. As illustrated below, the IEUA Business Goals must be must be continually evaluated as part of the planning process to ensure that they meet the current and future needs of the Region.



BUSINESS GOALS STRUCTURE: The IEUA Business Goals were categorized into six main areas: *Fiscal Responsibility, Workplace Environment, Business Practices, Water Reliability, Wastewater Management and Environmental Stewardship.* Within each Business Goal (i.e. Water Reliability), several Objectives were established to support the Business Goal (i.e. beneficial use of recycled water, etc.). For each Objective, a Commitment was developed to define the level of service that IEUA will provide (i.e. develop recycled water infrastructure to reuse 50,000 AFY). The structure of the Business Goals is shown in the following figure:



DOCUMENT STRUCTURE: Included within this narrative is one page for each Business Goal – which outlines the Business Goal intent, each Objective and the corresponding recommended Commitment. Background on each Objective/Commitment is included within the Appendix.



SCHEDULE: The development, review and approval of Business Goals entails a sequence as indicated in the schedule below:

Following the completion of this process, the adopted Business Goals will be used as the basis for the development of several planning documents, including the Strategic Plan, Integrated Water Resources Plan, Facilities Master Plan Update and the Asset Management Plan.

DEFINITIONS: The following list is provided to define key terms utilized in the Business Goals Narrative.

Board of Directors – Five elected officials providing the governance of Inland Empire Utilities Agency and representing the following Divisions:

- Division 1: Terry Catlin
- Division 2: Gene Koopman
- Division 3: Steve Elie
- Division 4: Vacant
- Division 5: Michael Camacho

Chino Groundwater Basin – 5,000,000 AF of groundwater storage encompassing approximately 235 square miles of the upper Santa Ana River Watershed within San Bernardino, Riverside and Los Angeles Counties. A substantial portion of the Chino Groundwater Basin overlaps with the IEUA Service Area.

IEUA Service Area – 242 square miles located in the southwest corner of San Bernardino County incorporating: the City of Chino, the City of Chino Hills, the City of Fontana, the City of Montclair, the City of Ontario, the City of Upland and unincorporated areas of San Bernardino County.

Imported Water – A supplemental water source to local water supplies generally purchased through the State Water Project.

Member Agencies – Cities, agencies and districts that contract with IEUA for regional wastewater services and Imported Water deliveries (* denotes member agencies who also are signatories to the Regional Sewage Contract):

- City of Chino*
- City of Chino Hills*
- Cucamonga Valley Water District*
- City of Fontana*
- Fontana Water Company
- City of Montclair*
- Monte Vista Water District
- City of Ontario*
- San Antonio Water Company
- City of Upland*

Policy Committee – A committee comprised of policy members from Regional Sewage Contract member agencies and IEUA.

Public – The approximately 850,000 residents within the IEUA Service Area who receive the benefits of the services provided by the Member Agencies and IEUA.

Region – The geographical location where IEUA maintains a sphere of influence which is broader than the IEUA Service Area.

Regional Water Agencies – Agencies and districts having water interests within the Region but are not Member Agencies. These include but are not limited to:

- Chino Basin Watermaster
- Jurupa Community Services District
- Los Angeles County Sanitation District
- Metropolitan Water District
- Orange County Sanitation District
- Orange County Water District
- San Bernardino Flood Control and Water Conservation District
- Santa Ana Watershed Project Authority
- Western Municipal Water District

Stakeholders – A general term to define all interested parties including: Board of Directors, Policy Committee, Technical Committee, Member Agencies and Regional Water Agencies.

Supplemental Water – An additional water supply originating from outside the IEUA Service Area that may offset the demand for Imported Water – may include outside groundwater, recycled water, etc.

Technical Committee – A committee comprised of public works/water managers from the Member Agencies and IEUA.

A. Business Goal: Fiscal Responsibility

IEUA will safeguard the Agency's fiscal health through organizational efficiency, adoption of balanced multiyear budgets and rates that meet full cost-of-service targets, maintain a high quality credit rating and preserve established fund balance reserves to effectively address short term and long term economic variability. Furthermore, IEUA will provide open and transparent communication to educate the Member Agencies on the fiscal policies of the Agency.

1. **Funding & Appropriation** *[Agency Management, Financial Planning, Accounting & Fiscal Management]*
Objective: IEUA will appropriately fund operational, maintenance and capital investment costs.

    Commitment: IEUA will adopt service rates and fees that fully support the costs of service and provide a reliable and steady flow of operating revenue to support all operational expenses, capital replacement and debt service costs. In addition, IEUA will ensure that service rates and fees support the Agency's goal to sustain high quality Commitment Levels.

    Reference Material: Appendix A.1

2. **Budget Planning** *[Agency Management, Financial Planning, & Accounting & Fiscal Management]*
Objective: IEUA will accurately forecast future operational, repair & replacement, capital improvement and debt service costs as needed for the creation of multiyear budgets and rate resolutions that create fiscal stabilization for IEUA and the Member Agencies.

    Commitment: IEUA will provide multiyear forecasts for operational, repair & replacement, capital investment and debt service costs to support the adoption of multiyear budgets and rates enhancing dependability and stability.

    Reference Material: Appendix A.2

3. **Reserves** *[Financial Planning, Accounting & Fiscal Management]*
Objective: IEUA will preserve fund reserves that sustain the Agency's long term fiscal health, high quality credit rating and ensure its ability to effectively address economic variability.

    Commitment: IEUA will adopt financial policies to establish and preserve fund reserves above legally or contractually mandated levels to maintain Commitment Levels. In addition, IEUA will support short and long term funding requirements and sustain the Agency's long term fiscal health and high quality credit rating to reduce future borrowing costs.

    Reference Material: Appendix A.3

4. **Creditworthiness** *[Financial Planning, Accounting & Fiscal Management]*
Objective: IEUA will sustain a high quality credit rating and debt service coverage ratio to safeguard the Agency's fiscal health and reduce future borrowing costs.

    Commitment: IEUA will reinstate the Agency's credit rating to AAA by FY 17/18 to reduce borrowing costs anticipated for the expansion and improvement of existing facilities to meet future growth in the Agency's service area.

    Reference Material: Appendix A.4

B. Business Goal: Workplace Environment

IEUA is committed to provide a positive workplace environment by recruiting, retaining and developing a highly skilled team dedicated to the Agency's Mission, Vision and Values.

1. Mission, Vision & Values *[All Agency Staff & Board]*

Objective: IEUA will uphold Business Goals, Objectives and Commitment Levels that support and advance the Agency's Mission, Vision and Values.

> ***Commitment***: IEUA will maintain the highest standard of ethical conduct from all Agency staff by promoting values of prudent leadership, integrity, collaboration, open communication, respect, accountability, high quality, passion and efficiency to support the Agency's Mission, Vision and Values.
>
> ***Reference Material***: Appendix B.1

2. Employer of Choice *[Human Resources, & Agency Management]*

Objective: IEUA will be an Employer of Choice.

> ***Commitment***: IEUA will provide a work environment that will attract and retain highly skilled, motivated, professional and committed employees.
>
> ***Reference Material***: Appendix B.2

3. Training *[Agency Management & Human Resources]*

Objective: IEUA will provide employees with state-of-the-art skills and knowledge to meet current and anticipated Agency needs.

> ***Commitment***: IEUA will facilitate and provide opportunities for staff to further their personal/professional development in support of maintaining a highly skilled workforce.
>
> ***Reference Material***: Appendix B.3

4. Staff Safety *[Safety, Human Resources, & Agency Management]*

Objective: IEUA will promote and ensure a safe and healthy work environment to protect employees and Stakeholders.

> ***Commitment***: IEUA will have no more than 1 day of lost time due to work related illness or injury per 1,000 days worked.
>
> ***Reference Material***: Appendix B.4

C. Business Goal: Business Practices

IEUA is committed to applying ethical, fiscally responsible and environmentally sustainable principles to all aspects of business and organizational conduct.

1. Efficiency & Effectiveness *[All Departments]*

Objective *IEUA will promote standards of efficiency and effectiveness in all Agency business practices and processes.*

> ***Commitment***: IEUA will integrate ***Lean*** techniques to evaluate its current business practices and processes and identify ways to improve the quality, cost and value of the services the Agency provides to the Member Agencies and the Public.
> ***Reference Material***: Appendix C.1

2. Customer Service *[All Departments]*

Objective: IEUA will provide excellent customer service that is cost effective, efficient, innovative and reliable.

> ***Commitment***: IEUA will respond to and meet the Member Agencies expectation for enhanced value added services. IEUA will solicit Stakeholder feedback on performance and goal alignment on an annual basis.
>
> ***Reference Material***: Appendix C.2

3. Regional Leadership and Community Relations *[Agency Management, Planning, & Engineering]*

Objective: IEUA will cultivate a positive and transparent relationship with its Stakeholders to enhance quality of life, preserve our heritage and protect the environment.

> ***Commitment***: IEUA will partner with its Stakeholders on common issues to create and implement integrated and innovative solutions, minimize duplication of efforts and support education and outreach to the Public. Furthermore, IEUA will incorporate Member Agencies and Regional Water Agencies into various IEUA related projects and programs to ensure that a transparent and broader regional representation is achieved.
>
> ***Reference Material***: Appendix C.3

4. Policy Leadership *[Agency Management, Planning, & Engineering]*

Objective: IEUA will effectively advocate, campaign and guide the development of policies and legislation that benefit the Region IEUA serves.

> ***Commitment***: IEUA will promote a collaborative approach for the development of positions on policies, legislation and regulations that impact Agency policy objectives.
>
> ***Reference Material***: Appendix C.4

D. Business Goal: Water Reliability

IEUA is committed to the development and implementation of an integrated water resource management plan that promotes cost-effective, reliable, efficient and sustainable water use along with economic growth within the IEUA Service Area.

1. Water Use Efficiency & Education *[Planning, Engineering, & Public Information]*

Objective: IEUA will promote education and water use efficiency to enhance water supplies within the Region and exceed State goals for reductions in per capita water use within the IEUA Service Area.

> ***Commitment***: IEUA will promote to reduce water use in the IEUA Service Area to less than 200 gallons per capita per day (gpcd) by 2018.
>
> ***Reference Material***: Appendix D.1

2. New Water Supplies *[Planning &, Engineering]*

Objective: IEUA will support the Member Agencies and Regional Water Agencies with the development of reliable, drought-proof and diverse local water resources and Supplemental Water supplies in order to reduce dependence on Imported Water supplies.

> ***Commitment***: IEUA will promote reducing demand for Imported Water during dry and normal years and storing Imported Water into the Chino Groundwater Basin during wet years. In addition, IEUA will support maximizing the beneficial use of existing water infrastructure, while meeting future increased demands through investment in local water resources, Supplemental Water supplies and conservation efforts.
>
> ***Reference Material***: Appendix D.2

3. Recycled Water *[Planning, Engineering, Operations, & Maintenance]*

Objective: IEUA will support maximizing beneficial reuse of recycled water to enhance reliability and reduce dependence on Imported Water.

> ***Commitment***: IEUA will complete the development of recycled water infrastructure and will support the Member Agencies in achieving reuse of 50,000 AFY by 2025.
>
> ***Reference Material***: Appendix D.3

4. Groundwater Recharge *[Planning, Engineering, Operations, & Maintenance]*

Objective: IEUA will maximize all sources of groundwater recharge.

> ***Commitment***: IEUA will support the recharge of all available stormwater and maximize the recharge of recycled water within the Chino Groundwater Basin. Furthermore, IEUA will pursue the purchase and storage of cost-effective Supplemental Water supplies.
>
> ***Reference Material***: Appendix D.4

E. Business Goal: Wastewater Management

IEUA systems will be master planned, managed and constructed to ensure that when expansion planning is triggered, designs/construction can be completed to meet regulatory/growth needs in an expeditious, environmentally responsible and cost effective manner.

1. Capacity *[Planning, Engineering, & Construction Management]*

Objective: IEUA will maintain capacity within systems and facilities to meet essential service demands and to protect public health and environment.

> ***Commitment***: IEUA will ensure that systems are managed and constructed so that 90% of capacity is never exceeded.
>
> ***Reference Material***: Appendix E.1

2. On-Time Construction *[Engineering, & Construction Management]*

Objective: IEUA will ensure capital projects are designed and implemented in a timely and economically responsible manner.

> ***Commitment***: IEUA will design and construct facilities through efficient project management to ensure that 80% of projects are completed on schedule and 90% of projects are on budget.
>
> ***Reference Material***: Appendix E.2

3. Biosolids Management *[Operations & Maintenance]*

Objective: IEUA will manage all Agency produced biosolids in a compliant, fiscally prudent and environmentally sustainable manner.

> ***Commitment***: IEUA will ensure that 95% of the Inland Regional Compost Facility's capacity is utilized, all biosolids produced by IEUA are treated at IERCF, Agency solids generation is minimized through efficient dewatering operations and all compost is marketed for beneficial use.
>
> ***Reference Material***: Appendix E.3

4. Energy Management *[Planning, Engineering, Operations, & Maintenance]*

Objective: IEUA will optimize facility energy use and effectively manage renewable resources to achieve peak power independence, contain future energy costs, achieve statewide renewable energy, distributed generation and greenhouse gas reduction goals, and provide for future rate stabilization.

> ***Commitment***: IEUA will achieve peak power independence by 2020 through the implementation of renewable projects, energy management agreements and operational efficiencies.
>
> ***Reference Material***: Appendix E.4

F. Business Goal: Environmental Stewardship

IEUA is committed to the responsible use and protection of the environment through conservation and sustainable practices.

1. Regulatory Compliance *[Compliance, Operations, & Maintenance]*

Objective: IEUA will comply with all federal, state and local laws at each Agency facility.

> ***Commitment***: IEUA will have no more than 2 notices of violation annually from the State Water Resources Control Board, Air Quality Management District, or Non-Reclaimable Waste System for all Agency owned and operated facilities.
>
> ***Reference Material***: Appendix F.1

2. Good Neighbor Policy *[Compliance, Operations, & Maintenance]*

Objective: IEUA will control odors at all Agency facilities for the purpose of improving the environment and being a good neighbor to the local community.

> ***Commitment***: IEUA will perform a quarterly odor monitoring assessment to develop actual and acceptable baseline odor thresholds. Acceptable baseline thresholds will be used to measure treatment plant performance and drive necessary capital improvements.
>
> ***Reference Material***: Appendix F.2

3. Response & Complaint Mitigation *[Compliance, Operations, & Maintenance]*

Objective: IEUA will investigate and appropriately respond in a timely manner to any environmental issue or complaint received at any Agency Facility.

> ***Commitment***: IEUA will immediately respond to any event that threatens public health and safety and will respond within 5 working days to any non-emergency complaint or suggestion.
>
> ***Reference Material***: Appendix F.3

4. Environmental Responsibility *[Agency Management, Planning, & Engineering]*

Objective: IEUA will strive to implement actions that enhance or promote environmental sustainability and the preservation of the region's heritage.

> ***Commitment***: IEUA will consider and assess environmental sustainability, public use and heritage preservation options for all of its programs and projects.
>
> ***Reference Material***: Appendix F.4

Appendix

Reference Materials

A. Fiscal Responsibility

A.1 – Funding & Appropriation
A.2 – Budget Planning
A.3 – Reserves
A.4 – Creditworthiness

B. Workplace Environment

B.1 – Mission, Vision & Values
B.2 – Employer of Choice
B.3 – Training
B.4 – Staff Safety

C. Business Practices

C.1 – Efficiency & Effectiveness
C.2 – Customer Service
C.3 – Regional Leadership & Community Relations
C.4 – Policy Leadership

D. Water Reliability

D.1 – Water Use Efficiency & Education
D.2 – New Water Supplies
D.3 – Recycled Water
D.4 – Groundwater Recharge

E. Wastewater Management

E.1 – Capacity
E.2 – On-Time Construction
E.3 – Biosolids Management
E.4 – Energy Management

F. Environmental Stewardship

F.1 – Regulatory Compliance
F.2 – Good Neighbor Policy
F.3 – Response & Complaint Mitigation
F.4 – Environmental Responsibility

Appendix A.1

Fiscal Responsibility – Funding & Appropriation

Business Goal: *IEUA will safeguard the Agency's fiscal health through organizational efficiency, adoption of balanced multiyear budgets and rates that meet full cost-of-service targets, maintain a high quality credit rating and preserve established fund balance reserves to effectively address short term and long term economic variability. Furthermore, IEUA will provide open and transparent communication to educate the Member Agencies on the fiscal policies of the Agency.*

Objective: *IEUA will appropriately fund operational, maintenance and capital investment costs.*

Commitment: *IEUA will adopt service rates and fees that fully support the costs of service and provide a reliable and steady flow of operating revenue to support all operational expenses, capital replacement and debt service costs. In addition, IEUA will ensure that service rates and fees support the Agency's goal to sustain high quality Commitment Levels.*

Commitment Level Background

- Historically, the Agency's operating revenues (net of property tax supplement) have been lower than operating expenses (i.e., services provided by the Agency do not generate revenues needed to pay for total cost of operations), resulting in an operating structural deficit. The operating structural deficit has been supported by a combination of property tax receipts and fund reserves.
- The allocation of property tax receipts and fund reserves to support operating activities reduced the amount of property taxes available to support capital investment, and over time, diminished the Agency's fund reserve balances.
- Given the uncertainty of property taxes, it is essential for the Agency to reduce its reliance on this funding source to support recurring expenditures (O&M and debt service costs) over time.
- In 2013, IEUA will release the first Asset Management Plan, which will provide management strategies and funding requirements to repair and replace aging equipment at each of the treatment facilities based on condition assessments. Funding of R&R is essential to ensuring facilities are maintained to support the Agency's Commitment Levels.
- IEUA is committed to ultimately having rates that fully support recurring costs, including O&M,R&R, and debt service costs. Achieving this goal will allow the Agency to fully allocate property tax receipts to support capital investment, including future expansion of existing facilities, and reduce future borrowing costs.
- Fiscal Year 2013/14 is the second year of a three-year rate resolution adopted by the Agency's Board of Directors in February 2012 for the Regional Wastewater and Recycled Water programs. The multi-year rate increases begin to address the net operating structural deficit resulting from rates not fully recovering program costs.

Appendix A.2

Fiscal Responsibility – Budget Planning

Business Goal: *IEUA will safeguard the Agency's fiscal health through organizational efficiency, adoption of balanced multiyear budgets and rates that meet full cost-of-service targets, maintain a high quality credit rating and preserve established fund balance reserves to effectively address short term and long term economic variability. Furthermore, IEUA will provide open and transparent communication to educate the Member Agencies on the fiscal policies of the Agency.*

Objective: *IEUA will accurately forecast future operational, repair & replacement, capital improvement and debt service costs as needed for the creation of multiyear budgets and rate resolutions that create fiscal stabilization for IEUA and the Member Agencies.*

Commitment: *IEUA will provide multiyear forecasts for operational, repair & replacement, capital investment and debt service costs to support the adoption of multiyear budgets and rates enhancing dependability and stability.*

Commitment Level Background

- In addition to the annual adoption of the Operating Budget and TYCIP, the Agency also prepares a Long Range Plan of Finance (LRPF).
- The LRPF aligns the Agency's financial capacity with long-term service objectives. The LRPF uses forecasts to provide insight into the Agency's future financial capacity so that Agency strategies can achieve long term sustainability of financial and service objectives. It provides the most cost-effective funding strategy to support the operations and capital requirements in line with established policies and goals.
- Based upon the LRPF and other financial documents, the Agency is committed to adopting multiyear budgets and rates to facilitate the integration of the financial and strategic planning.
- Adoption of multiyear budgets and rates will provide a more strategic approach to resource allocation, as well as streamline the Agency's rate increase process and provide long term stability.

Appendix A.3

Fiscal Responsibility – Reserves

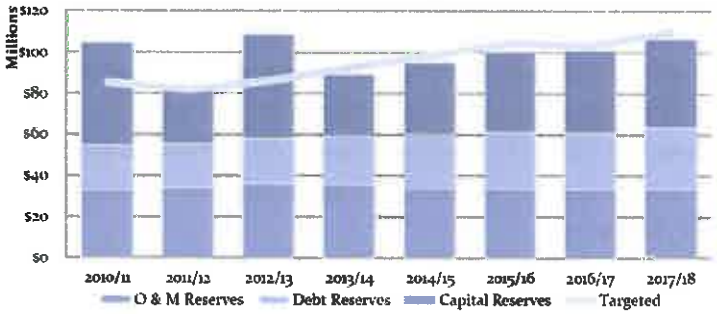
Business Goal: *IEUA will safeguard the Agency's fiscal health through organizational efficiency, adoption of balanced multiyear budgets and rates that meet full cost-of-service targets, maintain a high quality credit rating and preserve established fund balance reserves to effectively address short term and long term economic variability. Furthermore, IEUA will provide open and transparent communication to educate the Member Agencies on the fiscal policies of the Agency.*

Objective: *IEUA will preserve fund reserves that sustain the Agency's long term fiscal health, high quality credit rating and ensure its ability to effectively address economic variability.*

Commitment: *IEUA will adopt financial policies to establish and preserve fund reserves above legally or contractually mandated levels to maintain Commitment Levels. In addition, IEUA will support short and long term funding requirements and sustain the Agency's long term fiscal health and high quality credit rating to reduce future borrowing costs.*

Commitment Level Background

- Fund balance is a measure of the net worth (total assets minus total liabilities) of an organization and is a strong indicator of its financial health. In addition to consolidated fund balance at the Agency-wide level, IEUA also maintains fund balances at the individual program level.
- The fund balance reserves are designated for specific purposes, and include four month operating contingency and debt service as prescribed by the current bond covenants, capital construction, improvement and replacement, rate stabilization, self-insured workers' compensation and liability insurance, retiree medical benefits, and other short term and long term requirements.
- The figure below compares the Agency's actual and projected total fund balance to the "targeted" amount from FYs 2009/10 through 2016/17. Targeted fund balance as defined in the Agency's 2012 LRPF is the sum of 50 percent of operating revenues, and total fund balance reserves designated to support debt service costs.



- An update of the Agency's financial policies adopted in 2005 is planned in 2013 as part of the implementation of a long range financial model. A key objective will be to align reserves and thresholds to meet the Agency's short term and long term needs and develop a funding strategy.

Appendix A.4

Fiscal Responsibility – Creditworthiness

Business Goal: *IEUA will safeguard the Agency's fiscal health through organizational efficiency, adoption of balanced multiyear budgets and rates that meet full cost-of-service targets, maintain a high quality credit rating and preserve established fund balance reserves to effectively address short term and long term economic variability. Furthermore, IEUA will provide open and transparent communication to educate the Member Agencies on the fiscal policies of the Agency.*

Objective: *IEUA will sustain a high quality credit rating and debt service coverage ratio to safeguard the Agency's fiscal health and reduce future borrowing costs.*

Commitment: *IEUA will reinstate the Agency's credit rating to AAA by FY 17/18 to reduce borrowing costs anticipated for the expansion and improvement of existing facilities to meet future growth in the Agency's service area.*

Commitment Level Background

- As part of the 2012 multi-year rate increase, IEUA established minimum debt coverage ratio targets for the upcoming fiscal years. The following table shows the DCR targets, the actual DCR's and forecasted DCR's (F):

DCR	FY 11/12	FY 12/13	FY 13/14	FY 14/15	FY 15/16
	Actual	Projected		Forecasts	
Target		1.43x	1.50x	1.70x	
Actual/Forecast	1.69x	1.92x	1.75x	2.01x	2.18x

- The FY 2011/12 Comprehensive Annual Financial Report (CAFR) reported an Agency DCR of 1.69x and the following credit ratings: AA- (S&P), Aa2 (Moody's), and AA- (Fitch).
- The adopted FY 2014-2023 Ten Year Capital Improvement (TYCIP) includes expansion of the Agency's southern service area facilities in FY 2018/19 where most of the future population growth is anticipated. This expansion is projected to be financed with new debt. Improvement of the Agency's long term credit rating to AAA and DCR to 2.70x (DCR is the ratio of net revenue available to meet debt service costs). In the current market, the differential cost of borrowing between AA and AAA is about 20 basis points. On a $40 million bond issue, this equates to a borrowing-cost-savings of over $2.4 million over a 30 year term.
- Lower borrowing costs equate to lower fees.

Appendix B.1

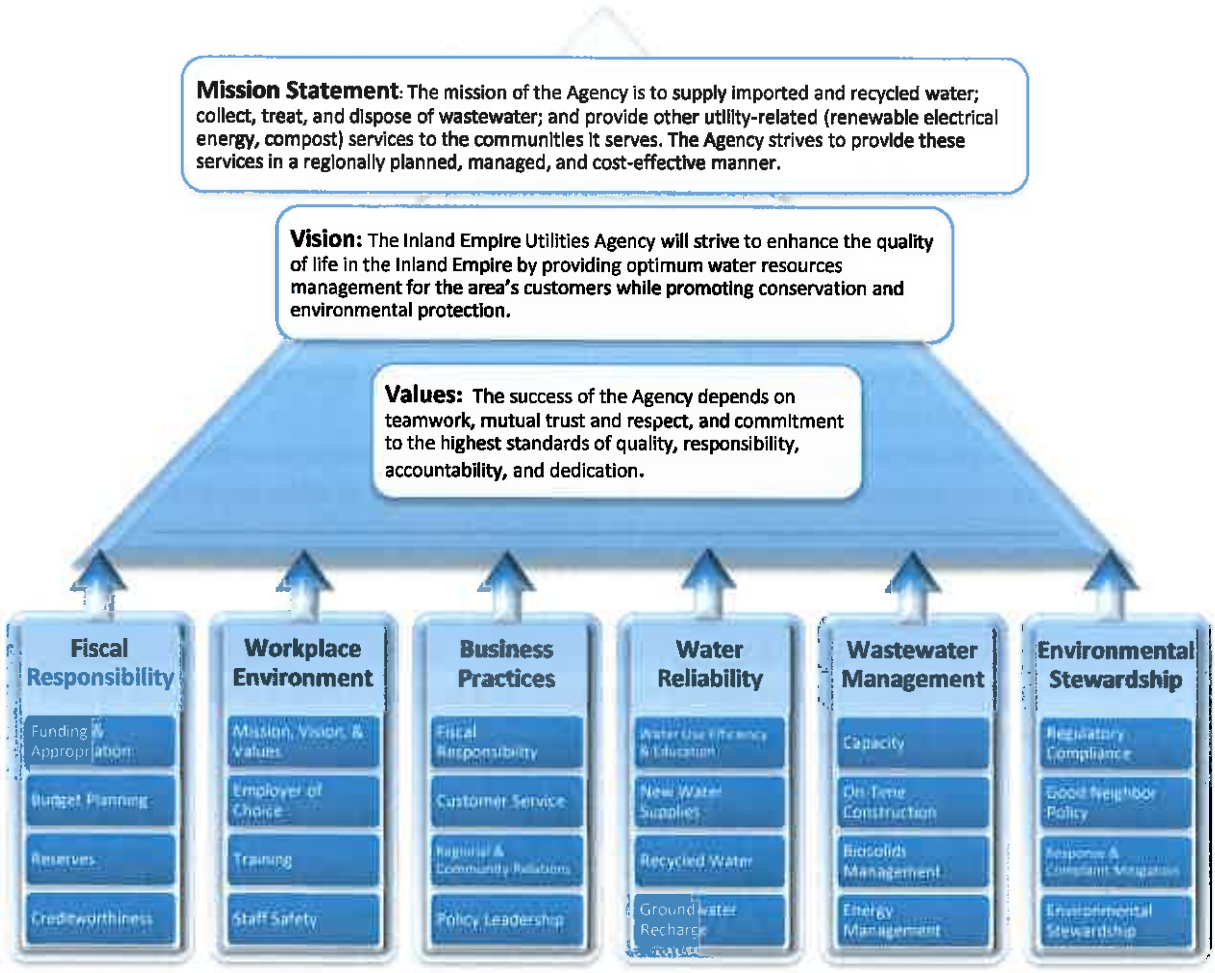
Workplace Environment – Mission, Vision & Values

Business Goal: *IEUA is committed to provide a positive workplace environment by recruiting, retaining and developing a highly skilled team dedicated to the Agency's Mission, Vision and Values.*

Objective: *IEUA will uphold Business Goals, Objectives and Commitment Levels that support and advance the Agency's Mission, Vision and Values.*

Commitment: *IEUA will maintain the highest standard of ethical conduct from all Agency staff by promoting values of prudent leadership, integrity, collaboration, open communication, respect, accountability, high quality, passion and efficiency to support the Agency's Mission and Vision.*

Commitment Level Background



- **Management will ensure that principles, policies and practices support the Business Goals, Mission, Vision and Values of the Agency.**

Appendix B.2

Workplace Environment – Employer of Choice

Business Goal: *IEUA is committed to provide a positive workplace environment by recruiting, retaining and developing a highly skilled team dedicated to the Agency's Mission, Vision and Values.*

Objective: *IEUA will be an Employer of Choice.*

Commitment: *IEUA will provide a work environment that will attract and retain highly skilled, motivated, professional and committed employees.*

Commitment Level Background

- IEUA will recruit, retain, and promote a diverse and qualified workforce committed to the Agency's Mission, Vision and Values. This will be achieved by utilizing modern recruitment practices that provide flexible and responsive recruiting solutions to assist with filling positions in a timely and effective manner.
- IEUA will encourage and maintain a highly motivated and trained staff by designing, implementing, and supporting a learning environment which encourages growth and development of Agency staff.
- IEUA will strive to align project/work tasks with the skills of its employees to create a rewarding and successful work environment.
- IEUA will create a culture that recognizes a dedicated staff and attracts qualified individuals through the use of creative communication methods and continued education of available employee benefits to increase knowledge of these programs and services. In addition, IEUA will update the Agency's various award recognition programs to reflect the Agency's cost containment strategies.
- IEUA will reduce stress from work-life imbalance by promoting partnerships, cross training, shared responsibilities, and a culture of teamwork to allow any and all employees recuperative time away from work activities.
- IEUA will inspire trust and confidence in Management by: clearly defining the Agency's Mission/Vision/Values, by creating Business Goals that support the Mission/Vision/Values, outlining a Strategic Plan to achieve those goals, communicating how the Agency is accomplishing these goals, and effectively linking these goals to each employee objectives and performance.

Appendix B.3

Workplace Environment – Training

Business Goal: *IEUA is committed to provide a positive workplace environment by recruiting, retaining and developing a highly skilled team dedicated to the Agency's Mission, Vision and Values.*

Objective: *IEUA will provide employees with state-of-the-art skills and knowledge to meet current and anticipated Agency needs.*

Commitment: *IEUA will facilitate and provide opportunities for staff to further their personal/professional development in support of maintaining a highly skilled workforce.*

Commitment Level Background

- All Agency employees have access to online training:
  - Leadership, Team Building, and Mentoring Skills Training
  - Microsoft Office Training
  - OSHA Required Safety Trainings

  Employees are provided with login information, which allows the employee to perform trainings at the most optimum time to fit their daily schedule.
- Selected Agency employees have the ability to attend onsite classroom trainings. The following onsite classroom trainings are going to be provided for Fiscal Year 2013/2014: "7 Habits of Highly Effective People", (4) specialized onsite workshops, (12) 4-hour Microsoft Office trainings and policies and procedures training.
- Three types of offsite training are going to be provided for Fiscal Year 2013/2014:
  - Southern California Local Government Supervisory Program – This is a 3 day training course to provide skills for new supervisors.
  - Southern California Local Government Leadership Academy – This is a 7 day training program for Managers provided by current or retired City Managers.
  - Liebert Cassidy Whitmore Training – Legal Counsel provides workshops to Managers, Supervisors, and aspiring Supervisors on relational issues.
- IEUA also provides tuition reimbursement up to $2,500 per year for employee educational expenses that increase their job knowledge and skills. Additionally, certification and degree incentives are awarded to employees who earn Associates, Bachelor's and Master's Degree, and specific program certification.
- Each Agency Department has training budgets to perform trainings on specialized skill sets for their employees.

Appendix B.4

Workplace Environment – Staff Safety

Business Goal: *IEUA is committed to provide a positive workplace environment by recruiting, retaining and developing a highly skilled team dedicated to the Agency's Mission, Vision and Values.*

Objective: *IEUA will promote and ensure a safe and healthy work environment to protect employees and Stakeholders.*

Commitment: *IEUA will have no more than 1 day of lost time due to work related illness or injury per 1,000 days worked.*

Commitment Level Background

- IEUA will sustain a clean, safe, and healthy working environment for all Agency employees at all facilities. This will be achieved by:
  - Administering and monitoring required safety and regulatory trainings;
  - Conducting annual intra-department safety audits; and
  - Conducting annual emergency response drills, such as HAZWOPER training, fire drills, and earthquake drills
- IEUA has maintained an outstanding employee workplace injury record. For Fiscal Year 2012/2013 the Agency had no lost time due to work related illness or injury. Most employee workplace injury events that occur at IEUA are typically due to cuts, scrapes, and bruises. Rarely does a workplace injury incident result in lost time.
- Occupational Safety and Health Administration (OSHA) categorizes work related illnesses or injuries by: recordable cases (a case that resulted in medical treatment beyond 1st aid, loss of consciousness, or a significant injury diagnosed by a physician), transfers or restrictions (a case that resulted in an employee not being able to perform their job duties; however, their job duties were modified to meet the requirement of the illness or injury), lost time (a case that resulted in an employee not being able to work for one day after the date of injury), and death. For 2010 through 2012, IEUA had the following work injury statistics:

By Case

Calendar Year	Recordable Cases	Transfers or Restrictions	Lost Time	Deaths
2010	9	6	1	0
2011	12	6	1	0
2012	13	12	0	0

By Days

Calendar Year	Transfers or Restrictions	Lost Time
2010	81	180
2011	235	56
2012	390	0

Appendix C.1

Business Practices – Efficiency & Effectiveness

Business Goal: *IEUA is committed to applying ethical, fiscally responsible and environmentally sustainable principles to all aspects of business and organizational conduct.*

Objective: *IEUA will promote standards of efficiency and effectiveness in all Agency business practices and processes.*

Commitment: *IEUA will integrate **Lean** techniques to evaluate current business practices and processes and identify ways to improve the quality, cost and value of the services the Agency provides to the Member Agencies and the Public.*

Commitment Level Background

- IEUA is committed to providing its Stakeholders with high quality service in a cost effective, regionally planned manner. Continued assessment and improvement of our business processes and practices is essential to ensure optimization of efficiency and effectiveness.
- ***Lean*** was originally developed to reduce waste in manufacturing and evolved from Total Quality Management (TQM); the manufacturing practices of the Toyota Motor Corporation. However, rather than focusing on mass production, ***Lean*** focus on the elimination of waste while providing the same, or enhanced, value to the customer.
- Application of ***Lean*** techniques will help define key performance indicators (KPIs) to more effectively measure, monitor, and realign processes to meet the Agency's business goals and objectives.
- In April 2013, the second phase of the Agency's Enterprise Resource Planning (ERP) business system, first implemented in 2007, went live to streamline the recording, tracking and reporting of employee and payroll data. This enhancement helps support the Agency's efficiency and effectiveness initiative by eliminating redundant systems, enhancing data integrity, and supporting more transparent and timely reporting.
- The Agency's ERP system and integrated format also helps support the transition from a reactive to a condition based monitoring (CBM) maintenance philosophy strategy; a key initiative of the Agency. Under CBM, the 45 percent of resources currently allocated to reactive maintenance (unplanned or emergency repairs) will shift to support a predictive strategy denoted by improved planning and scheduling and more effective diagnosis of equipment functionality.
- The same integrated approach is being applied to the Agency's existing Supervisory Control & Data Acquisition (SCADA) System network which is currently comprised of a wide variety of equipment and applications located throughout the various facilities. Significant effort went into documenting the current state and analyzing the Agency's SCADA systems resulting in the 2012 Board adoption of the Recycled Water, Groundwater Recharge and Facilities SCADA Master Plans.

Appendix C.2

Business Practices – Customer Service

Business Goal: *IEUA is committed to applying ethical, fiscally responsible and environmentally sustainable principles to all aspects of business and organizational conduct.*

Objective: *IEUA will provide excellent customer service that is cost effective, efficient, innovative and reliable.*

Commitment: *IEUA will respond to and meet the Member Agencies expectation for enhanced value added services. IEUA will solicit Stakeholder feedback on performance and goal alignment on an annual basis.*

Commitment Level Background

- IEUA is committed to providing excellent customer service by:
  - Providing the primary services of the Agency – water management, wastewater management, biosolids management, and other resources management disciplines.
  - Ensuring that these services are offered in an effective, sustainable and cost efficient method.
  - Providing clear and direct responses to customer suggestions, inquiries, and complaints.
  - Maintaining open sources of communication to ensure stakeholder's interests are discussed and opportunities are pursued.
- IEUA will optimize customer service by ensuring alignment and management of core procurement business functions, roles and responsibilities.
- Media relations will continue to be cultivated and press releases will remain a major effort along with the Agency internal and external newsletter and updates.
- Social networking and website maintenance will remain a top priority for Agency outreach and communication initiatives.
- IEUA will collaborate with all Stakeholders to ensure open communication and discussion of issues and policies that affect the IEUA Service Area, (i.e. topics such as imported water rates and deliveries, development and availability of local water supplies.)

Appendix C.3

Business Practices – Regional Leadership & Community Relations

Business Goal: *IEUA is committed to applying ethical, fiscally responsible and environmentally sustainable principles to all aspects of business and organizational conduct.*

Objective: *IEUA will cultivate a positive and transparent relationship with its Stakeholders to enhance quality of life, preserve our heritage and protect the environment.*

Commitment: *IEUA will partner with its Stakeholders on common issues to create and implement integrated and innovative solutions, minimize duplication of efforts and support education and outreach to the Public. Furthermore, IEUA will incorporate Member Agencies and Regional Water Agencies into various IEUA related projects and programs to ensure that a transparent and broader regional representation is achieved.*

Commitment Level Background

- IEUA will promote and sustain effective communication between the Agency and its Stakeholders through use of various methods, including frequent meetings/workshops, newsletters and electronic media.
- Incorporating the Agency's branding initiatives, staff will create a recognizable standard to educate the public about water recycling, water conservation and capital infrastructure/replacement investments.
- IEUA is committed to taking actions that consider the cost, quality and value of service for communities we serve.
- The Agency strives to foster open, positive and collaborative relationships with all Stakeholders to meet the water needs of the Region now and in the future.

Appendix C.4

Business Practices – Policy Leadership

Business Goal: *IEUA is committed to applying ethical, fiscally responsible and environmentally sustainable principles to all aspects of business and organizational conduct.*

Objective: *IEUA will effectively advocate, campaign and guide the development of policies and legislation that directly benefit the Region IEUA serves.*

Commitment: *IEUA will promote a collaborative approach for the development of positions on policies, legislation and regulations that impact Agency policy objectives.*

Commitment Level Background

- IEUA will provide leadership on legislative solutions and regulatory standards for water reliability, water quality, energy management, wastewater collection, treatment and reuse, organics management, and stormwater and watershed management.
- IEUA will continue to effectively seek State and Federal grant funding for Agency and regional projects that achieve IEUA's policy objectives; (e.g. the Recharge Master Plan, Renewable Energy, the Optimum Basin Management Plan, and the Recycled Water Program).
- IEUA will actively research, monitor, review, and adopt positions on federal and state legislation that benefit the IEUA's and the Member Agencies policy objectives. This information will be shared and discussed with all Stakeholders.
- IEUA will support the development of public affairs, public awareness, community education and outreach, media relations and legislative programs on issues that address the policy objectives of IEUA. Open communication and collaboration among the Agency and its Stakeholders is of prime importance.
- IEUA will work with Member Agencies to formulate methods and approaches for addressing community and agency concerns and ensure that concerns, needs, and requests are responded to in a timely manner.
- IEUA will actively review and provide recommendations on procedures and processes to improve the efficiency, cost effectiveness, customer responsiveness, quality and environmental sustainability of Agency programs and projects.
- IEUA will coordinate intergovernmental activities with Stakeholders, industry associations, and regulatory agencies and will appear before local and state bodies on public affairs and other matters.
- IEUA will comply with the Brown Act requirements, and other laws pertaining to special districts.
- IEUA will navigate and implement the regulatory changes as a result of pension reform.

Appendix D.1

Water Reliability – Water Use Efficiency & Education

Business Goal: *IEUA is committed to the development and implementation of an integrated water resource management plan that promotes cost-effective, reliable, efficient and sustainable water use along with economic growth within the IEUA Service Area.*

Objective: *IEUA will promote education and water use efficiency to enhance water supplies within the Region and exceed State goals for reductions in per capita water use within the IEUA Service Area.*

Commitment: *IEUA will promote to reduce water use in the IEUA Service Area to less than 200 gallons per capita per day (gpcd) by 2018.*

Commitment Level Background

- The Water Conservation Act of 2009 (SBX 7-7) requires urban retail water suppliers to continue demand management measures to reduce water use, as measured by gpcd, by 10% by December 31, 2015 and by 20% by December 31, 2020 to maintain eligibility to receive state water management grants and loans.
- The baseline water use for the region from 1999 - 2008 was calculated to be 251 gpcd.
- The reduced water use targets can be achieved through: water use efficiency (WUE) active programs, WUE passive policy initiatives, and recycled water use. The current goal of the Urban Water Management Plan and the Water Use Efficiency Business Plan is to achieve the 20 x 2020 per capita water use reduction in the following manner:

	2015 Reduction	2020 Reduction
Projected Reduction from WUE Activities	5 gpcd	13 gpcd
Projected Reduction from Recycled Water Use	38 gpcd	45 gpcd
TOTAL Projected Reduction	**43 gpcd**	**58 gpcd**
10 Year Baseline	**251 gpcd**	
Target	226 gpcd	201 gpcd
Projected Achievement	208 gpcd	193 gpcd

- Additional per capita water use reductions can be achieved within the IEUA Service Area. IEUA's policy goal is to strive to achieve the 20 by 2020 reduction through conservation measures alone. IEUA will collaborate with all Member Agencies to review and update the Water Use Efficiency Business Plan to achieve this goal and will support the reduction of water use below 200 gpcd by 2018.
- IEUA will continue to expand regional water efficiency educational, outreach and rebate programs.

Appendix D.2

Water Reliability – New Water Supplies

Business Goal: *IEUA is committed to the development and implementation of an integrated water resource management plan that promotes cost-effective, reliable, efficient and sustainable water use along with economic growth within the IEUA Service Area.*

Objective: *IEUA will support the Member Agencies and Regional Water Agencies with the development of reliable, drought-proof and diverse local water resources and Supplemental Water supplies in order to reduce dependence on Imported Water supplies.*

Commitment: *IEUA will promote reducing demand for Imported Water during dry and normal years and storing Imported Water into the Chino Groundwater Basin during wet years. In addition, IEUA will support maximizing the beneficial use of existing water infrastructure, while meeting future increased demands through investment in local water resources, Supplemental Water supplies and conservation efforts.*

Commitment Level Background

- As part of the 2010 Urban Water Management Plan (UWMP), IEUA has set a goal to maximize use of local water supplies and minimize the need for Imported Water, especially during dry years and other emergency shortages from Metropolitan Water District (MWD).
- Unless additional water reductions are achieved or new local water supplies are developed, current projections show that regionally an additional 10,000 AFY of costly Imported Water will be required by year 2025.
- It is understood that future Imported Water reliability will be lower and costs will be higher. Over the next ten years, it is estimated that the IEUA/Member Agencies will purchase $600 million in Imported Water. A 10,000 AFY water supply shift from Imported Water would reduce MWD purchases by approximately $100 million over the same ten year period.
- IEUA is in the process of preparing an Integrated Resources Plan (IRP), which will provide an achievable long-term strategy to meet current and future water needs. The IRP will evaluate existing water supplies and demands, forecast future water supplies and demands, and evaluate additional water efficiency and alternative sources of new water supply that will reduce future reliance on Imported Water.

Appendix D.3

Water Reliability – Recycled Water

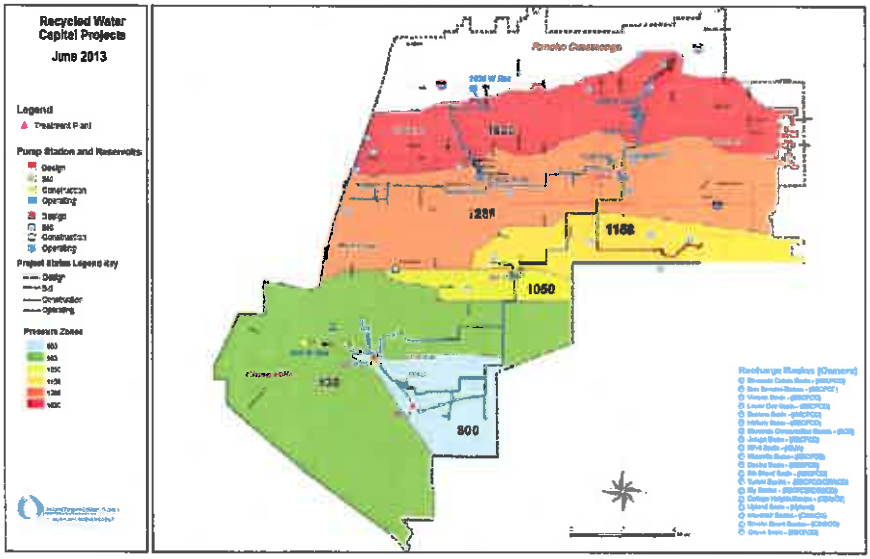
Business Goal: *IEUA is committed to the development and implementation of an integrated water resource management plan that promotes cost-effective, reliable, efficient and sustainable water use along with economic growth within the IEUA Service Area.*

Objective: *IEUA will support maximizing beneficial reuse of recycled water to enhance reliability and reduce dependence on Imported Water.*

Commitment: *IEUA will complete the development of recycled water infrastructure and will support the Member Agencies in achieving reuse of 50,000 AFY by 2025.*

Commitment Level Background

- IEUA has a current wastewater flow of approximately 60,000 AFY. Based upon wastewater forecasts and potential future interconnections, IEUA is targeting a reliable recycled water supply of 50,000 AFY for direct use and groundwater recharge by 2025.
- As outlined in the Recycled Water Business Plan, IEUA is in the process of expanding recycled water infrastructure to meet the 50,000 AFY delivery target. IEUA will release the Recycled Water Plan Update in 2014.
- In addition, the IRP will have specific focus on the development of additional direct recycled water connections and a specific emphasis on recycled water interties and enhanced groundwater recharge capabilities.



- Estimated Fiscal Year 2012/2013 recycled water delivery for direct use and groundwater recharge is 31,500 AFY. Increasing recycled water deliveries to 50,000 AFY is key to meeting the other three Objectives/Commitment Levels (Water Use Efficiency & Education, New Water Supplies, and Groundwater Recharge) for the Water Reliability Business Goal.

Appendix D.4

Water Reliability – Groundwater Recharge

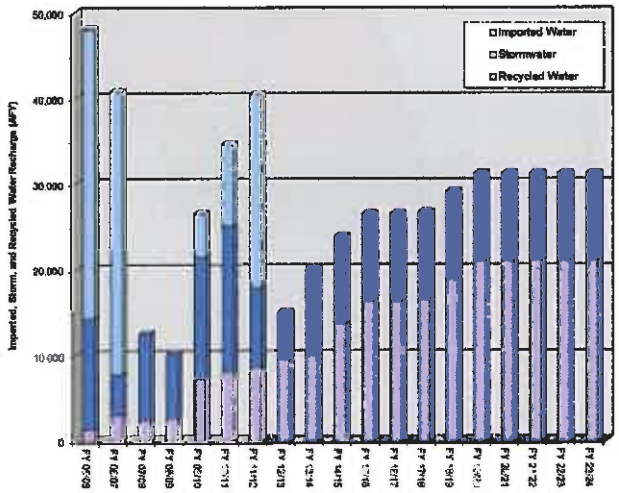
Business Goal: *IEUA is committed to the development and implementation of an integrated water resource management plan that promotes cost-effective, reliable, efficient and sustainable water use along with economic growth within the IEUA Service Area.*

Objective: *IEUA will maximize all sources of groundwater recharge.*

Commitment: *IEUA will support the recharge of all available stormwater and maximize the recharge of recycled water within the Chino Groundwater Basin. Furthermore, IEUA will pursue the option to purchase and store cost-effective surplus Imported Water supplies.*

Commitment Level Background

- Groundwater currently comprises about 60% of the water supply needed to meet urban water demand for the region.
- The Chino Groundwater Basin contains approximately 5 million AF of water storage with an additional 1 million AF in unused storage capacity. The current safe-yield of the Basin is 145,000 AFY and declining. Historically, discounted Imported Water has been available and utilized to recharge the Basin when pumping has exceeded the safe-yield. The MWD discounted replenishment water was discontinued in 2012, changing the economic impacts of over-production of groundwater.
- The Chino Basin Groundwater Recharge Program developed new sources of replenishment water: local stormwater and recycled water.
- IEUA has been shifting the need to buy Imported Water to meet replenishment needs, to the cost-effective use of stormwater and recycled water.



- IEUA will continue to partner with CBWM to maximize the recharge of all available stormwater and recycled water and will only recharge imported water proactively when economically viable or as necessary to meet replenishment requirements.

Appendix E.1

Wastewater Management – Capacity

Business Goal: *IEUA systems will be master planned, managed and constructed to ensure that when expansion planning is triggered, designs/construction can be completed to meet regulatory/growth needs in an expeditious, environmentally responsible and cost effective manner.*

Objective: *IEUA will maintain capacity within systems and facilities to meet essential service demands and to protect public health and environment.*

Commitment: *IEUA will ensure that systems are managed and constructed so that 90% of capacity is never exceeded.*

Commitment Level Background

- Economic development of the region is dependent upon well planned public works infrastructure in place prior to land development. Wastewater collection and treatment are critical components of this infrastructure.
- IEUA has and will continue to utilize operational flexibilities provided through flow diversion and bypass systems to maximize beneficial use and capacity of the integrated collection system, wastewater treatment system, recycled water system, and organics management system.
- For Fiscal Year 2012/2013, all four IEUA Wastewater Recycling Facilities have a Percent Capacity Utilization between 60% - 70%. The Ten-Year Percent Capacity Utilization projection shows slight increases for RP-1, RP-4, and CCWRF; however, RP-5 has a substantial increase to 95%:

	FY 2012/13 Actual*			FY 2022/23 Projection		
Regional Water Recycling Plant	Treated Influent Flow	Plant Rated Capacity	Percent Capacity Utilization	Treated Influent Flow	Plant Rated Capacity	Percent Capacity Utilization
RP-1	27.7	44.0	63%	30.4	44.0	69%
RP-4	9.8	14.0	70%	10.8	14.0	77%
CCWRF	7.4	11.4	65%	8.0	11.4	70%
RP-5	10.5	16.3**	64%	15.5	16.3	95%
IEUA Total	55.3	85.7	65%	64.7	85.7	76%

- For Fiscal year 2013/2014, IEUA will be updating the Facilities Master Plan, which will considered future growth patterns, alternatives for expansion of the Wastewater Recycling Facilities, and impacts to the Recycled Water and Organics Management systems.
- IEUA will ensure that all planning, design, construction, and start-up activities for treatment system expansions are scheduled and completed before the 90% Percent Capacity Utilization is reached.

Appendix E.2

Wastewater Management – On-Time Construction

Business Goal: *IEUA systems will be master planned, managed and constructed to ensure that when expansion planning is triggered, designs/construction can be completed to meet regulatory/growth needs in an expeditious, environmentally responsible, and cost effective manner.*

Objective: *IEUA will ensure capital projects are designed and implemented in a timely and economically responsible manner.*

Commitment: *IEUA will design and construct facilities through efficient project management to ensure that 80% of projects are completed on schedule and 90% of projects are on budget.*

Commitment Level Background

- IEUA is committed to ensuring that projects are completed: on-time to obtain the beneficial use of required equipment as required by Operations, Maintenance, and Compliance, and on budget to contain costs and accurately project Agency future expenditures.
- Constructability reviews, which will include technical input from Construction, Operations, Maintenance, and DCS staff, will be included as a standard design element with the goal of reducing the number of change orders experienced during construction.
- Construction Management staff have received schedule training to allow for detailed reviews of contractor construction schedules. Staff will effectively analyze contractor schedules to highlight deficiencies in critical paths that may result in extended project schedules.
- At the completion of a project pre-design report (PDR), budgets will be created with well-defined scopes of work that include all project costs: design/construction consultants, construction contract award, and all Agency labor costs (Engineering, Construction Management, Operations, Maintenance, DCS, Finance, and Accounting).
- A project will be deemed on budget if all design, construction, and start-up activities are completed and expenditures on the project are between 90-100% of the project budget.
- Schedules for duration of design and construction/start-up will be created at the time the project budget is created (completion of the PDR).
- The Engineering schedule metric will be based upon the project design kickoff meeting and the Award of Construction Contract. The Engineering activities will be deemed on schedule if the duration between the Award of Construction Contract and design kickoff meeting is +/- 10% of the initial estimate.
- The Construction Management schedule metric will start at the preconstruction meeting and conclude with the Operations acceptance of the project. The Construction activities will be deemed on schedule if the duration between the project acceptance and preconstruction meeting is +/- 10% of the initial estimate.

Appendix E.3

Wastewater Management – Biosolids Management

Business Goal: *IEUA systems will be master planned, managed and constructed to ensure that when expansion planning is triggered, designs/construction can be completed to meet regulatory/growth needs in an expeditious, environmentally responsible, and cost effective manner.*

Objective: *IEUA will manage all Agency produced biosolids in a compliant, fiscally prudent and environmentally sustainable manner.*

Commitment: *IEUA will ensure that 95% of the Inland Regional Compost Facility's capacity is utilized, all biosolids produced by IEUA are treated at IERCF, Agency solids generation is minimized through efficient dewatering operations, and all compost is marketed for beneficial use.*

Commitment Level Background

- In 2001, the Chino Basin Organics Management Business Plan set a goal for the region to divert organic solids from landfills and to consume locally generated recycled organic material. Under a Joint Powers Agreement, IEUA in partnership with Los Angeles County Sanitation District constructed the Inland Empire Regional Composting Facility (IERCF) to meet this goal.
- IERCF has an operating capacity of approximately 400 wet tons per day for wastewater biosolids. IEUA's owned portion of this operating capacity is equivalent to 50% or approximately 200 wet tons per day of biosolids material. IEUA currently generates approximately 190 wet tons per day of biosolids.
- IEUA's goal is to send all biosolids generated at its wastewater facilities to IERCF; however, IERCF requires one shutdown day per month to perform preventative maintenance on operating equipment. On maintenance days, IEUA will utilize the use of storage at RP-1 and RP-2, while maintaining contracts with third party composting facilities as a contingency.
- IEUA supports reducing solids generation at its wastewater facilities. Currently, start-up activities for the new RP-1 Centrifuge Dewatering Building are commencing and full operation should be achieved by the end of 2013. The new centrifuges will increase the biosolids total solids percentage from the current 16% up to 24%. This will decrease the IEUA biosolids generation by approximately 50 wet tons per day, resulting in excess IEUA capacity at IERCF.
- All biosolids and wood amendment sent to IERCF are processed and treated to produce a Class A exceptional quality compost. IERCF compost, which is created and marketed as SoilPro Premium Compost, is beneficially used by contracting agencies and sold as a soil conditioner that improves water retention, resulting in better plant growth and reduces water requirements.

Appendix E.4

Wastewater Management – Energy Management

Business Goal: *IEUA systems will be master planned, managed and constructed to ensure that when expansion planning is triggered, designs/construction can be completed to meet regulatory/growth needs in an expeditious, environmentally responsible, and cost effective manner.*

Objective: *IEUA will optimize facility energy use and effectively manage renewable resources to achieve peak power independence, contain future energy costs, achieve statewide renewable energy, distributed generation and greenhouse gas reduction goals, and provide for future rate stabilization.*

Commitment: *IEUA will achieve peak power independence by 2020 through the implementation of renewable projects, energy management agreements and operational efficiencies.*

Commitment Level Background

- IEUA facilities currently use approximately 75,000 MWh of electricity annually at an annual cost of approximately $9,000,000. This is 26% of the non-labor Operations and Maintenance budget and the highest, non-labor cost of the Agency.
- The region's population is forecasted to increase by 50% by 2030, which will further increase demand and cost for electricity. Electricity prices are volatile; however, historically, the average annual increase has been between 4% - 6%.
- IEUA has created a preliminary Energy Management Plan to reach energy independence from the grid during peak energy use/pricing period (noon – 6:00 PM) by 2020 through increased energy efficiency, increased on-site energy generation, a diversified energy portfolio and energy demand response.
- Through Power Purchase Agreements (PPA's), IEUA has expanded its renewable energy portfolio to include 3.5 MW of solar, 1.0 MW of wind, and 2.8 MW of biogas fuel cell production.
- IEUA will develop an updated energy management plan that will focus on integrating energy efficiency, demand response, and renewable energy generation programs to contain future energy costs and contribute to achieving statewide renewable energy and greenhouse gas reduction goals.

Appendix F.1

Environmental Stewardship – Regulatory Compliance

Business Goal: *IEUA is committed to the responsible use and protection of the environment through conservation and sustainable practices.*

Objective: *IEUA will comply with all federal, state and local laws at each Agency facility.*

Commitment: *IEUA will have no more than 2 notices of violation annually from the State Water Resources Control Board, Air Quality Management District, or Non-Reclaimable Waste System for all Agency owned and operated facilities.*

Commitment Level Background

- IEUA has set Key Performance Indicators (KPI) at each Agency facility to monitor compliance with all regulations stipulated in the NPDES, AQMD, and NRWS permits.
- When compliance KPI's are exceeded, incident reports are created to outline the facts and causes of any noncompliant event. The incident reports are reviewed and corrective action is taken to prevent future KPI noncompliance.
- It is up to the discretion of AQMD to issue NOV's; however, in general a NOV is issued for: operation of equipment without a valid permit to operate, excessive exceedance of a permit stipulated emissions requirement, or operations resulting in a nuisance to the public.
- For Calendar Year 2012, IEUA had the following AQMD notices of violation:

Date	Incident	Comments
9/5/12	Ammonia Tank Level Exceedance (greater than permitted capacity)	NOV issued (item resolved)
9/5/12	Unpermitted Pilot Unit Installation	NOV issued (item appealed)

- SWRCB defines violations as "serious" and "non-serious" and each type of violation may be subject to a minimum liability penalty (MMP). In addition, sewage spills, including large recycled water spills, are subject to administrative civil liability penalties (ACL). Any MMP or ACL would be considered a notice of violation. For Calendar Year 2012, IEUA had the following SWRCB incidents; however, no incidents were deemed serious:

Date	Incident	Comments
1/10/12	Turner Basin RW Release	
4/3/12	SB Lift Station Sewer Overflow	Spill was contained and cleaned before reaching surface water
4/12/12	CalPoly Pomona RW Release	
5/8/12	Philadelphia NRW Sewer Overflow	Spill was contained and cleaned before reaching surface water
12/19/12	CCWRF 7-d Median Coliform	Investigation identified issue as sample contamination.

Appendix F.2

Environmental Stewardship – Good Neighbor Policy

Business Goal: *IEUA is committed to the responsible use and protection of the environment through conservation and sustainable practices.*

Objective: *IEUA will control odors at all Agency facilities for the purpose of improving the environment and being a good neighbor to the local community.*

Commitment: *IEUA will perform a quarterly odor monitoring assessment to develop actual and acceptable baseline odor thresholds. Acceptable baseline thresholds will be used to measure treatment plant performance and drive necessary capital improvements.*

Commitment Level Background

- IEUA facilities and processes have the potential to produce odors.
- Each facility is operated under AQMD permits that include odor control requirements.
- AQMD has a rule that prohibits odor impacts to the community.
- Substantial funding has been made into odor control technologies at Agency Facilities.
- IEUA routinely performs odor circuits around each facility to measure for hydrogen sulfide. Hydrogen sulfide has an odor described as smelling similar to rotten eggs and is generally used as a surrogate for wastewater odor presence.
- IEUA will review extending similar odor circuits to all Agency Facilities and will review expanding measurements to include ammonia (pungent smell) and mercaptans (rotten cabbage smell).
- In addition, IEUA will perform a quarterly odor profile analysis at each of the treatment facilities. An odor profile analysis is completed by inviting participants from Member Agencies and IEUA staff to survey facility odors and grade them by intensity (week to strong) and characteristic (rotten eggs, fishy, rotten cabbage, etc.). See following diagram for example sample locations.

Regional Plant No. 1 Regional Plant No. 5

- Based upon the odor circuits and odor profile analysis, odor baselines will be created and thresholds will be set for each facility. An odor control plan will be created to determine any capital expenditures required to meet the established thresholds. Based upon the required capital expenditures, the odor thresholds may be adjusted to provide the most efficient odor control strategy.

Appendix F.3

Environmental Stewardship – Response & Complaint Mitigation

Business Goal: *IEUA is committed to the responsible use and protection of the environment through conservation and sustainable practices.*

Objective: *IEUA will investigate and appropriately respond in a timely manner to any environmental issue or complaint received at any Agency Facility.*

Commitment: *IEUA will immediately respond to any event that threatens public health and safety and will respond within 5 working days to any nonemergency complaint or suggestion.*

Commitment Level Background

- Generally, all Agency facilities have Operations & Maintenance staff onsite 10 hours per day, 7 days a week to respond to any compliance or public health & safety events. During hours when facilities are unmanned, Operations & Maintenance staff are on-call and receive alarm notifications for any compliance or public health and safety event.
- For Calendar Year 2012, IEUA had 17 onsite compliance related incidents, 2 emergency response events due to recycled water releases, and 2 response events to sanitary sewer overflows. Each event was responded to immediately.
- For Calendar Year 2012, IEUA received 4 odor complaints from members of the Public. Each complaint was thoroughly investigated by Agency staff and incident reports were created. Most complaints cannot be substantiated; however, the Agency has modified operations in an attempt to reduce the potential of creating odors.

Appendix F.4

Environmental Stewardship – Environmental Responsibility

Business Goal: *IEUA is committed to the responsible use and protection of the environment through conservation and sustainable practices.*

Objective: *IEUA will strive to implement actions that enhance or promote environmental sustainability and the preservation of region's heritage.*

Commitment: IEUA will consider and assess environmental sustainability, public use and heritage preservation options for all of its programs and projects.

Commitment Level Background

- IEUA constructed a new headquarters building and committed to design standards that ensured prudent use of natural resources and proactive conservation measures. This project has enabled the Agency to achieve recognition and leadership in support of building a sustainable environment. This recognition was presented to the Agency through the U.S. Green Building Council's Leadership in Energy and Environmental Design (LEED™) program earning the "Platinum" level rating by meeting specific requirements. IEUA will take actions to sustain the Platinum LEED status of its facilities.
- In 2007, IEUA opened the Chino Creek Wetlands and Educational Park, one portion of the overall efforts being taken in the watershed under the Chino Creek Integrated Plan (CCIP). The general function of the CCIP is to focus planning attention on the lower Chino Creek area of the Prado Basin in a process of preserving and restoring the Prado Basin, maximizing value to the community, improving water-quality and flood control, and providing habitat restoration, recreation, water conservation and public education. The park is open to the public during daytime hours and consists of: 22,000 various drought tolerant plants, 1.7 miles of nature trails, 22 acres of habitat, and 6 ponds.
- The 1630 West Recycled Water Pump Station was constructed at Vineyard Park in Ontario. As part of the project, new park bathroom facilities were constructed and improvements of the parking lot, electrical, and irrigation systems were completed providing benefit to the local residents.
- IEUA will expand its environmental and education programs including: annual Earth Day activities, Garden in Every School and Inland Empire Garden Friendly. IEUA will collaborate with all Stakeholders (including Cal State San Bernardino Water Resource Institute and Home Depot) on the Inland Empire Garden Friendly program to promote sustainable environmental principles and incorporate the history and tradition of the Region.
- IEUA completed construction of the wetlands mitigation area in Basin 2 of the RP-3 Recharge Facility in July 2004. Basins 1, 3 and 4 are used actively for groundwater recharge, while most of Basin 2 is occupied by the mitigation wetlands. The vegetation was planted and the irrigation system installed in May 2005.

Appendix B

Carbon Management Plan

CARBON MANAGEMENT PLAN

INTRODUCTION

IEUA's Business Goals discuss the need for effective energy management in order to meet California's Greenhouse Gas (GHG) reduction goals. This Carbon Management Plan intends to provide a baseline for future reduction goals and introduce specific carbon management efforts that will be further developed and expanded upon in successive plans. Effective carbon management is instrumental in sustainably and efficiently treating wastewater and providing recycled water for the Chino Basin.

GHG REPORTING

IEUA became a member of The Climate Registry (TCR) in 2013. TCR membership is voluntary, and requires an annual inventory of GHG emissions. IEUA's 2013 GHG emissions were reported, but not verified by an independent third party. IEUA has committed to pursue verification for the 2014 reported GHG emissions.

Figure 1 shows the breakdown of IEUA's 2013 GHG emissions by source. A more detailed categorization is shown in Table 1. GHG emissions reported through TCR are divided into Scope 1 (direct emissions) and Scope 2 (indirect) emissions. Approximately 21 percent of IEUA's GHG emissions are emitted directly from fossil fuel combustion at IEUA facilities (Scope 1). The remainder of the inventory is made up of indirect electricity purchases, emissions from mobile combustion related to biosolids hauling, or emissions from biogenic sources (Scope 2).

FIGURE 1. IEUA'S 2013 GHG EMISSIONS BY SOURCE

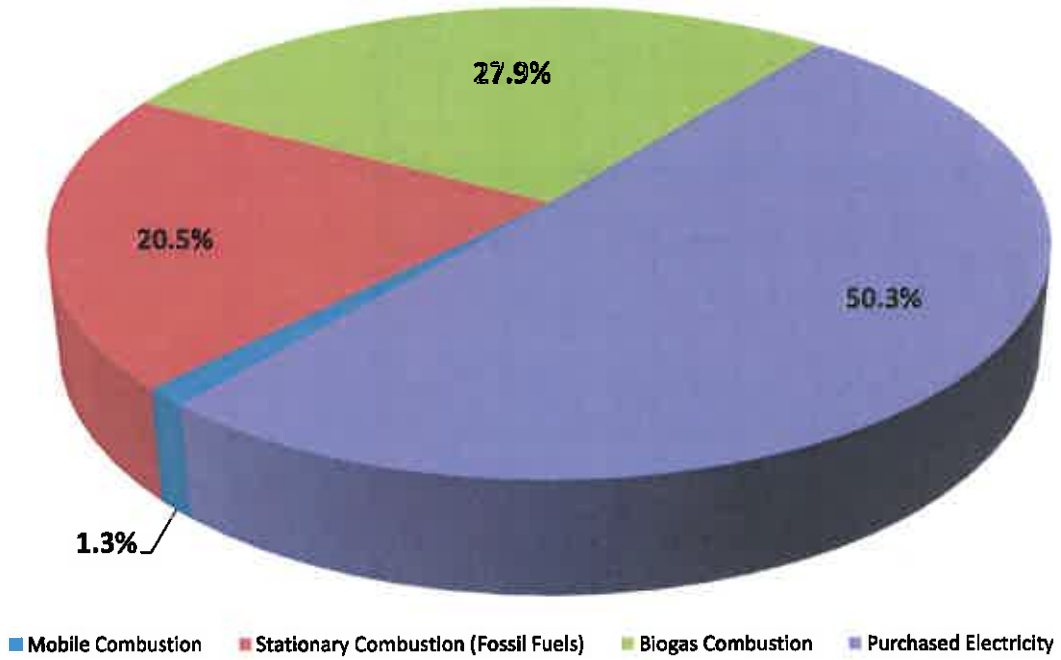


TABLE 1. IEUA'S 2013 GHG EMISSIONS BY SCOPE AND FACILITY

Source	Scope 1 (Direct Emissions)					Scope 2 (Indirect Emissions)			Scope 1 Total	Scope 2 Total	Total GHG Emissions
	Stationary Combustion			Mobile Combustion		Purchased Electricity	Biogas Combustion	Mobile Combustion (Diesel)			
	Natural Gas	Diesel	LPG	Gasoline	Diesel						
RP-1	5,671	33	33	-	-	3,066	6,559	-	5,737	9,625	15,362
RP-4/IERCF	1	14	-	-	-	5,033	-	-	14	5,033	5,047
RP-2	372	21	-	-	-	224	2,475	-	392	2,698	3,091
RP-5/HQ	688	9	-	-	-	2,365	307	-	697	2,672	3,370
CCWRF	3	23	-	-	-	1,519	-	-	26	1,519	1,544
LS	-	-	-	-	-	775	-	-	0	775	775
RW	-	-	-	-	-	3,559	-	-	0	3,559	3,559
GWR	-	-	-	-	-	304	-	-	0	304	304
Fleet Vehicles	-	-	-	297	10	-	-	-	307	0	307
Biosolids Hauling	-	-	-	-	-	-	-	124	0	124	124
Dechlorination Station	-	-	-	-	-	23	-	-	0	23	23
Total	***6,735***	***99***	***33***	***297***	***10***	***16,868***	***9,341***	***124***	***7,173***	***26,310***	***33,506***

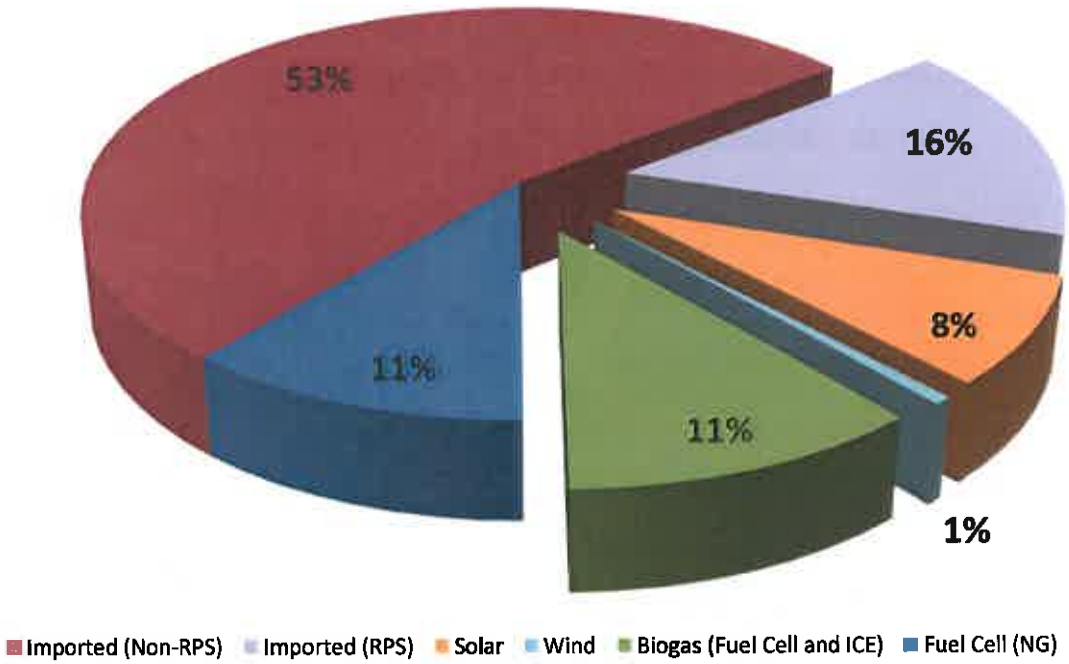
Note: GHG emissions from electricity used for recycled water pumping at RP-1, RP-4, RP-5, and CCWRF are included under "RW."

CARBON NEUTRALITY BY 2030

In recent years, IEUA has worked to develop a diverse portfolio of renewable energy technologies. Since 2008, 3.5 MW of solar panels, a 1 MW wind turbine, and a 2.8 MW biogas fuel cell have been installed at IEUA facilities, which adds to a 580 kW biogas engine that has been in operation since 1990. In 2010, IEUA entered into a public-private partnership to operate a food waste digestion process designed to provide renewable fuel for two 1.5 MW biogas engines at IEUA's RP-5 facility. These biogas engines began to generate power in early 2015.

As shown in Figure 1, electricity purchases account for half of IEUA's GHG emission profile. Through renewable resource optimization and expansion, IEUA aims to procure 100 percent of its electricity through carbon neutral sources by 2030. In Fiscal Year 2013/2014, 36 percent of electricity purchases were procured from carbon neutral sources (Figure 2). It should be noted that only biogas used in the fuel cell was considered to be carbon neutral. Natural gas usage in the fuel cell was separately included in the 64 percent of procurement from non-carbon neutral sources.

FIGURE 2. IEUA FY 13/14 ELECTRICITY PROCUREMENT SOURCES



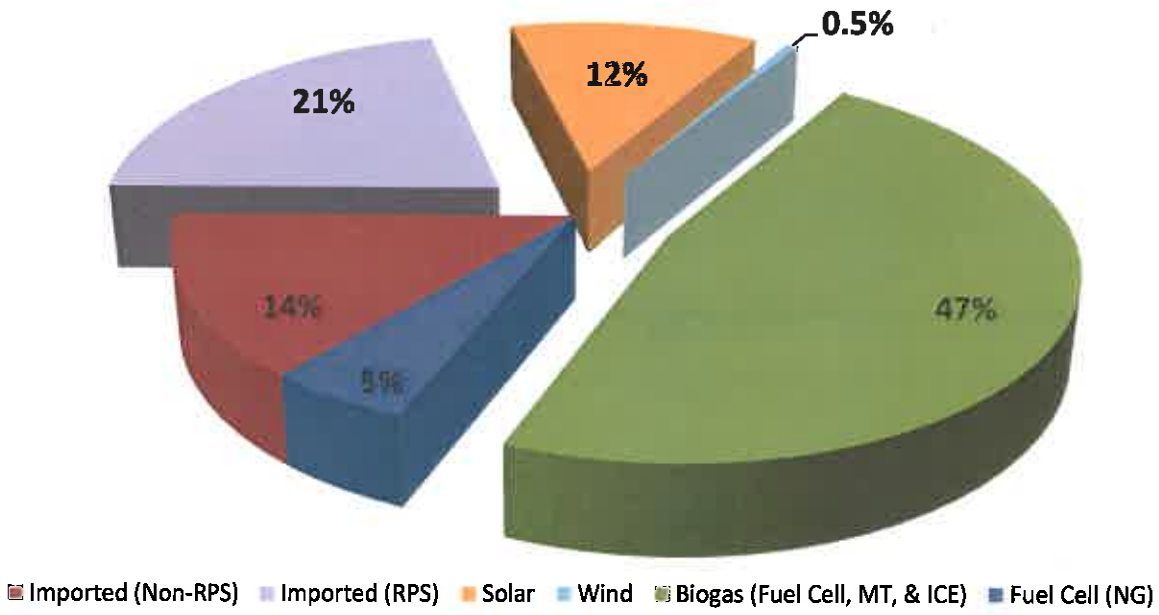
Achieving a goal of 100 percent carbon neutrality will require significant planning and engineering effort. Biogas optimization, increased plant efficiencies, and new renewable projects will all be pursued to work toward the 2030 goal. IEUA used information from the Wastewater Facilities Master Plan (WFMP) to project electrical needs over the next 20 years based on the anticipated increase in influent flows. IEUA also used the following assumptions to estimate the contribution of renewable resources toward meeting the 2030 electrical needs.

- Food Waste Digestion Operations – IEUA estimates that the cogeneration engines powered by the food waste digestion process will generate at 90 percent capacity by 2030.

- Microturbine Installation – IEUA is currently evaluating the installation of a microturbine that would operate on biogas and serve as a replacement of the 580 kW engine at RP-2.
- Fuel Cell Operations – IEUA assumes that the fuel cell at RP-1 will maintain operation on a 75/25 mixture of biogas and natural gas, respectively. Equipment degradation rates specified by the manufacturer are included in the projection.
- Solar Installations – IEUA is currently evaluating the installation of an additional 1 MW of solar generation, which was incorporated into the projection. Generation capabilities of the solar were estimated to decrease at a rate of one percent per year, consistent with manufacturer specifications.
- Increased RPS – Based on current legislation, IEUA anticipates that by 2030, 50 percent of electricity procured through import will come from renewable sources.
- Increased Energy Efficiency – Based on preliminary energy audit results, implementing energy efficiency measures at IEUA facilities is expected to reduce energy usage by 15 percent on average.

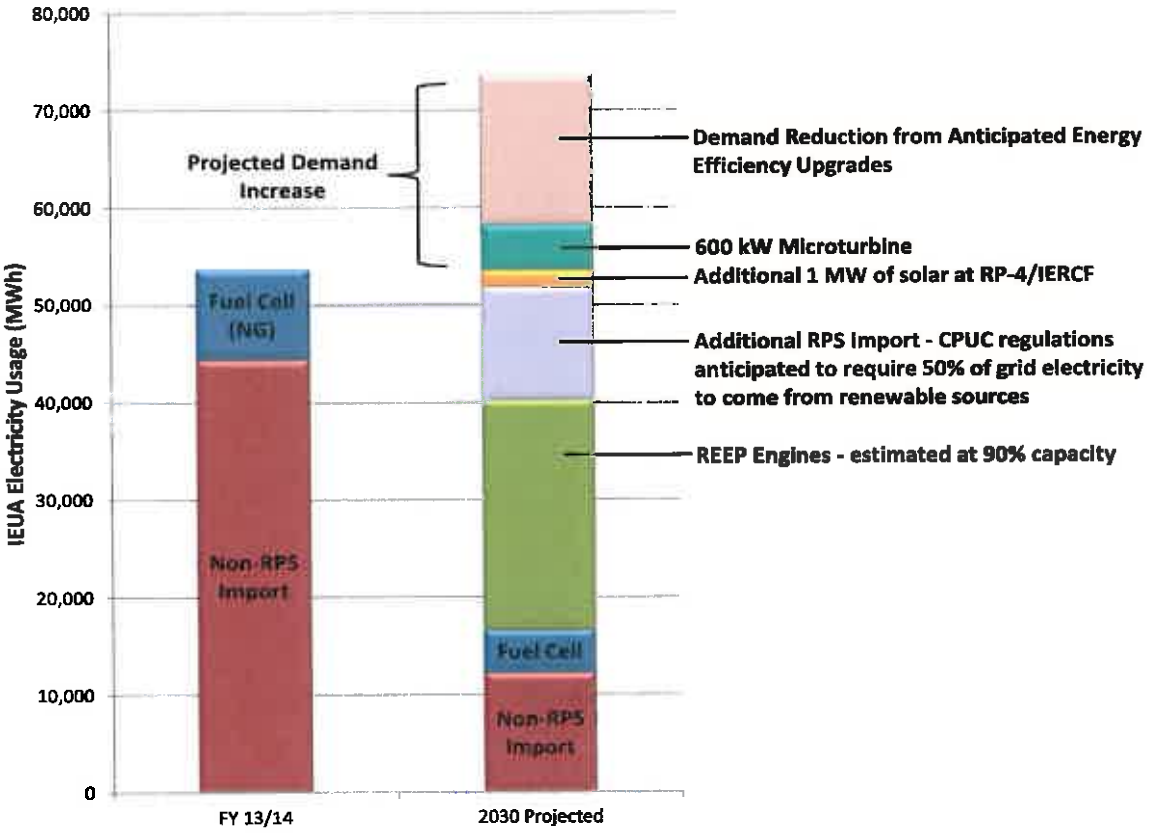
Using these assumptions and the projections from the WFMP, IEUA has estimated that 81 percent of its electricity needs in 2030 will be generated from renewable resources (Figure 3).

FIGURE 3. PROJECTED 2030 ELECTRICITY PROCUREMENT SOURCES



To better understand where the carbon neutral electricity will be coming from, Figure 4 breaks down the anticipated generation from carbon neutral sources in the 2030 projections. These estimates account for projected demand increases from the WFMP, as well as expected efficiency upgrades. Existing renewable resources (3.5 MW of solar, 1 MW wind turbine, 2.8 MW fuel cell, and 580 kW engine) are not included in either column.

FIGURE 4. PROJECTED 2030 CARBON NEUTRAL RESOURCES



Future planning efforts will be focused on tracking the performance of renewable installations, researching new opportunities to increase the procurement of electricity from carbon neutral sources, and identifying potential avenues of bridging the gap between the current level of carbon neutrality and the 2030 goal.

GHG MANAGEMENT

In addition to achieving carbon neutrality, IEUA will evaluate and implement measures to improve GHG management. Beginning in FY 15/16, GHG reductions will be considered favorably in the selection criteria for proposals received for new engineering projects.

The Carbon Management Plan will also be revised in parallel with IEUA's Energy Management Plan to ensure continuous evaluation and improvement toward GHG goals. Future planning efforts will enlist the assistance of third party consultants to generate a more robust management plan that evaluates potential GHG monitoring and reduction measures such as the carbon neutrality of fleet vehicles, tracking GHG impacts in various water supplies, and expansion of IEUA's GHG inventory to include Scope 3 emissions.

Appendix C

Organics Diversion

ORGANICS DIVERSION

INTRODUCTION

California has adopted several policies to reduce the short-lived climate pollutants (SLCP) and Greenhouse Gas (GHG) emissions by 2030, like the California Global Warming Solutions Act of 2006 (AB 32), and the mandatory commercial organics recycling law (AB 1826) in 2014. AB 1826 requires business to recycle organic waste by April 1, 2016, based on the amount of waste generated per week, and expects local governments to adopt and implement a mandatory commercial organic waste recycling program by January 1, 2016. Since composting and anaerobic digestion are acceptable alternatives to organics landfill disposal, Agency's facilities and staff know-how may represent a valuable resource to IEUA's Member Agencies required to comply with AB 1826.

FEASIBILITY STUDY

The Agency's "Organics Diversion" initiative was introduced in support of IEUA's Member Agencies and local businesses, in complying with the State's organics diversion requirements. As result, staff is conducting a feasibility study in the Agency's service area, to evaluate the amount and the current processing and disposal practices of:

- fat, oil and grease (FOG)
- domestic and commercial food waste
- high strength industrial waste.

A critical element of the feasibility study is the digester gas production estimate associated with the amount and type of organic waste available in the Agency's service area, and the development of a business case evaluation related to co-digestion and digester gas utilization facilities. Potential beneficial use of the biogas generated is:

- electricity generation (internal combustion engine, microturbine, fuel cell)
- conversion to natural gas pipeline quality (pipeline injection and/or vehicle fuel)

Because of the significant energy value associated with food waste, the implementation of an organics diversion program and food waste co-digestion will be essential in supporting the Agency long term goals of peak power independence and carbon neutrality.

PROJECT BARRIERS

Social, political, economic and regulatory barriers can adversely affect the implementation of the Organics Diversion initiative at IEUA. Community support is essential to ensure proper disposal and prevent food waste contamination; as well the full support of the Member Agencies directly responsible for providing waste management, or contracting the waste collection and disposal to a third party. Lack of funding, slow return on investments, uncertain revenue stream and incentives may be too risky for the Agency; and, delaying the implementation and enforcement of organic recycling laws may limit the amount of waste available for co-digestion, preventing the development of a competitive organic waste market, with tipping fees comparable to other disposal options.

Inland Empire Utilities Agency
6075 Kimball Avenue
Chino, CA 91708
Phone: (909) 993-1600
www.ieua.org

Fuel Cell

Facility: Regional Water Recycling Plant No. 1 (RP-1)

Manufacturer: Fuel Cell Energy, DFC3000

Rating Output: 2,800 kW

Estimated Annual Output: 19,260 MWh/yr

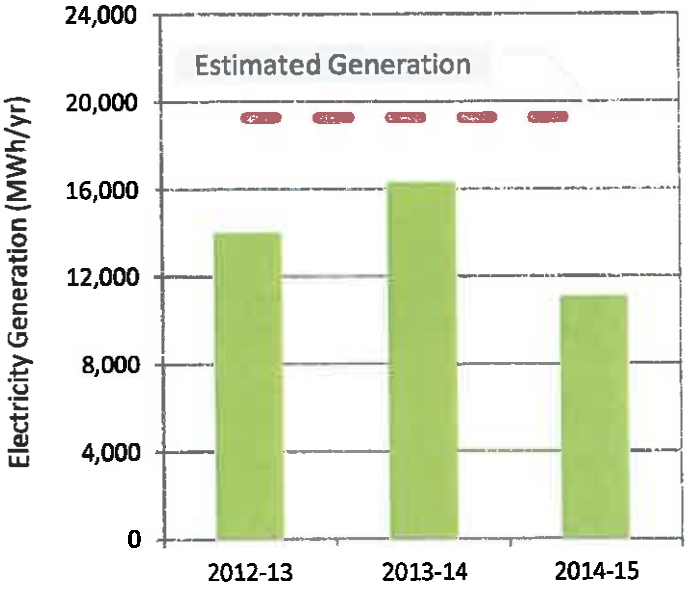
Commercial Operation Date: 1/1/2013

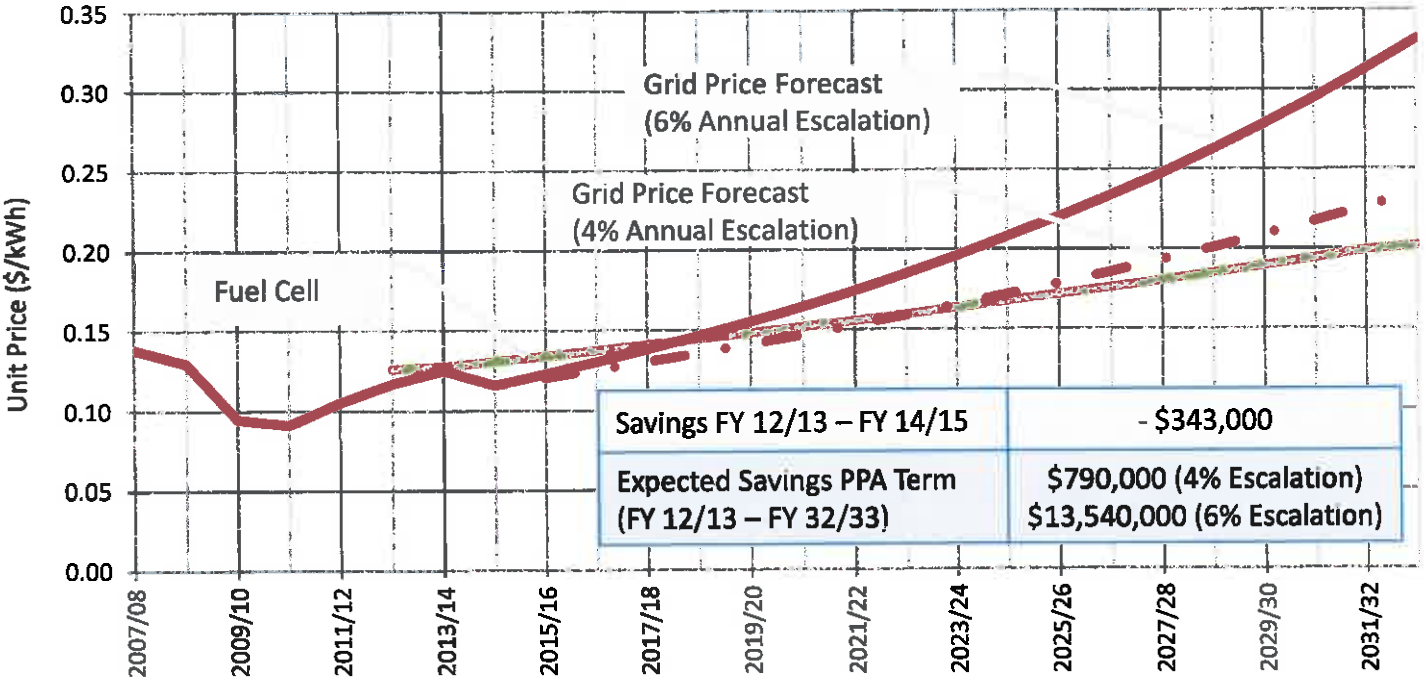
Power Purchase Agreement: Anaergia (20 years)

PPA Rate: $0.1262/kWh (2013) - $0.2017/kWh (2033)

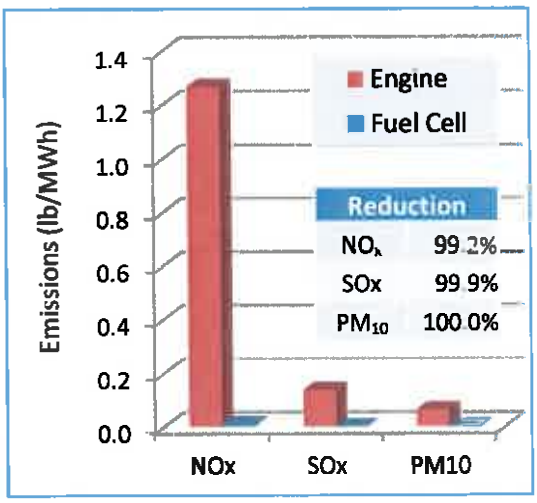
Ancillary Equipment: Gas Cleaning System, Heat Recovery

Fuel Requirements: 612,000 – 830,000 cft/day biogas





Savings FY 12/13 – FY 14/15	- $343,000
Expected Savings PPA Term (FY 12/13 – FY 32/33)	$790,000 (4% Escalation) $13,540,000 (6% Escalation)



Solar

Facilities: Carbon Canyon Water Recycling Facility, Regional Water Recycling Plant No. 1, No.4, No.5

Manufacturer: SunPower, Evergreen

Rating Output: 3,500 kW

Estimated Annual Output: 7,000 MWh/yr

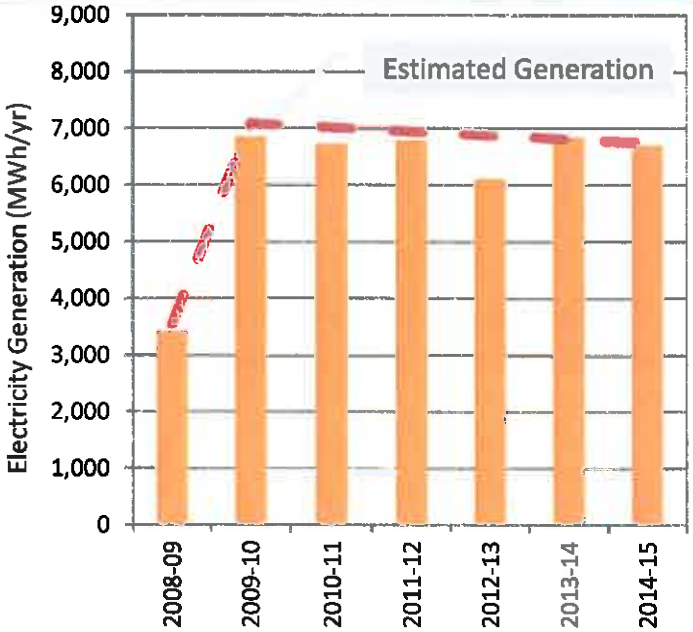
Commercial Operation Date: 12/2008

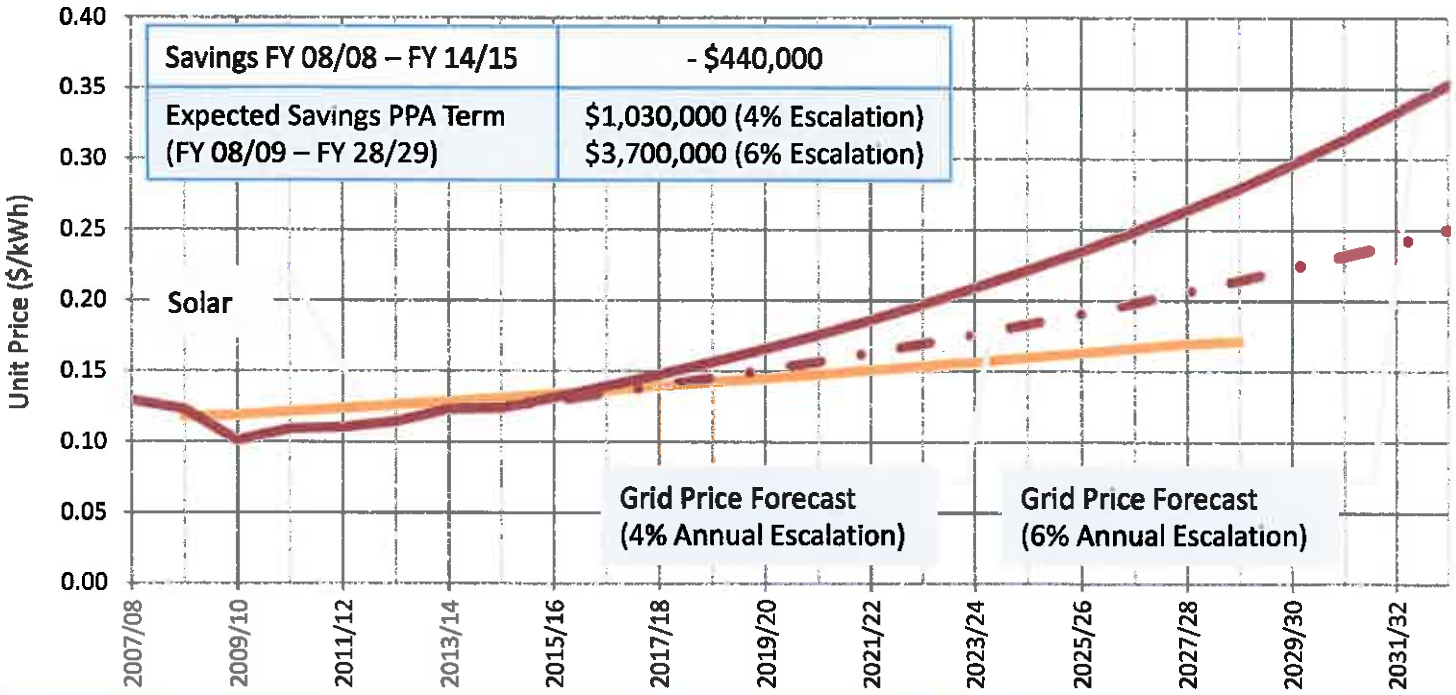
Power Purchase Agreement: SunPower

PPA Rate: $0.1173/kWh (2008) - $0.1709/kWh (2028)

Number of Panels: 18,210

Type of Panels: Ground/Roof Mounted Fixed Tilted, Ground Mounted Tracker





Environmental Benefits Since 2008

Renewable Energy = 43,524 MWh

Equivalent to:

- Carbon sequestered by 10,896 acres of forest in one year.
- Removing 2,799 passenger vehicles from the road for one year.

Emissions Reductions (tons)

VOC = 0.47	CO = 3.33
NOx = 1.64	PM10 = 0.39
SOx = 0.22	CO2e = 13,293

Wind Turbine

Facility: Regional Water Recycling Plant No. 4 (RP-4)

Manufacturer: Mitsubishi, MWT 62/1.0 - 1000A

Rating Output: 1,000 kW

Estimated Annual Output: 1,500 MWh/yr

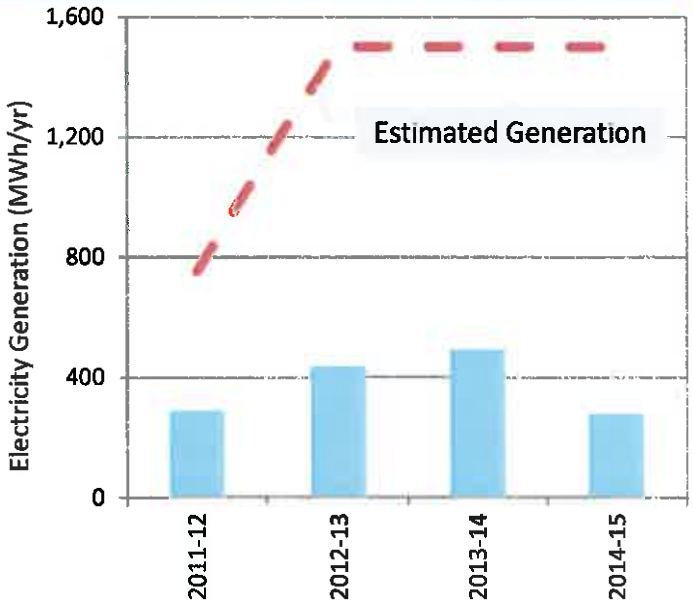
Commercial Operation Date: 12/3/2011

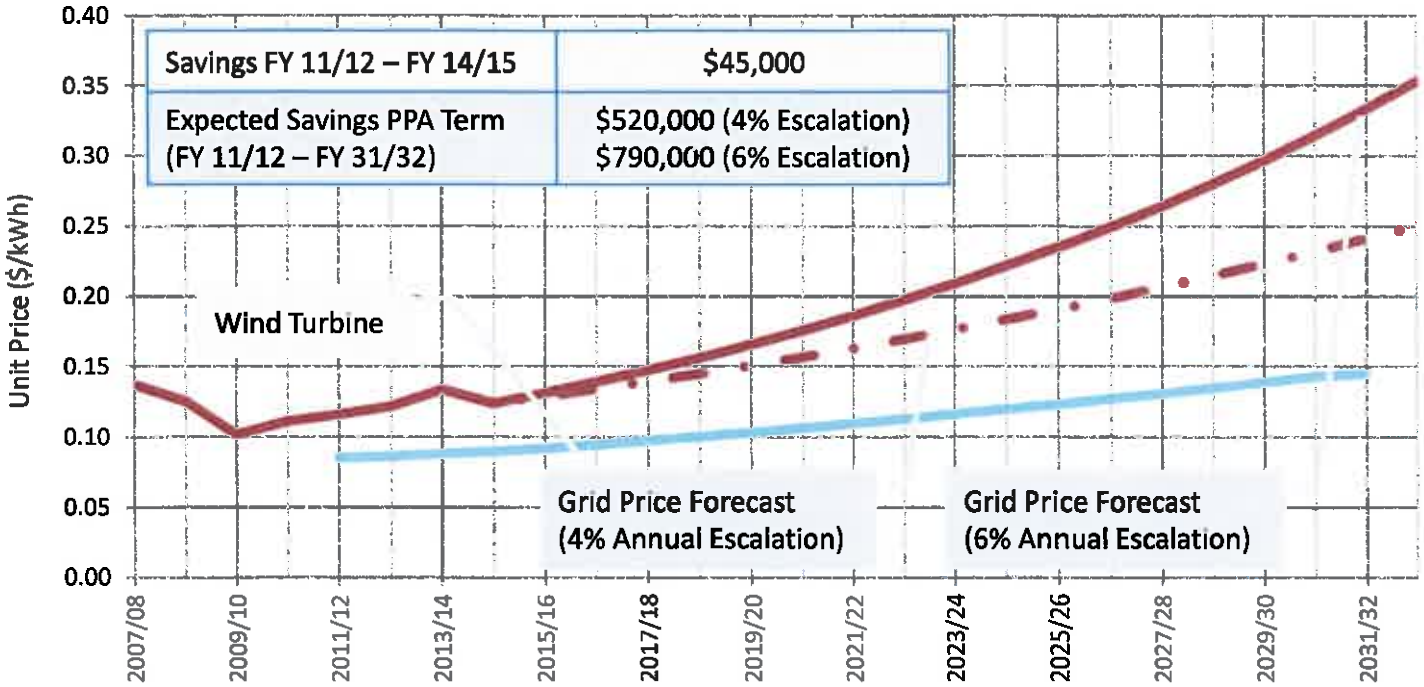
Power Purchase Agreement: Foundation Wind Power

PPA Rate: $0.085/kWh (2011) - $0.145/kWh (2031)

Wind Speed: 7 mph (100 kW) – 27 mph (1,000 kW)

Tower Height: 180 ft





Environmental Benefits Since 2011

Renewable Energy = 1,498 MWh

Equivalent to:

- Carbon sequestered by 375 acres of forest in one year.
- Removing 96 passenger vehicles from the road for one year.

Emissions Reductions (tons)

VOC = 0.02	CO = 0.11
NOx = 0.06	PM10 = 0.01
SOx = 0.01	CO2e = 458

ACTION
ITEM

2C

Inland Empire Utilities Agency
A MUNICIPAL WATER DISTRICT

Date: February 17, 2016

To: The Honorable Board of Directors

Through: Engineering, Operations, and Biosolids Management Committee *(2/10/16)*
Finance, Legal, and Administration Committee *(2/10/16)*

From: P. Joseph Grindstaff
General Manager

Submitted by: Chris Berch
Executive Manager of Engineering/Assistant General Manager

Shaun J. Stone
Manager of Engineering

Subject: Agency-Wide Lighting Improvements Construction Contract Award

RECOMMENDATION

It is recommended that the Board of Directors:

1. Approve the construction contract for the Agency-Wide Lighting Improvements, Project No. EN16013, to Facilities Solutions Group for a not-to-exceed amount of $1,400,320; and

2. Authorize the General Manager to finalize and execute the contract.

BACKGROUND

As part of the Agency-Wide Energy Efficiency Study Project, IEUA staff have been working with The Energy Network (TEN) and the Water Infrastructure and System Efficiency (WISE) Program to identify opportunities to reduce total electricity usage and costs. A business case evaluation was conducted based on an Agency-wide external and internal light fixture audit, and staff has estimated that if various fluorescent light fixtures are replaced the Agency can realize a net present value of more than $2.5M return over the life of the light fixtures considering the energy savings and the reduction in maintenance costs.

Based on the business case evaluation, the Agency-Wide Lighting Improvements Project (EN16013) was launched to replace lighting fixtures with qualified DesignLights Consortium (DLC) approved LED fixtures within Regional Water Recycling Plant No. 1 (RP-1), Regional Water Recycling Plant No. 4 (RP-4), Regional Water Recycling Plant No. 5 (RP-5), Carbon

Canyon Water Recycling Facility (CCWRF), Inland Empire Regional Composting Facility (IERCF), and Headquarters Buildings. Completing the Agency-Wide Lighting Improvements will achieve the following objectives:

- Capture $115,823 in utility incentives from Southern California Edison (SCE)
- Reduce energy usage by over 1.6 million kWh
- Reduce greenhouse gas emissions equal to 16,608 tons of carbon dioxide
- Reduce maintenance costs
- Strengthen the position the Agency as a community leader

The Agency elected to use the National Joint Powers Alliance ("NJPA") list of qualified, licensed contractors that perform various components of a public work projects, including energy efficiency. The following lighting contractors were prequalified by NJPA for San Bernardino County and were considered for this project:

Contractor
Facilities Solution Group (FSG)
Earth Savers Energy Services, Inc.
Express Energy Services, Inc.
ABM Electrical & Lighting Solutions

The contractors listed above have extensive experience in California and are appropriately licensed, bonded, insured, qualified, and competent to perform this project. As part of the selection process, the firms were requested to submit adjustment factors to the fixed prices in the Lighting Construction Task Catalog from the NJPA. These adjustment factors were used to determine the ranking of bids. The adjustment factors for this project were the normal working hours (prevailing wages), other than normal working hours (prevailing wages) and non-pre-priced (for items not in the catalog). FSG was determined to have the lowest adjustment factor and; therefore, selected by IEUA as the best value.

The Agency requested FSG to provide a cost proposal for the Agency-Wide Lighting Improvements Project. A cost proposal based on the audit provided by FSG on January 5, 2016, was provided with a total price of $1,400,320. Staff reviewed the cost proposal and confirmed that the pricing of the material is in accordance with the approved NJPA catalogues.

In addition to the objectives above, the Agency is offered an on-bill financing option through SCE for approximately 80% of the construction costs, or $1,099,888 over a 10 year period. The on-bill financing will allow the Agency to finance most of the construction costs with a zero percent (0%) interest rate and amortized payment over a 10 year period. There is no balloon payment at the end of the 10 years if the amount financed is paid in full at the end of the term, and there is no penalty for early retirement of the loan. It is anticipated that the generated electrical savings will offset the loan payment. A detailed proposal (including the $115,823 incentive) prepared for the project by TEN is included as Attachment A.

The following is the projected project cost:

Description	Estimated Cost
IEUA Labor and Staff Augmentation	$40,000
Construction Contract (Not-To-Exceed) for All Sites	$1,400,320
Construction Services (IEUA Labor and Augmentation)	$150,000
Construction Contingency (~15%)	$235,000
SCE Incentives	$(115,823)
On Bill Financing	$(1,099,888)
Total Project Cost	**$609,609**
Total Project Budget	**$4,800,000***

*Total Project Budget is inclusive of all annual lighting improvement projects included within the TYCIP.

The construction will commence in two phases. Phase I will take place at RP-4 and the IERCF. Once Phase I is complete, the energy savings will be verified by comparing the readings from the data loggers installed before and after construction. Following verification, Phase II will be launched at all the remaining sites. The following is the project schedule:

Project Milestone	Date
Construction Contract Award	February 2016
Construction Completion	February 2017

The Agency-Wide Lighting Improvements Project is part of the Agency's Energy Management Goal to optimize facility energy use and effectively manage renewable resources to achieve peak power independence, contain future energy costs, and achieve statewide renewable energy, distributed generation, and greenhouse gas.

PRIOR BOARD ACTION

None.

IMPACT ON BUDGET

Due to the availability of SCE Programs, it is recommended that the Agency consolidate the annual lighting improvement projects into one project through the 2016 TYCIP process. Ten projects totaling $4,800,000 will be combined into one project (EN16013). The projected FY15/16 expenditures are within the approved FY 15/16 budgets of $500,000 for EN16013 and EN17004.

The award of the construction contract for Agency-Wide Lighting Improvements for the not-to-exceed amount of $1,400,319 is within the total combined project budgets of $4,800,000 in the Regional Wastewater O&M (RO) Fund. The immediate project cost is $609,609 after incentives and on-bill financing is considered.
PJG:CB:SS:aa

ATTACHMENT A

Lighting Project Proposal
Inland Empire Utilities Agency

Project Summary

The Energy Network is pleased to present this project proposal summarizing the recommended lighting energy efficiency measures at Inland Empire Utilities Agency facilities. The analysis was performed by The Energy Network with assistance from Lincus Inc. By implementing this project with free assistance from The Energy Network, Inland Empire Utilities Agency can realize an estimated $2,916,458 in return over the life of the project. The Energy Network looks forward to presenting the comprehensive findings and helping IEUA save money on their energy bills.

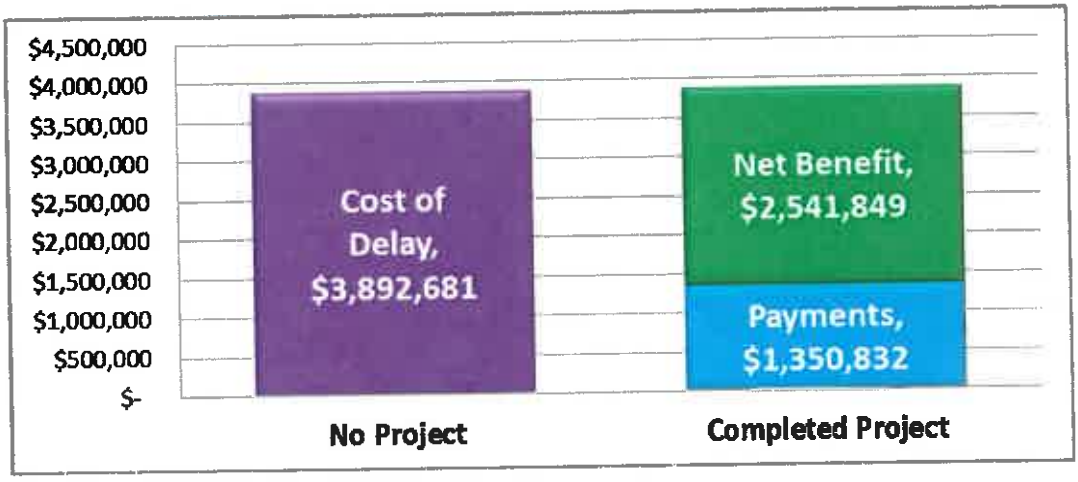
Project Benefits

- Capture **$115,823** in utility incentives
- Reduce energy usage by over **1.6 million kWh.**
- Reduce greenhouse gas emissions equal to taking **3,496** cars off the road.
- Reduce maintenance costs
- Position Inland Empire Utilities Agency as a community leader
- Hedge against increasing utility costs

Estimated Annual Savings	Estimated Savings Over Project Lifetime	Cost of Delay
$249,240	$2,541,849	$20,770 per month $249,240 per year

Projected Savings

By financing the project, the Inland Empire Utilities Agency will maintain a positive annual cash flow over the life of the project.



Project Financial Summary

Project Costs					Project Financial Metrics			
Facility	Gross Project Cost	Incentives/ Rebates	Available OBF	Net Project Cost	NPV with OBF & Cash	Savings to Investment Ratio (SIR)	Simple Payback Period (SPP; years)	Return on Investment (ROI)
RP-1	$ 567,075.01	$ 66,515.35	$ 500,559.66	$0.00	$ 1,456,154.25	3.20	4.0	248.7%
RP-4	$ 292,736.77	$ 24,594.85	$ 268,141.92	$0.00	$ 495,457.24	2.09	5.6	158.5%
RP-5	$ 133,637.73	$ 6,699.49	$ 90,792.51	$36,145.73	$ 161,772.63	1.72	7.0	112.0%
CCWRF	$ 175,403.53	$ 11,452.97	$ 152,883.03	$11,067.53	$ 223,834.62	1.65	6.9	115.2%
Headquarters	$ 231,466.93	$ 6,560.24	$ 87,511.20	$137,395.49	$ 13,355.65	0.71	14.9	0.5%
Labor Startup Costs								
Labor Startup Costs	$ 190,000.00	-	-	$190,000.00	-	-	-	-
Total	$ 1,590,319.97	$ 115,822.90	$ 1,099,888.32	$374,608.75	$ 2,541,848.83	2.16	5.9	152.1%

Project Savings

Facility	On-bill Energy Savings (kWh)	SCE Approved Savings (kWh)	On-bill Demand Savings (kW)	SCE Approved Demand Savings (kW)
RP-1	900,874	719,024	78	56
RP-4	334,715	284,936	18	11
RP-5	123,200	81,563	2	0
CCWRF	163,241	127,273	12	8
HQ	83,607	74,503	6	4
Total	**1,605,637**	**1,287,298**	**116**	**79**

Cash Flow Analysis

The Energy Network provides expert guidance identifying financing opportunities available for public agencies and applying and securing them for eligible agencies. Options that are available to Inland Empire Utilities Agency are: Cash, On-Bill Financing (OBF) and Energy Project Lease Financing (ELF).

On-Bill Financing allows local public agencies to finance energy efficiency projects with zero-interest and pay back the loan as part of their utility bill for up to a 10-year period. To take advantage of OBF, a public agency must meet eligibility criteria and enroll in incentive programs from the utilities. Energy Project Lease Financing, a product authorized by the Public Utilities Commission, is designed specifically for local public agencies to fund energy projects. Agencies can take advantage of low interest rates and terms up to 15 years (up to 20 years for renewable energy projects). Financing is provided through private lenders and may be used in conjunction with other utility or public financing and incentives. A financial advisor is available to The Energy Network to discuss projects and financing options. The cash flow analysis provided below shows the present values of the future cash streams for this project.

Year	Incentives, OBF	Est. Utility Savings	Est. Maintenance Savings	Total Cash Inflows	Est. SCE OBF Payment	Total Cash Outflows	Net Cash Flows
0	$1,215,711			$1,215,711		($1,590,320)	($374,609)
1		$194,859	$54,381	$249,240	($156,226)	($156,226)	$93,015
2		$196,751	$53,853	$250,604	($151,675)	($151,675)	$98,929
3		$198,661	$53,331	$251,991	($147,258)	($147,258)	$104,734
4		$200,590	$52,813	$253,402	($142,968)	($142,968)	$110,434
5		$202,537	$52,300	$254,837	($138,804)	($138,804)	$116,033
6		$204,504	$51,792	$256,296	($102,344)	($102,344)	$153,952
7		$206,489	$51,289	$257,778	($57,757)	($57,757)	$200,021
8		$208,494	$50,791	$259,285	($42,818)	($42,818)	$216,467
9		$210,518	$50,298	$260,816	($26,404)	($26,404)	$234,412
10		$212,562	$49,810	$262,372	($9,968)	($9,968)	$252,404
11		$214,626	$49,326	$263,952	$0	$0	$263,952
12		$216,709	$48,848	$265,557	$0	$0	$265,557
13		$218,813	$48,373	$267,187	$0	$0	$267,187
14		$220,938	$47,904	$268,841	$0	$0	$268,841
15		$223,083	$47,439	$270,521	$0	$0	$270,521
16		$0	$0	$0	$0	$0	$0
17		$0	$0	$0	$0	$0	$0
18		$0	$0	$0	$0	$0	$0
19		$0	$0	$0	$0	$0	$0
20		$0	$0	$0	$0	$0	$0
21		$0	$0	$0	$0	$0	$0
22		$0	$0	$0	$0	$0	$0
23		$0	$0	$0	$0	$0	$0
24		$0	$0	$0	$0	$0	$0
25		$0	$0	$0	$0	$0	$0
	Totals	**$3,130,132**	**$762,549**	**$5,108,392**	**($976,223)**	**($2,566,543)**	**$2,541,849**

Turnkey Project Delivery and the National Joint Powers Alliance (NJPA)

The Energy Coalition's Turnkey Delivery approach allows Inland Empire Utilities Agency to retain a qualified, competitively selected contractor for energy efficiency projects using procedures expressly authorized under California law, but in a manner that significantly reduces the time and expense associated with a traditional local government procurement process. The Turnkey approach involves the following steps, taking advantage of membership in the NJPA as well as the flexible procurement procedures available to all local governmental agencies under California Government Code section 4217.10, et seq., for the installation of energy efficiency projects:

Inland Empire Utilities Agency joins as a member of NJPA at no cost or liability, and thereby can access contractors previously selected by NJPA based upon both the contractors' qualifications to perform the type of work involved in the project, and competitive bid prices for that type of work.

Working with The Energy Coalition, the Inland Empire Utilities Agency (a) determines the specific bid items that comprise the energy efficiency project, (b) selects a contractor based upon the competitive bids submitted to NJPA for the specified bid items that make up the project, and (c) estimates the likely cost savings from implementing the project using the Turnkey Delivery approach and the selected contractor, in order to confirm the benefits of the implementing the project in this manner.

The Inland Empire Utilities Agency conducts a public hearing, and makes a formal finding that the Inland Empire Utilities Agency energy efficiency project is anticipated to result in cost savings to the Inland Empire Utilities Agency.

The Inland Empire Utilities Agency enters into a contract with the selected contractor for the performance of the energy efficiency contract based upon that contractor's competitively bid price for the work.

This Turnkey Delivery approach provides the Inland Empire Utilities Agency with the benefits and protections of the traditional "design, bid and build" public works procurement process, but at a lower cost and with less time and staff resource commitments. These savings result because the Inland Empire Utilities Agency takes advantage of NJPA's services to identify each of the specific work components of an energy efficiency project, and select qualified contractors based upon their competitive bids for these project components. This approach allows the Inland Empire Utilities Agency to forego detailed engineering and design of the project, and to solicit bids from the previously qualified, competitively selected contractors to perform the Inland Empire Utilities Agency proposed energy efficiency project.

Financial Metrics Definitions

Gross Project Cost is based the total construction costs for each measure include direct labor, materials, equipment, the contractor's adjustment factor and all task order processing fees. The agency cost includes construction and contingency costs. The Energy Network cost includes project management, audit, design, construction management support, and measurement and verification.

Opportunity Cost: The NPV of the accumulated energy and maintenance savings over the lifetime of the projects based on the useful life of each measure.

Net Benefit: *The net savings after payments for construction costs and interest on loans.*

Net Present Value (NPV): Also known as a Lifecycle Analysis, the NPV is a measure of the present value dollars of the net cost savings for a given energy project over its lifetime, including initial project costs, with discounting applied to cash flows that occur in the future. NPV is simply the present value (PV) of future cash flows minus the purchase price. NPV takes into account the time value of money and indicates what a project's lifetime cash flow is worth today. NPV is determined by calculating the amount of money in today's dollars that would have to be invested at the discount rate to reproduce the savings cash flow from the EEM and then subtracting the EEM implementation cost. If the NPV is greater than zero, the project is considered to be cost effective. Equipment measure life is based on Effective Useful Life values for each measure based on stipulated values for the SCE measure code.

Net Present Value = Energy Cost Savings + Maintenance Savings

Return on Investment (ROI) is the annual percentage return from a project, where annual cost savings include the net present value of both utility cost savings and maintenance cost savings over the life of the project, per CEC Proposition 39 Guidelines. ROI is calculated as follows:

ROI = [Annual Cost Savings ($/yr) - Project Cost] / Project Cost ($)

Reimbursable Costs: Money returned by the utilities after the project has been installed with the Installation Report submitted and approved.

Simple Payback Period: The simple payback period is the amount of time required to recover the initial costs of a project from its savings; it is calculated as Net Project Cost ($) / Annual Cost Savings ($/yr). A project is economically acceptable if the payback period is less than the length of the project life. A simple payback period ignores the time value of money and assumes that future savings occur in even amounts each year. The simple payback period is equal to the investment costs divided by the annual savings. For example, a $1,000 investment that saves $500 each year has a two-year simple payback period.

Savings-to-Investment Ratio (SIR) is the value of benefits from a project divided by its cost.
Per CEC Proposition 39:

SIR = NPV / (Project Installation Cost – Rebates – Other Grants – Non-energy Benefits)

TEN does not use "Non-energy Benefits" in its financial models.

Energy Lease Financing FAQs

How does Energy Project Lease Financing work compared to other energy efficiency financing programs like the utilities' On Bill Financing and the California Energy Commission's low interest loan?

Energy Project Lease Financing complements other financing tools such as On Bill Financing and CEC's loan. Agencies' needs vary and the mix of financing chosen to fund a particular efficiency project may differ. Some of the advantages of Energy Project Lease Financing are:

- No up-front capital is needed since the financing closes prior to construction
- Projects without utility incentives may be funded
- There is no maximum limit for financing
- Longer terms of up to 15 years are available, reducing annual payments

What are the repayment terms?

Repayments are typically structured with level semi-annual payments over the term of the loan, but other structures may be requested. The repayment term is determined by the weighted useful life of the project. Incentive funds may be included in the repayment schedule if requested by the agency.

What are the loan security requirements?

Loans are structured as equipment leases secured by the equipment or facilities in which the energy improvements are made. Improvements made to facilities with existing encumbrances may require an alternate security pledge.

How do I apply?

Agencies must complete a simple application form with project data, basic financial information and estimated energy savings. Upon receipt of the application, The Energy Network will acquire a lender bid resulting in an Offer to Finance with indicative lease rates and terms.

What are the criteria for loan approval?

The agency must submit completed documents and have verifiable credit standing. The borrower's financial statements must demonstrate the capacity to make lease payments, and its governing board must approve the borrowing prior to document closing and release of funds.

How are funds disbursed?

Funds are held in an escrow account and paid out upon requisition by the agency.

What projects are eligible?

Generally any energy efficiency, water-conservation, renewable energy projects or other capital improvements are eligible. The Energy Project Lease Financing program was established to support funding for projects that demonstrate savings relative to existing operations; however, this is not a strict requirement.

What is the funding source?

Funding for Energy Project Lease Financing is provided by a variety of private lending institutions that offer tax exempt lease financing through a broker. The Energy Network selected the broker through a competitive bidding process.

How long does it take to get approved and obtain the funds?

Approval is typically provided within one week of a completed application being submitted. Funding documentation and closing can be completed within 30 days of governing board approval.

Are there early payment penalties?

There may be early payment penalties. They are defined in the Offer to Finance. A standard payout option at five years may be requested by the Agency in the application.

Agency-Wide Lighting Improvements
Construction Contract Award
Project No. EN16013

February 2016



Inland Empire Utilities Agency

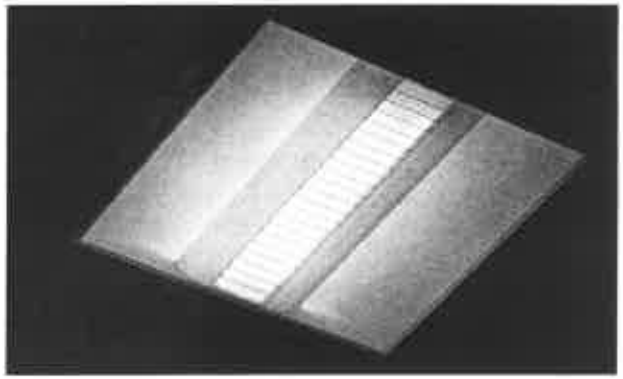
A MUNICIPAL WATER DISTRICT

Shaun J. Stone, P.E
Manager of Engineering

Adham Almasri, P.E.
Project Manager

Project Background

- Agency Staff, Water Infrastructure and System Efficiency (WISE) Program, and The Energy Network (TEN) identified energy efficiency opportunities
- Replacement of fluorescent lights by LED lights was approved by WISE and TEN
- An audit generated a list of interior and exterior lighting fixtures
- Scope includes RP-1,CCWRF, RP-5, RP-4/IERCF, HQ A&B
- The project is part of the TYCIP to improve the Agency-Wide energy efficiency

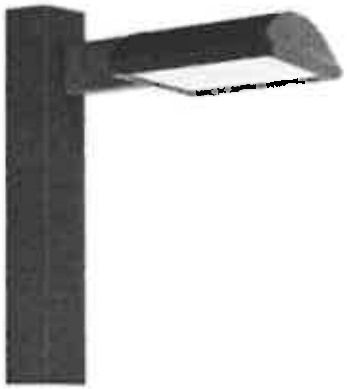


Existing 2x2x2 Linear Fluorescent Recessed Lights at HQA
$11.00/year

Proposed (LED) Lighting Fixtures (EVOKIT)
$7.00/year (36% Energy Savings)

Project Benefits

- Potential $2,600,000 in energy and maintenance savings
- Capture over $115,000 in utility incentives from SCE
- Reduce greenhouse gas emissions by almost 17,000 tons of carbon dioxide
- Strength the Agency's position as a community leader
- 0% on-bill financing by SCE for 80% of the construction costs ($1,100,000)



Proposed (LED)RAB ALED2T105
$54.00/year (77% Energy Savings)

Existing 400W MH Arm Mounted Pole Street Lights at CCWRF
$235.00/year

Project Sequencing

- Four (4) contractors pre-qualified by The National Joint Powers Alliance (NJPA)
- Facilities Solution Group selected based on their prevailing wages and non-pre-priced items in the NJPA Lighting Catalog
- Phase I: RP-4/IERCF lighting fixtures will be replaced
- Energy savings will be verified by reading installed data loggers
- Phase II will be pursued if savings are achieved

Existing 1x4x2 Vapor tight lights at RP-1
$65.00/year

Proposed (LED) P2 VTL-1X4-XL-F-UL-40K
$36.00/year (45% Energy Savings)

Project Cost and Schedule

Description	Estimated Cost
IEUA Labor and Staff Augmentation	$40,000
Construction Contract (Not-To-Exceed for All Sites)	$1,400,320
Construction Services (IEUA Labor and Augmentation)	$150,000
Contingency (~15%)	$235,000
SCE Incentives	($115,823)
On Bill Financing*	($1,099,888)
Total Project Cost	**$609,609**
IEUA Approved Budget	**$4,800,000**

* 0% interest loan to be paid back on monthly SCE bill over 10 years

Project Milestone	
Construction Contract Award	February 2016
Construction Completion	February 2017

Agency Goal/Recommendation

Staff recommends that the Board of Directors approve the construction contract award to Facilities Solutions Group for the Agency-Wide Lighting Improvements Project, Project No. EN16013 for a not-to-exceed amount of $1,400,320 and also authorize the General Manager to execute the contract.

The Agency Wide Lighting Improvements project is part of the Agency's Energy Management Goal to optimize facility energy use and effectively manage renewable resources to achieve peak power independance, contain future energy costs, and achieve statewide renewable energy, distributed generation, and greenhouse gas.

Inland Empire Utilities Agency
A MUNICIPAL WATER DISTRICT

CONTRACT NUMBER: 4600002049

FOR

ENERGY EFFICIENCY FACILITIES LIGHTING REPLACEMENT PROJECT

THIS CONTRACT (the "Contract"), is made and entered into this _____ day of _____, 2016, by and between the Inland Empire Utilities Agency, a Municipal Water District, organized and existing in the County of San Bernardino under and by virtue of the laws of the State of California (hereinafter referred to as "Agency"), and the Facility Solutions Group, Inc. of Placentia, California (hereinafter referred to as "Contractor"), for the Agency's Energy Efficiency Facilities Lighting Replacement Project.

WHEREAS, the National Joint Powers Alliance (NJPA) called for Invitation for Bids in July 2013, for constructions contractors for general lighting energy efficiency projects, and;

WHEREAS, the Facility Solutions Group, Inc. entered into an agreement with the NJPA (CA-GL06A-082013-FSG) with an effective date of August 20, 2013, through August 19, 2017, with annual renewals upon acceptance by both parties, and;

WHEREAS, the Agency would like to utilize Contractor's competitively-let contract issued under the NJPA.

NOW, THEREFORE, in consideration of the mutual promises and obligations set forth herein, the parties agree as follows:

1. PROJECT MANAGER ASSIGNMENT: All technical direction related to this Contract shall come from the designated Project Manager. Details of the Agency's assignment are listed below.

Project Manager:	Adham Almasri
	Inland Empire Utilities Agency
Address:	6075 Kimball Avenue, Bldg. B
Telephone:	(909) 993-1462
Facsimile:	(909) 993-1982
Email:	aalmasri@ieua.org

2. CONTRACTOR ASSIGNMENT: Special inquiries related to this Contract and the effects of this Contract shall be referred to the following:

Contractor:	Jeff Johnson, CLMC, CLEP
	Facility Solutions Group, Inc.
Address:	801 Richfield Road
	Placentia, CA 92870
Telephone:	(714) 237-9970, extension 14221
Facsimile:	(714) 237-9958
Email:	jeff.johnson@fsgi.com

3. ORDER OF PRECEDENCE: The documents referenced below represent the Contract Documents. Where any conflicts exist between the General Terms and Conditions, or addenda attached, then the governing order of precedence shall be as follows:

    1. Amendments to Contract Number 4600002049.
    2. Contract Number 4600002049 General Terms and Conditions.
    3. Contractor's Price Proposal titled IEUA 5 Site 12/17/15 - Lighting
    4. Contractor's Scope of Work, Exhibit A, The Energy Network Project ID: A52WWLT1.
    5. Agency's Front End Construction Boilerplate attached hereto and made a part hereof.
    5. NJPA Facility Solution Group Contract CA-GL06A-082013-FSG dated August 20, 2013.

4. SCOPE OF WORK AND SERVICES: Contractor services and responsibilities shall include and be in accordance with Contractor's Scope of Work, Exhibit A, and the Agency's Front End Boilerplate, which are both attached hereto and made a part hereof by this reference. The Scope of Work shall be released in phases as directed by the Agency's Project Manager listed on page one of this Contract.

5. TERM: The term of this Contract shall extend from the date of the Notice to Proceed, and terminate upon completion of the Work, or June 30, 2018, whichever occurs first, unless agreed to by both parties, reduced to writing, and amended to this Contract.

6. PAYMENT, INVOICING AND COMPENSATION: The Contractor may submit an invoice not more than once per month during the term of this Contract. Agency shall pay Contractor's properly executed invoice, approved by the Project Manager, within thirty (30) days following receipt of the invoice. Payment will be withheld for any service which does not meet the requirements of this Contract, until such service is revised, the invoice resubmitted and accepted by the Project Manager.

Contractor shall provide with their invoice certified payroll verifying that Contractor has paid prevailing requirements as stipulated in SB-854 for public works greater than $1,000.00 (http://www.dir.ca.gov/DIRNews/2014/2014-55.pdf).

All invoices shall be formulated consistent with the contract requirements and Contractor's proposed pricing within the Contractor's accepted proposal.

As compensation for the work performed under this Contract, Agency shall pay Contractor's monthly invoice, for a total contract price *not-to-exceed* **$1,400,320.00** for all services satisfactorily provided hereunder during the term of this Contract.

To expedite payment of invoices email to apgroup@ieua.org with a copy to the Agency's Project Manager.

7. INSURANCE: During the term of this Contract, the Contractor shall maintain at Contractor's sole expense, the following insurance.

A. Minimum Scope of Insurance:

1. General Liability: $1,000,000 combined single limit per occurrence for bodily injury, personal injury and property damage. Coverage shall be at least as broad as Insurance Services Office form number GL 0001-87 covering Comprehensive General Liability. If Commercial General Liability Insurance or other form with a general aggregate limit is used, either the general aggregate limit shall apply separately to this project/location, or the general aggregate limit shall be twice the required occurrence limit.

2. Automobile Liability: $1,000,000 combined single limit per accident for bodily injury and property damage. Coverage shall be at least as broad as Insurance Services Office form number CA 00 01 87, covering Automobile Liability, including "any auto."

3. Workers' Compensation and Employers Liability: Workers' compensation limits as required by the Labor Code of the State of California and employers Liability limits of $1,000,000 per accident.

4. Performance and Payment Bonds are required in accordance with the attached bonding forms.

B. Deductibles and Self-Insured Retention: Any deductibles or self-insured retention must be declared to and approved by the Agency. At the option of the Agency, either: the insurer shall reduce or eliminate such deductibles or self-insured retention as respects the Agency, its officers, officials, employees and volunteers; or the Contractor shall procure a bond guaranteeing payment of losses and related investigations, claim administration and defense expenses.

C. Other Insurance Provisions: The policies are to contain, or be endorsed to contain, the following provisions:

1. General Liability and Automobile Liability Coverage

a. The Agency, its officers, officials, employees and volunteers are to be covered as insureds, endorsements GL 20 11 07 66, CG2010 1185 and/or CA 20 01 (Ed. 0178), as respects: liability arising out of activities performed by or on behalf of the Contractor, products and completed operations of the Contractor, premises owned, occupied or used by the Contractor, or automobiles owned, leased, hired or borrowed by the Contractor. The coverage shall contain no special limitations on the scope of protection afforded to the Agency, its officers, officials, employees or volunteers.

b. The Contractor's insurance coverage shall be primary insurance as respects the Agency, its officer, officials, employees and volunteers. Any insurance or self-insurance maintained by the Agency, its officers, officials, employees, volunteers, property owners or engineers under contract with the Agency shall be excess of the Contractor's insurance and shall not contribute with it.

c. Any failure to comply with reporting provisions of the policies shall not affect coverage provided to the Agency, its officers, officials, employees or volunteers.

d. The Contractor's insurance shall apply separately to each insured against whom claim is made or suit is brought, except with respect to the limits of the insurer's liability.

e. The Contractor may satisfy the limit requirements in a single policy or multiple policies. Any Such additional policies written as excess insurance shall not provide any less coverage than that provided by the first or primary policy.

2. Workers' Compensation and Employers Liability Coverage

The insurer shall agree to waive all rights of subrogation against the Agency, its officers, officials, employees and volunteers for losses arising from work performed by the Contractor for the Agency.

3. All Coverages

Each insurance policy required by this contract shall be endorsed to state that coverage shall not be suspended, voided, canceled by either party, reduced in coverage or in limits except after thirty (30) days' prior written

notice by certified mail, return receipt requested, has been given to the Agency.

D. Acceptability of Insurers: Insurance is to be placed with insurers with a Best's rating of no less than A minus:VII, and who are admitted insurers in the State of California.

E. Verification of Coverage: Contractor shall furnish the Agency with certificates of insurance and with original endorsements effecting coverage required by the Agency for themselves and all subcontractors prior to commencing work, or allowing any subcontractor to commence work under any subcontract. The certificates and endorsements for each insurance policy are to be signed by a person authorized by that insurer to bind coverage on its behalf. All certificates and endorsements are to be approved by the Agency before work commences. The Agency reserves the right to require complete, certified copies of all required insurance policies, at any time.

F. Submittal of Certificates: Contractor shall submit all required certificates and endorsements to the following:

Inland Empire Utilities Agency
Attn: Angela Witte
P.O. Box 9020
Chino Hills, CA 91709

8. FITNESS FOR DUTY:

A. Fitness: Contractor and its SubContractor personnel on the Jobsite:

1) shall report to work in a manner fit to do their job.

2) shall not be under the influence of or in possession of any alcoholic beverages or of any controlled substance (except a controlled substance as prescribed by a physician so long as the performance or safety of the Work is not affected thereby); and

3) shall not have been convicted of any serious criminal offense which, by its nature, may have a discernible adverse impact on the business or reputation of the Agency.

9. LEGAL RELATIONS AND RESPONSIBILITIES

A. Professional Responsibility: The Contractor shall be responsible, to the level of competency presently maintained by other practicing professionals performing the same or similar type of work.

B. Status of Contractor: The Contractor is retained as an independent Contractor only, for the sole purpose of rendering the services described herein, and is not an employee of the Agency.

C. Observing Laws and Ordinances: The Contractor shall keep itself fully informed of all existing and future state and federal laws and all county and city ordinances and regulations which in any manner affect the conduct of any services or tasks performed under this Contract, and of all such orders and decrees of bodies or tribunals having any jurisdiction or authority over the same. The Contractor shall at all times observe and comply with all such existing and future laws, ordinances, regulations, orders and decrees, and shall protect and indemnify, as required herein, the Agency, its officers, employees and agents against any claim or liability arising from or based on the violation of any such law, ordinance, regulation, order or decree, whether by the Contractor or its employees.

D. Work Safety: Contract work requiring confine space entry must follow Cal-OSHA Regulation 8 CCR, Sections 5157 – 5158. This regulation requires the following to be submitted to IEUA for approval prior to the Contractor's mobilization to the work site:

1. Proof of training on confined space procedures, as defined in Cal-OSHA Regulation 8 CCR, Section 5157; and,

2. A written plan that includes; identification of confined spaces within the work site, alternate procedures where appropriate, contractor provisions and specific procedures for permit-required and non-permit required spaces and a rescue plan.

E. Subcontract Services: Any subcontracts for the performance of any services under this Contract shall be subject to the written approval of the Project Manager and shall comply with State of California, Department of Industrial Relations, SB 854 requirements.

F. Hours of Labor: The Contractor shall comply with all applicable provisions of California Labor Code Sections 1810 to 1817 relating to working hours. The Contractor shall, as a penalty to the Agency, forfeit $25.00 for each worker employed in the execution of the Contract by the Contractor or by any subcontractor for each calendar day during which such worker is required or permitted to work more than eight hours in any one calendar day and forty (40) hours in any one calendar week in violation of the provisions of the Labor Code.

G. Travel and Subsistence Pay: The Contractor shall make payment to each worker for travel and subsistence payments which are needed to execute the work and/or service, as such travel and subsistence payments are defined in the applicable collective bargaining agreements with the worker.

H. Liens: Contractor shall pay all sums of money that become due from any labor, services, materials or equipment furnished to Contractor on account of said services to be rendered or said materials to be furnished under this Contract and

that may be secured by any lien against the Agency. Contractor shall fully discharge each such lien at the time performance of the obligation secured matures and becomes due.

I. Indemnification: Contractor shall indemnify the Agency, its directors, employees and assigns, and shall defend and hold them harmless from all liabilities, demands, actions, claims, losses and expenses, including reasonable attorneys' fees, which arise out of or are related to the negligence, recklessness or willful misconduct of the Contractor, its directors, employees, agents and assigns, in the performance of work under this contract.

J. Conflict of Interest: No official of the Agency who is authorized in such capacity and on behalf of the Agency to negotiate, make, accept or approve, or to take part in negotiating, making, accepting or approving this Contract, or any subcontract relating to services or tasks to be performed pursuant to this Contract, shall become directly or indirectly personally interested in this Contract.

K. Equal Opportunity: During the performance of this Contract, the Contractor shall not unlawfully discriminate against any employee or employment applicant because of race, color, religion, sex, age, marital status, ancestry, physical or mental disability, sexual orientation, veteran status or national origin.

L. Disputes:

1. All disputes arising out of or in relation to this Contract shall be determined in accordance with this section. The Contractor shall pursue the work to completion in accordance with the instruction of the Agency's Project Manager notwithstanding the existence of dispute. By entering into this Contract, both parties are obligated, and hereby agree, to submit all disputes arising under or relating to the Contract which remain unresolved after the exhaustion of the procedures provided herein, to independent arbitration. Except as otherwise provided herein, arbitration shall be conducted under California Code of Civil Procedure Sections 1280, et. seq, or their successor.

2. Any and all disputes during the pendency of the work shall be subject to resolution by the Agency Project Manager and the Contractor shall comply, pursuant to the Agency Project Manager instructions. If the Contractor is not satisfied with any such resolution by the Agency Project Manager, they may file a written protest with the Agency Project Manager within seven (7) calendar days after receiving written notice of the Agency's decision. Failure by Contractor to file a written protest within seven (7) calendar days shall constitute waiver of protest, and acceptance of the Agency Project Manager's resolution. The Agency's Project Manager shall submit the Contractor's written protests to the General Manager, together with a copy of the Agency Project Manager's written decision, for his or her

consideration within seven (7) calendar days after receipt of said protest(s). The General Manager shall make his or her determination with respect to each protest filed with the Agency Project Manager within ten (10) calendar days after receipt of said protest(s). If Contractor is not satisfied with any such resolution by the General Manager, they may file a written request for arbitration with the Project Manager within seven (7) calendar days after receiving written notice of the General Manager's decision.

3. In the event of arbitration, the parties hereto agree that there shall be a single neutral Arbitrator who shall be selected in the following manner:

   a. The Demand for Arbitration shall include a list of five names of persons acceptable to the Contractor to be appointed as Arbitrator. The Agency shall determine if any of the names submitted by Contractor are acceptable and, if so, such person will be designated as Arbitrator.

   b. In the event that none of the names submitted by Contractor are acceptable to Agency, or if for any reason the Arbitrator selected in Step (a) is unable to serve, the Agency shall submit to Contractor a list of five names of persons acceptable to Agency for appointment as Arbitrator. The Contractor shall, in turn, have seven (7) calendar days in which to determine if one such person is acceptable.

   c. If after Steps (a) and (b), the parties are unable to mutually agree upon a neutral Arbitrator, the matter of selection of an Arbitrator shall be submitted to the San Bernardino County Superior Court pursuant to Code of Civil Procedure Section 1281.6, or its successor. The costs of arbitration, including but not limited to reasonable attorneys' fees, shall be recoverable by the party prevailing in the arbitration. If this arbitration is appealed to a court pursuant to the procedure under California Code of Civil Procedure Section 1294, et. seq., or their successor, the costs of arbitration shall also include court costs associated with such appeals, including but not limited to reasonable attorneys' fees which shall be recoverable by the prevailing party.

4. Joinder in Mediation/Arbitration: The Agency may join the Contractor in mediation or arbitration commenced by a contractor on the Project pursuant to Public Contracts Code Sections 20104 et seq. Such joinder shall be initiated by written notice from the Agency's representative to the Contractor.

M. Workers' Legal Status: For performance against this Contract, Contractor shall only utilize employees and/or subcontractors that are authorized to work in the United States pursuant to the Immigration Reform and Control Act of 1986.

N. Prevailing Wage Requirements: Pursuant to Section 1770 and following, of the California Labor Code, the Contractor shall not pay less that the general prevailing wage rates, as determined by the Director of the State of California Department of Industrial Relations for the locality in which the work is to be performed and for each craft or type of worker needed to execute the work contemplated under the Contract. The Contractor or any subcontractor performing part of said work shall strictly adhere to all provisions of the Labor Code, including, but not limited to, minimum wages, work days, nondiscrimination, apprentices, maintenance and availability of accurate payroll records and any other matters required under all Federal, State and local laws related to labor.

10. OWNERSHIP OF MATERIALS AND DOCUMENTS/CONFIDENTIALITY: The Agency retains ownership of any and all partial or complete reports, drawings, plans, notes, computations, lists, and/or other materials, documents, information, or data prepared by the Contractor and/or the Contractor's subcontractor(s) pertaining to this Contract. Said materials and documents are confidential and shall be available to the Agency from the moment of their preparation, and the Contractor shall deliver same to the Agency whenever requested to do so by the Project Manager and/or Agency. The Contractor agrees that same shall not be made available to any individual or organization, private or public, without the prior written consent of the Agency.

11. NOTICES: Any notice may be served upon either party by delivering it in person, or by depositing it in a United States Mail deposit box with the postage thereon fully prepaid, and addressed to the party at the address set forth below:

Agency: Mr. Warren T. Green
Manager of Contracts & Facilities Services
Inland Empire Utilities Agency
P.O. Box 9020
Chino Hills, CA 91709

Contractor: Mr. Jeff Johnson, CLMC, CLEP
Facility Solutions Group, Inc.
801 Richfield Road
Placentia, CA 92870

Any notice given hereunder shall be deemed effective in the case of personal delivery, upon receipt thereof, or, in the case of mailing, at the moment of deposit in the course of transmission with the United States Postal Service.

12. SUCCESSORS AND ASSIGNS: All of the terms, conditions and provisions of this Contract shall inure to the benefit of and be binding upon the Agency, the Contractor, and their respective successors and assigns. Notwithstanding the foregoing, no assignment of the duties or benefits of the Contractor under this Contract may be assigned, transferred or otherwise disposed of without the prior written consent of the Agency; and

any such purported or attempted assignment, transfer or disposal without the prior written consent of the Agency shall be null, void and of no legal effect whatsoever.

13. RIGHT TO AUDIT: The Agency reserves the right to review and/or audit all Contractor's records related to the Work. The option to review and/or audit may be exercised during the term of the Contract, upon termination, upon completion of the Contract, or at any time thereafter up to twelve (12) months after final payment has been made to the Contractor. The Contractor shall make all records and related documentation available within three (3) working days after said records are requested by the Agency.

14. INTEGRATION: The Contract Documents represent the entire Contract of the Agency and the Contractor as to those matters contained herein. No prior oral or written understanding shall be of any force or effect with respect to those matters covered by the Contract Documents. This Contract may not be modified, altered or amended except by written mutual agreement by the Agency and the Contractor.

15. GOVERNING LAW: This Contract is to be governed by and constructed in accordance with the laws of the State of California.

16. TERMINATION FOR CONVENIENCE: The Agency reserves and has the right to immediately suspend, cancel or terminate this Contract at any time upon written notice to the Contractor. In the event of such termination, the Agency shall pay Contractor for all authorized and Contractor-invoiced services up to the date of such termination.

17. FORCE MAJEURE: Neither party shall hold the other responsible for the effects of acts occurring beyond their control; e.g., war, riots, strikes, natural disasters, etcetera.

18. LIQUIDATED DAMAGES: Liquidated Damages, in the amount of $150.00 per day, may be assessed by the Agency for each calendar day that the Contractor fails to complete the services in accordance with the contractually-committed delivery schedule. Any and all Liquidated Damages assessed by the Agency will be taken as a direct credit against the Contractor's invoice for the missed services. The Contractor's acceptance of a contract subsequently issued in conjunction with this solicitation, shall serve to indicate acceptance of this Liquidated Damages clause, and the daily assessment of damages expressed herein.

19. CHANGES: The Agency may, at any time, make changes to this Contract's Scope of Work; including additions, reductions and other alterations to any or all of the work. However, such changes shall only be made via written amendment to this Contract. The Contract Price and Work Schedule shall be equitably adjusted, if required, to account for such changes and shall be set forth within the Contract Amendment.

20. NOTICE TO PROCEED: No services shall be performed or furnished under this Contract unless and until this document has been properly signed by all responsible parties and a Notice to Proceed order has been issued to the Contractor.

IN WITNESS WHEREOF, the parties hereto have caused the Contract to be entered as of the day and year written above.

INLAND EMPIRE UTILITIES AGENCY, A MUNICIPAL WATER DISTRICT:		FACILITY SOLUTIONS GROUP, INC.:	
P. Joseph Grindstaff General Manager	(Date)	Jeff Johnson, CLMC, CLEP	(Date)

Contractor's Price Proposal Summary - Categor

Print Date:	January 05, 2016
Contract Number:	CA-GL06A-082013-FSG
Work Order Number:	A52WWLT1
Work Order Title:	Inland Empire Utilities Agency (IEUA) - Lighting
Contractor:	Facility Solutions Group
Proposal Value:	$1,400,319.97
Proposal Name:	IEUA 5 Site 12/17/15 - Lighting

Category - CCR:	**$175,403.53**
Category - HQ:	**$231,466.93**
Category - RP1:	**$567,075.01**
Category - RP4:	**$292,736.77**
Category - RP5:	**$133,637.73**
Proposal Total	**$1,400,319.97**

This proposal total represents the correct total for the proposal. Any discrepancy between line totals, sub-totals and the proposal total is due to rounding of the line totals and sub-totals.

The Percentage of NPP on this Proposal: **61.8491%**

Contractor's Price Proposal Detail - Categor

Print Date: January 05, 2016

Contract Number: CA-GL06A-082013-FSG
Work Order Number: A52WWLT1
Work Order Title: Inland Empire Utilities Agency (IEUA) - Lighting
Contractor: Facility Solutions Group
Proposal Value: $1,400,319.97
Proposal Name: IEUA 5 Site 12/17/15 - Lighting

Record	Section - Item	Modifier	UOM	Description	Line Total
Category - CCR					
1	01 22 16 00-0002		EA	Reimbursable FeesReimbursable fees will be paid to the contractor for the actual cost, without mark-up, for which a receipt or bill is received. The Adjustment Factor applied to Reimbursable Fees will be 1.0000. The labor cost involved in obtaining all permits is in the Adjustment Factor. The base cost of the Reimbursable Fee is $1.00. The quantity used will adjust the base cost to the actual Reimbursable Fee (e.g. quantity of 125 = $125.00 Reimbursable Fee). If there are multiple Reimbursable Fees, each one shall be listed separately with a comment in the "note" block to identify the Reimbursable Fees (e.g. sidewalk closure, road cut, various permits, extended warrantee, expedited shipping costs, etc.). A copy of each receipt shall be included with the Proposal.	$3,459.00
				Quantity x Unit Price x Factor = Total	
			Installation	3,459.00 x $1.00 x 1.0000 = $3,459.00	
				Bonds, including insurance	
2	01 52 13 00-0004		MO	6' x 8' x 40' Storage Container	$471.97
				Quantity x Unit Price x Factor = Total	
			Installation	4.00 x $136.00 x 0.8676 = $471.97	
				2 Cont x 2 months	
3	01 MO D0 00-0004	0004	MO	For Delivery, Each Way, Add	$294.98
				Quantity x Unit Price x Factor = Total	
			Installation	4.00 x $85.00 x 0.8676 = $294.98	
4	01 66 19 00-0059		EA	Handling Material For Over 125' Per 48" x 40" x 48" Container Per 125' Segment	$5,282.12
				Quantity x Unit Price x Factor = Total	
			Installation	876.00 x $6.95 x 0.8676 = $5,282.12	
				Handling onver125'/pallet	
5	01 74 19 00-0022		CYM	Hauling On Paved Roads, First 15 Miles	$563.38
				Quantity x Unit Price x Factor = Total	
			Installation	585.00 x $1.11 x 0.8676 = $563.38	
6	01 74 19 00-0023		CYM	Hauling On Paved Roads, Miles Over Initial 15 Miles	$131.96
				Quantity x Unit Price x Factor = Total	
			Installation	195.00 x $0.78 x 0.8676 = $131.96	
				Dispos first 15 miles	
7	16 00 00 00-0105	NPP Task	ea	RAB ALED2T105	$20,298 13
				Quantity x Unit Price x Factor = Total	
			Installation	32 00 x $558 82 x 1 1351 = $20,298 13	
				Material only, labor under CTC 26562300-0095	
8	16 00 00 00-0109	NPT Task	ea	RAB BAYLED78NW	$8,813 69
				Quantity x Unit Price x Factor = Total	
			Installation	22 00 x $352 94 x 1 1351 = $8,813 69	
				Material only, labor under CTC 26511300-0658	

Record	Section - Item	Modifier	UOM	Description	Line Total
Category - CCR					
9	16 00 00 00-0110		ea	RAB BLEDR24	$1,518 36
		NPP Task	Installation	Quantity 3 00 x Unit Price $445 88 x Factor 1 1351 = Total $1,518 36	
				Material only, labor under CTC 26562600-0007	
10	16 00 00 00-0125		EA	RAB FFLED52T	$419 99
		NPP Task	Installation	Quantity 1 00 x Unit Price $370 00 x Factor 1 1351 = Total $419 99	
				Material only, labor under CTC 26563600-0028	
11	16 00 00 00-0134		EA	RAB WPLED26/PC	$3,665 64
		NPP Task	Installation	Quantity 15 00 x Unit Price $215 29 x Factor 1 1351 = Total $3,665 64	
				Material only, labor under CTC 26562300-0021	
12	16 00 00 00-0135		ea	RAB WPLED52/PC	$352 55
		NPP Task	Installation	Quantity 1 00 x Unit Price $310 59 x Factor 1 1351 = Total $352 55	
				Material only, labor under CTC 26562300-0052	
13	16 00 00 00-0350		ea	COLUMBIA LAW4-40LW-E-U	$1,261 97
		NPP Task	Installation	Quantity 9 00 x Unit Price $123 53 x Factor 1 1351 = Total $1,261 97	
				Material only, labor under CTC 26511300-0029	
14	16 00 00 00-0603		ea	EVOKIT 2X2 P 32L 31W 840 + 502435krt	$1,347 51
		NPP Task	Installation	Quantity 7 00 x Unit Price $169 59 x Factor 1 1351 = Total $1,347 51	
				Material only, labor under CTC 26511300-0075	
15	16 00 00 00-0604		ea	EVOKIT 2X4 P 42L 42W 840 + 502435 krt	$5,970 17
		NPP Task	Installation	Quantity 27 00 x Unit Price $194 80 x Factor 1 1351 = Total $5,970 17	
				Material only, labor under CTC 26511300-0075	
16	16 00 00 00-0707		ea	P2 VTL-1X4-XL-F-UL-40K	$4,023 66
		NPP Task	Installation	Quantity 23 00 x Unit Price $154 12 x Factor 1 1351 = Total $4,023 66	
				Material only, labor under CTC 26511300-0029	
17	16 00 00 00-1030		ea	Sensorswitch SB010 ODP D P BZ 3V	$3,483 62
		NPP Task	Installation	Quantity 33 00 x Unit Price $93 00 x Factor 1 1351 = Total $3,483 62	
				Material only, labor under CTC 26592300-0004	
18	16 00 00 00-1104		ea	Holophne PLED2 05L 4K AS UN NA G L5-P3US-GR	$33,991 70
		NPP Task	Installation	Quantity 62 00 x Unit Price $483 00 x Factor 1 1351 = Total $33,991 70	
				Material only, labor under CTC 26511300-0393	
19	16 00 00 00-1105		ea	Holophne PLED2 08L 4K AS UN NA G L5-P3US-GR	$5,424 64
		NPP Task	Installation	Quantity 9 00 x Unit Price $531 00 x Factor 1 1351 = Total $5,424 64	
				Material only, labor under CTC 26511300-0393	

Record	Section - Item	Modifier	UOM	Description	Line Total
Category - CCR					
20	16 00 00 00-1402		EACH	LUMECON LWP-BH-25W	$2,109.97
	NPP Task		Installation	Quantity 4.00 x Unit Price $464.71 x Factor 1.1351 = Total $2,109.97	
				Material only, labor under CTC 26511300-0658	
21	16000-1601		ea	CREE CR-LE-40LHE-40K-S-HD	$25,105.69
	NPP Task		Installation	Quantity 80.00 x Unit Price $276.47 x Factor 1.1351 = Total $25,105.69	
				Material only, labor under CTC 26511300-0029	
22	26 01 20 00-0002		EA	Lock Out/Tag Out Local Disconnect	$961.65
			Installation	Quantity 68.00 x Unit Price $16.30 x Factor 0.8676 = Total $961.65	
23	26 01 20 00-0004		EA	Lock Out/Tag Out Tags	$3.80
			Installation	Quantity 2.00 x Unit Price $2.19 x Factor 0.8676 = Total $3.80	
24	26 01 50 51-0149		EA	Recycle 4' Length Linear Fluorescent Lamps	$142.18
			Installation	Quantity 332.00 x Unit Price $0.45 x Factor 0.9517 = Total $142.18	
25	26 01 50 51-0153		EA	Recycle U-Shaped Or Circular Fluorescent Lamps	$5.46
			Installation	Quantity 14.00 x Unit Price $0.41 x Factor 0.9517 = Total $5.46	
26	26 01 50 51-0154		EA	Recycle HID Lamps	$182.27
			Installation	Quantity 149.00 x Unit Price $1.41 x Factor 0.8676 = Total $182.27	
27	26 01 50 52-0036		EA	Fluorescent Ballast Removal	$612.48
			Installation	Quantity 173.00 x Unit Price $3.72 x Factor 0.9517 = Total $612.48	
28	26 05 33 13-0127		EA	1/2" x 2" Long RGS, Nipple	$247.37
			Installation	Quantity 33.00 x Unit Price $8.64 x Factor 0.8676 = Total $247.37	
				For ext sensors NPP 1030	
29	26 MO D0 00-0022	0022	EA	For Installation Above 14', Add	$33.21
			Installation	Quantity 33.00 x Unit Price $1.16 x Factor 0.8676 = Total $33.21	
30	26 05 33 16-0199		EA	1/2", Type FD, Deep, Single Gang Cast Aluminum BoxOne hub.	$1,677.19
			Installation	Quantity 33.00 x Unit Price $58.58 x Factor 0.8676 = Total $1,677.19	
				For ext sensors NPP 1030	
31	26 09 23 00-0004		EA	Wall Switch Replacement Occupancy Sensor, Double GangNote: Includes integral occupancy sensor and relay	$2,039.11
			Installation	Quantity 30.00 x Unit Price $71.42 x Factor 0.9517 = Total $2,039.11	
				For supplying and installing interior wall occupancy switches	

Record	Section - Item	Modifier	UOM	Description	Line Total
Category - CCR					
32	26 09 23 00-0004		EA	Wall Switch Replacement Occupancy Sensor, Double GangNote: Includes integral occupancy sensor and relay	$838.02
	Excludes Material		Installation	Quantity 33.00 x Unit Price $29.27 x Factor 0.8676 = Total $838.02	
				Labor only for installation of exterior sensors NPP 1030	
33	26 09 23 00-0005		EA	Ceiling Mount Sensor Coer <500 SF, T-Bar Or Exposed CeilingNote: Includes one relay, 8' of plenum rated control wire, mounting, j-box	$324.74
			Installation	Quantity 2.00 x Unit Price $170.61 x Factor 0.9517 = Total $324.74	
34	26 09 23 00-0006		EA	Ceiling Mount Sensor Coer >500 SF, T-Bar Or Exposed CeilingNote: Includes one relay, 8' of plenum rated control wire, mounting, j-box	$2,699.93
			Installation	Quantity 15.00 x Unit Price $189.13 x Factor 0.9517 = Total $2,699.93	
35	26 09 23 00-0007		EA	Install Additional Switching RelayNote: Includes 8' of plenum rated control wire, mounting, j-box	$442.81
			Installation	Quantity 8.00 x Unit Price $58.16 x Factor 0.9517 = Total $442.81	
36	26 09 23 00-0008		EA	On Board Occupancy Sensor For Light FixtureNote: Factory installed	$2,027.29
			Installation	Quantity 26.00 x Unit Price $81.93 x Factor 0.9517 = Total $2,027.29	
37	26 27 26 00-0137		EA	Blank Cover, Three Gang, Cast Metallic Weatherproof Cover (Killark® 3FSBC)	$555.15
			Installation	Quantity 33.00 x Unit Price $19.39 x Factor 0.8676 = Total $555.15	
				For ext sensors NPP 1030	
38	26 51 13 00-0029		EA	Remove And Reinstall Surface Mounted Or Pendant Light Fixture	$8,441.96
			Installation	Quantity 112.00 x Unit Price $79.20 x Factor 0.9517 = Total $8,441.96	
				Labor only NPP 0350, 0707, 1601	
39	26 51 13 00-0075		EA	4,300 Lumens, 2' x 4', LED Architectural Lighting Retrofit For Existing Recessed Lay-In/Troffer Fixtures (PlanLED FR3E-045) (DLC Certified)	$947.11
	Excludes Material		Installation	Quantity 34.00 x Unit Price $29.27 x Factor 0.9517 = Total $947.11	
				Labor only NPP 0603, 0604	
40	26 51 13 00-0393		EA	98 System Watts, 6,340 Lumens, Pendant Mount, Wet Location, NEMA 4X, High Bay/Low Bay, LED Fixture (Cooper Champ® Pro PVM9L)	$9,966.20
	Excludes Material		Installation	Quantity 71.00 x Unit Price $101.12 x Factor 0.8676 = Total $6,228.95	
			Demolition	71.00 x $60.87 x 0.8676 = $3,737.25	
				Labor only NPP 1104, 1105	
41	26 51 13 00-0658		EA	7,000 Lumens, LED High Bay Fixture (PlanLED LUNA LN70)	$4,857.04
	Excludes Material		Installation	Quantity 26.00 x Unit Price $130.86 x Factor 0.9517 = Total $3,238.03	
			Demolition	26.00 x $65.43 x 0.9517 = $1,619.01	
				Labor only NPP 0109, 1402	

Record	Section - Item	Modifier	UOM	Description	Line Total
Category - CCR					
42	26 56 23 00-0021		EA	70 Watt Metal Halide, Non Cutoff, Borosilicate Glass Lens, Small Wall Pack	$2,257.41
	Excludes Material			Quantity x Unit Price x Factor = Total	
			Installation	15.00 x $130.13 x 0.8676 = $1,693.51	
			Demolition	15.00 x $43.33 x 0.8676 = $563.90	
			Labor only NPP 0134		
43	26 56 23 00-0052		EA	250 Watt Metal Halide, Non Cutoff, Borosilicate Glass Lens, Large Wall Pack	$225.80
	Excludes Material			Quantity x Unit Price x Factor = Total	
			Installation	1.00 x $195.19 x 0.8676 = $169.35	
			Demolition	1.00 x $65.07 x 0.8676 = $56.45	
			Labor only NPP 0135		
44	26 56 23 00-0095		EA	100 LEDs, 111 System Watts, Arm Mount, Rectangular, LED Area Fixture (CREE® BetaLED® Edge® ARE-EDG) (DLC Certified)	$6,680.94
	Excludes Material			Quantity x Unit Price x Factor = Total	
			Installation	32.00 x $160.43 x 0.8676 = $4,454.05	
			Demolition	32.00 x $80.21 x 0.8676 = $2,226.89	
			Labor only NPP 0105		
45	26 56 26 00-0007		EA	42" H.I.D. Bollard	$1,016.08
	Excludes Material			Quantity x Unit Price x Factor = Total	
			Installation	3.00 x $260.25 x 0.8676 = $677.38	
			Demolition	3.00 x $130.13 x 0.8676 = $338.70	
			Labor only NPP 0110		
46	26 56 36 00-0028		EA	175 Watt Metal Halide PF-154 Series GE Flood Light	$227.63
	Excludes Material			Quantity x Unit Price x Factor = Total	
			Installation	1.00 x $174.91 x 0.8676 = $151.75	
			Demolition	1.00 x $87.46 x 0.8676 = $75.88	
			Labor only NPP 0125		
Subtotal for Category - CCR:					**$175,403.53**
Category - HQ					
47	01 22 16 00-0002		EA	Reimbursable FeesReimbursable fees will be paid to the contractor for the actual cost, without mark-up, for which a receipt or bill is received. The Adjustment Factor applied to Reimbursable Fees will be 1.0000. The labor cost involved in obtaining all permits is in the Adjustment Factor. The base cost of the Reimbursable Fee is $1.00. The quantity used will adjust the base cost to the actual Reimbursable Fee (e.g. quantity of 125 = $125.00 Reimbursable Fee). If there are multiple Reimbursable Fees, each one shall be listed separately with a comment in the "note" block to identify the Reimbursable Fees (e.g. sidewalk closure, road cut, various permits, extended warrantee, expedited shipping costs, etc.). A copy of each receipt shall be included with the Proposal.	$4,539.00
				Quantity x Unit Price x Factor = Total	
			Installation	4,539.00 x $1.00 x 1.0000 = $4,539.00	
			Bonds, including insurance		
48	01 52 13 00-0004		MO	8' x 8' x 40' Storage Container	$471.97
				Quantity x Unit Price x Factor = Total	
			Installation	4.00 x $136.00 x 0.8676 = $471.97	
			2 Cont x 2 months		

Record	Section - Item	Modifier	UOM	Description	Line Total
Category - HQ					
49	01 MO D0 00-0004	0004	MO	For Delivery, Each Way, Add	$294.98
			Installation	Quantity 4.00 x Unit Price $85.00 x Factor 0.8676 = Total $294.98	
50	01 66 19 00-0059		EA	Handling Material For Over 125' Per 48" x 40" x 48" Container Per 125' Segment	$5,282.12
			Installation	Quantity 876.00 x Unit Price $6.95 x Factor 0.8676 = Total $5,282.12	
			Over 125'/pallet		
51	01 74 19 00-0022		CYM	Hauling On Paved Roads, First 15 Miles	$563.38
			Installation	Quantity 585.00 x Unit Price $1.11 x Factor 0.8676 = Total $563.38	
52	01 74 19 00-0023		CYM	Hauling On Paved Roads, Miles Over Initial 15 Miles	$131.96
			Installation	Quantity 195.00 x Unit Price $0.78 x Factor 0.8676 = Total $131.96	
			First 15 miles hauling		
53	16 00 00 00-0106	NPP Task	ea	RAB ALED2T50	$29,838 33
			Installation	Quantity 56 00 x Unit Price $469 41 x Factor 1 1351 = Total $29,838 33	
			Material only, labor under CTC 26562300-0092		
54	16 00 00 00-0117	NPP Task	ea	RAB WPLED26	$2,916 58
			Installation	Quantity 13 00 x Unit Price $197 65 x Factor 1 1351 = Total $2,916 58	
			Material only, labor under CTC 26562300-0021		
55	16 00 00 00-0123	NPP Task	EA	RAB FFLED39T	$285 77
			Installation	Quantity 1 00 x Unit Price $251 76 x Factor 1 1351 = Total $285 77	
			Material only, labor under CTC 26563600-0028		
56	16 00 00 00-0350	NPP Task	ea	COLUMBIA LAW4-40LW-E-U	$1,121 75
			Installation	Quantity 8 00 x Unit Price $123 53 x Factor 1 1351 = Total $1,121 75	
			Material only, labor under CTC 26511300-0029		
57	16 00 00 00-0603	NPP Task	ea	EVOKIT 2X2 P 32L 31W 840 + 502435kit	$38,307 82
			Installation	Quantity 199 00 x Unit Price $169 59 x Factor 1 1351 = Total $38,307 82	
			Material only, labor under CTC 26511300-0075		
58	16 00 00 00-1400	NPP Task	ea	ge alv1-0-1-T-47-D-4-S-B-V-ST-K-N-W	$24,070 52
			Installation	Quantity 103 00 x Unit Price $205 88 x Factor 1 1351 = Total $24,070 52	
			Material only, labor under CTC 26511300-0029		
59	16 00 00 00-1401	NPP Task	ea	ge alv1-0-1-T-47-D-8-S-B-V-ST-K-N-W	$694 41
			Installation	Quantity 2 00 x Unit Price $305 88 x Factor 1 1351 = Total $694 41	
			Material only, labor under CTC 26511300-0029		
60	26 01 20 00-0002		EA	Lock Out/Tag Out Local Disconnect	$975.79
			Installation	Quantity 69.00 x Unit Price $16.30 x Factor 0.8676 = Total $975.79	

Record	Section - Item	Modifier	UOM	Description	Line Total
Category - HQ					
61	26 01 20 00-0004		EA	Lock Out/Tag Out Tags	$7.60
			Installation	Quantity 4.00 x Unit Price $2.19 x Factor 0.8676 = Total $7.60	
62	26 01 50 51-0145		EA	8 Watt (50 Watt Halogen Equivalent), GU5.3 Base, MR16, Dimmable LED Lamp (Tier 1)	$1,454.82
			Installation	Quantity 45.00 x Unit Price $33.97 x Factor 0.9517 = Total $1,454.82	
63	26 01 50 51-0149		EA	Recycle 4' Length Linear Fluorescent Lamps	$141.33
			Installation	Quantity 330.00 x Unit Price $0.45 x Factor 0.9517 = Total $141.33	
64	26 01 50 51-0152		EA	Recycle Compact Fluorescent Lamps	$5.07
			Installation	Quantity 13.00 x Unit Price $0.41 x Factor 0.9517 = Total $5.07	
65	26 01 50 51-0153		EA	Recycle U-Shaped Or Circular Fluorescent Lamps	$57.75
			Installation	Quantity 148.00 x Unit Price $0.41 x Factor 0.9517 = Total $57.75	
66	26 01 50 51-0154		EA	Recycle HID Lamps	$91.75
			Installation	Quantity 75.00 x Unit Price $1.41 x Factor 0.8676 = Total $91.75	
67	26 01 50 52-0036		EA	Fluorescent Ballast Removal	$1,784.32
			Installation	Quantity 504.00 x Unit Price $3.72 x Factor 0.9517 = Total $1,784.32	
68	26 09 23 00-0004		EA	Wall Switch Replacement Occupancy Sensor, Double GangNote: Includes integral occupancy sensor and relay	$1,223.47
			Installation	Quantity 18.00 x Unit Price $71.42 x Factor 0.9517 = Total $1,223.47	
				For supplying and installing interior wall occupancy switches	
69	26 09 23 00-0006		EA	Ceiling Mount Sensor Coer >500 SF, T-Bar Or Exposed CeilingNote: Includes one relay, 8' of plenum rated control wire, mounting, j-box	$3,959.89
			Installation	Quantity 22.00 x Unit Price $189.13 x Factor 0.9517 = Total $3,959.89	
70	26 09 23 00-0007		EA	Install Additional Switching RelayNote: Includes 8' of plenum rated control wire, mounting, j-box	$553.51
			Installation	Quantity 10.00 x Unit Price $58.16 x Factor 0.9517 = Total $553.51	
71	26 51 13 00-0029		EA	Remove And Reinstall Surface Mounted Or Pendant Light Fixture	$8,517.33
			Installation	Quantity 113.00 x Unit Price $79.20 x Factor 0.9517 = Total $8,517.33	
				Labor Only NPP 0350, 1400, 1401	
72	26 51 13 00-0075		EA	4,300 Lumens, 2' x 4', LED Architectural Lighting Retrofit For Existing Recessed Lay-In/Troffer Fixtures (PlanLED FR3E-045) (DLC Certified)	$5,543.40
	Excludes Material		Installation	Quantity 199.00 x Unit Price $29.27 x Factor 0.9517 = Total $5,543.40	
				LABOR ONLY NPP 0603	

Record	Section - Item	Modifier	UOM	Description	Line Total
Category - HQ					
73	26 51 13 00-0344		EA	4,000 Lumens, 4' Length, LED Low Bay Fixture (Cree® CS14™) (DLC Certified, Tier 2)	$17,939.16
				Installation: Quantity 36.00 x Unit Price $487.91 x Factor 0.9517 = Total $16,716.38	
				Demolition: Quantity 36.00 x Unit Price $35.69 x Factor 0.9517 = Total $1,222.78	
74	26 51 13 00-0346		EA	8,000 Lumens, 8' Length, LED Low Bay Fixtures (Cree® CS18™) (DLC Certified, Tier 2)	$50,317.37
				Installation: Quantity 64.00 x Unit Price $781.49 x Factor 0.9517 = Total $47,599.62	
				Demolition: Quantity 64.00 x Unit Price $44.62 x Factor 0.9517 = Total $2,717.75	
75	26 56 23 00-0021		EA	70 Watt Metal Halide, Non Cutoff, Borosilicate Glass Lens, Small Wall Pack	$1,956.42
	Excludes Material			Installation: Quantity 13.00 x Unit Price $130.13 x Factor 0.8676 = Total $1,467.71	
				Demolition: Quantity 13.00 x Unit Price $43.33 x Factor 0.8676 = Total $488.71	
				Labor Only NPP 0117	
76	26 56 23 00-0092		EA	40 LEDs, 47 System Watts, Arm Mount, Rectangular, LED Area Fixture (CREE® BetaLED® Edge® ARE-EDG) (DLC Certified)	$10,021.27
	Excludes Material			Installation: Quantity 56.00 x Unit Price $137.51 x Factor 0.8676 = Total $6,881.01	
				Demolition: Quantity 56.00 x Unit Price $68.75 x Factor 0.8676 = Total $3,340.26	
				Labor only NPP 0106	
77	26 56 23 00-0102		EA	40 LEDs, 47 System Watts, Arm Mount, Round, LED Area Fixture (CREE® BetaLED® Edge® ARE-EDR)	$18,170.46
				Installation: Quantity 18.00 x Unit Price $1,094.77 x Factor 0.8676 = Total $17,098.80	
				Demolition: Quantity 18.00 x Unit Price $68.75 x Factor 0.8676 = Total $1,073.66	
78	26 56 36 00-0028		EA	175 Watt Metal Halide PF-154 Series GE Flood Light	$227.63
	Excludes Material			Installation: Quantity 1.00 x Unit Price $174.91 x Factor 0.8676 = Total $151.75	
				Demolition: Quantity 1.00 x Unit Price $87.46 x Factor 0.8676 = Total $75.88	
				Labor only NPP 0123	
Subtotal for Category - HQ:					**$231,466.93**
Category - RP1					
79	01 22 16 00-0002		EA	Reimbursable FeesReimbursable fees will be paid to the contractor for the actual cost, without mark-up, for which a receipt or bill is received. The Adjustment Factor applied to Reimbursable Fees will be 1.0000. The labor cost involved in obtaining all permits is in the Adjustment Factor. The base cost of the Reimbursable Fee is $1.00. The quantity used will adjust the base cost to the actual Reimbursable Fee (e.g. quantity of 125 = $125.00 Reimbursable Fee). If there are multiple Reimbursable Fees, each one shall be listed separately with a comment in the "note" block to identify the Reimbursable Fees (e.g. sidewalk closure, road cut, various permits, extended warrantee, expedited shipping costs, etc.). A copy of each receipt shall be included with the Proposal.	$11,133.00
				Installation: Quantity 11,133.00 x Unit Price $1.00 x Factor 1.0000 = Total $11,133.00	
				Bonds, including insurance	

Record	Section - Item	Modifier	UOM	Description	Line Total
Category - RP1					
80	01 52 13 00-0004		MO	8' x 8' x 40' Storage Container	$471.97
			Installation	Quantity 4.00 x Unit Price $136.00 x Factor 0.8676 = Total $471.97	
			2 Cot x 2 months		
81	01 MO D0 00-0004	0004	MO	For Delivery, Each Way, Add	$294.98
			Installation	Quantity 4.00 x Unit Price $85.00 x Factor 0.8676 = Total $294.98	
			4 Pickup & delivery		
82	01 66 19 00-0059		EA	Handling Material For Over 125' Per 48" x 40" x 48" Container Per 125' Segment	$5,282.12
			Installation	Quantity 876.00 x Unit Price $6.95 x Factor 0.8676 = Total $5,282.12	
			Over 125'/pallet		
83	01 74 19 00-0022		CYM	Hauling On Paved Roads, First 15 Miles	$563.38
			Installation	Quantity 585.00 x Unit Price $1.11 x Factor 0.8676 = Total $563.38	
84	01 74 19 00-0023		CYM	Hauling On Paved Roads, Miles Over Initial 15 Miles	$131.96
			Installation	Quantity 195.00 x Unit Price $0.78 x Factor 0.8676 = Total $131.96	
			First 15 miles hauling		
85	16 00 00 00-0105	NPP Task	ea	RAB ALED2T105	$57,722.81
			Installation	Quantity 91.00 x Unit Price $558.82 x Factor 1.1351 = Total $57,722.81	
			Material only, labor under CTC 26562300-0095		
86	16 00 00 00-0106	NPP Task	ea	RAB ALED2T50	$2,131.31
			Installation	Quantity 4.00 x Unit Price $469.41 x Factor 1.1351 = Total $2,131.31	
			Material only, labor under CTC 26562300-0092		
87	16 00 00 00-0107	NPP Task	ea	RAB ALED2T78	$6,393.93
			Installation	Quantity 12.00 x Unit Price $469.41 x Factor 1.1351 = Total $6,393.93	
			Material only, labor under CTC 26562300-0095		
88	16 00 00 00-0109	NPP Task	ea	RAB BAYLED78NW	$22,434.84
			Installation	Quantity 56.00 x Unit Price $352.94 x Factor 1.1351 = Total $22,434.84	
			Material only, labor under CTC 26511300-0658		
89	16 00 00 00-0111	NPP Task	ea	RAB CANVAS78T	$2,029.83
			Installation	Quantity 4.00 x Unit Price $447.06 x Factor 1.1351 = Total $2,029.83	
			Material only, labor under CTC 26563600-0028		
90	16 00 00 00-0115	NPP Task	ea	RAB SLIM18	$172.26
			Installation	Quantity 1.00 x Unit Price $151.76 x Factor 1.1351 = Total $172.26	
			Material only, labor under CTC 26562300-0006		

Record	Section - Item	Modifier	UOM	Description	Line Total
Category - RP1					
91	16 00 00 00-0120		EA	RAB ELED4T50/PC	$552 86
		NPP Task	Installation	Quantity 1 00 x Unit Price $487 08 x Factor 1 1351 = Total $552 86	
				THE FIXTURE IS RAB ALED4T50/PC Material only, labor under CTC 26562300-0092	
92	16 00 00 00-0121		EA	RAB ALED4T78	$1,065 65
		NPP Task	Installation	Quantity 2 00 x Unit Price $469 41 x Factor 1 1351 = Total $1,065 65	
				Material only, labor under CTC 26562300-0095	
93	16 00 00 00-0124		EA	RAB FFLED52	$742 67
		NPP Task	Installation	Quantity 2 00 x Unit Price $327 14 x Factor 1 1351 = Total $742 67	
				Material only, labor under CTC 26563600-0071	
94	16 00 00 00-0126		EA	RAB FXLED300SF	$23,075 90
		NPP Task	Installation	Quantity 20 00 x Unit Price $1,016 47 x Factor 1 1351 = Total $23,075 90	
				Material only, labor under CTC 26563600-0258	
95	16 00 00 00-0127		EA	RAB FXLED78	$3,888 76
		NPP Task	Installation	Quantity 8 00 x Unit Price $428 24 x Factor 1 1351 = Total $3,888 76	
				Material only, labor under CTC 26563600-0079	
96	16 00 00 00-0128		EA	RAB VANLED20	$451 36
		NPP Task	Installation	Quantity 2 00 x Unit Price $198 82 x Factor 1 1351 = Total $451 36	
				Material only, labor under CTC 26562300-0122	
97	16 00 00 00-0129		EA	RAB WP2LED24	$8,605 47
		NPP Task	Installation	Quantity 36 00 x Unit Price $210 59 x Factor 1 1351 = Total $8,605 47	
				Material only, labor under CTC 26562300-0021	
98	16 00 00 00-0131		EA	RAB SLIM18/PC	$4,615 14
		NPP Task	Installation	Quantity 24 00 x Unit Price $169 41 x Factor 1 1351 = Total $4,615 13	
				Material only, labor under CTC 26562300-0006	
99	16 00 00 00-0132		EA	RAB WP2LED24/PC	$777 23
		NPP Task	Installation	Quantity 3 00 x Unit Price $228 24 x Factor 1 1351 = Total $777 23	
				Material only, labor under CTC 26562300-0021	
100	16 00 00 00-0133		EA	RAB WPLED18/PC	$2,556 03
		NPP Task	Installation	Quantity 11 00 x Unit Price $204 71 x Factor 1 1351 = Total $2,556 03	
				Material only, labor under CTC 26562300-0021	
101	16 00 00 00-0134		EA	RAB WPLED26/PC	$16,373 17
		NPP Task	Installation	Quantity 67 00 x Unit Price $215 29 x Factor 1 1351 = Total $16,373 17	
				Material only, labor under CTC 26562300-0021	

Record	Section - Item	Modifier	UOM	Description	Line Total
Category - RP1					
102	16 00 00 00-0135		ea	RAB WPLED52/PC	$16,922 43
		NPP Task	Installation	Quantity 48 00 x Unit Price $310 59 x Factor 1 1351 = Total $16,922 43	
				Material only, labor under CTC 26562300-0052	
103	16 00 00 00-0254		ea	Lith 2TLX4-60L-FW-A12-LP840	$4,647 28
		NPP Task	Installation	Quantity 12 00 x Unit Price $341 18 x Factor 1 1351 = Total $4,647 28	
				Material only, labor under CTC 26511300-0029	
104	16 00 00 00-0255		ea	LITH TLX4 30L FW A12 SLD LP840	$1,929 67
		NPP Task	Installation	Quantity 5 00 x Unit Price $340 00 x Factor 1 1351 = Total $1,929 67	
				Material only, labor under CTC 26511300-0029	
105	16 00 00 00-0350		ea	COLUMBIA LAW4-40LW-E-U	$10,516 42
		NPP Task	Installation	Quantity 75 00 x Unit Price $123 53 x Factor 1 1351 = Total $10,516 42	
				Material only, labor under CTC 26511300-0029	
106	16 00 00 00-0507		EA	DECO LINEA-LED-14-45-40-UNV-N-DM-L	$863 95
		NPP Task	Installation	Quantity 8 00 x Unit Price $95 14 x Factor 1 1351 = Total $863 95	
				Material only, labor under CTC 26511300-0043	
107	16 00 00 00-0508		EA	DECO LINEA-LED-14-60-40-UNV-N-DM	$463 76
		NPP Task	Installation	Quantity 4 00 x Unit Price $102 14 x Factor 1 1351 = Total $463 76	
				Material only, labor under CTC 26511300-0043	
108	16 00 00 00-0603		ea	EVOKIT 2X2 P 32L 31W 840 + 502435kit	$1,155 01
		NPP Task	Installation	Quantity 6 00 x Unit Price $169 59 x Factor 1 1351 = Total $1,155 01	
				Material only, labor under CTC 26511300-0075	
109	16 00 00 00-0604		ea	EVOKIT 2X4 P 42L 42W 840 + 502435 kit	$13,267 05
		NPP Task	Installation	Quantity 60 00 x Unit Price $194 80 x Factor 1 1351 = Total $13,267 05	
				Material only, labor under CTC 26511300-0075	
110	16 00 00 00-0707		ea	P2 VTL-1X4-XL-F-UL-40K	$8,747 08
		NPP Task	Installation	Quantity 50 00 x Unit Price $154 12 x Factor 1 1351 = Total $8,747 08	
				Material only, labor under CTC 26511300-0029	
111	16 00 00 00-0708		ea	P2 VTL-1X8-XL-F-UL-40K	$3,489 42
		NPP Task	Installation	Quantity 13 00 x Unit Price $236 47 x Factor 1 1351 = Total $3,489 42	
				Material only, labor under CTC 26511300-0029	
112	16 00 00 00-1030		ea	Sensorswitch SB010 ODP D P BZ 3V	$8,234 02
		NPP Task	Installation	Quantity 78 00 x Unit Price $93 00 x Factor 1 1351 = Total $8,234 02	
				Material only, labor under CTC 26592300-0004	

Record	Section - Item	Modifier	UOM	Description	Line Total
Category - RP1					
113	16 00 00 00-1102		ea	Holophne PLED2 08L 4K AS UN NA G L5	$7,723 22
		NPP Task	Installation	Quantity 14 00 x Unit Price $486 00 x Factor 1 1351 = Total $7,723 22	
			Material only, labor under CTC 26511300-0393		
114	16 00 00 00-1103		ea	Holophne PLED2 10L 4K AS UN NA G L5	$7,879 86
		NPP Task	Installation	Quantity 13 00 x Unit Price $534 00 x Factor 1 1351 = Total $7,879 86	
			Material only, labor under CTC 26511300-0393		
115	16 00 00 00-1104		ea	Holophne PLED2 05L 4K AS UN NA G L5-P3US-GR	$12,609 83
		NPP Task	Installation	Quantity 23 00 x Unit Price $483 00 x Factor 1 1351 = Total $12,609 83	
			Material only, labor under CTC 26511300-0393		
116	16 00 00 00-1105		ea	Holophne PLED2 08L 4K AS UN NA G L5-P3US-GR	$9,041 07
		NPP Task	Installation	Quantity 15 00 x Unit Price $531 00 x Factor 1 1351 = Total $9,041 07	
			Material only, labor under CTC 26511300-0393		
117	16 00 00 00-1106		ea	Holophne PLED2 10L 4K AS UN NA G L5-P3US-GR	$12,487 24
		NPP Task	Installation	Quantity 19 00 x Unit Price $579 00 x Factor 1 1351 = Total $12,487 24	
			Material only, labor under CTC 26511300-0393		
118	16 00 00 00-1302		ea	CREE CR-LE-50L-40K-S-HD	$6,423 42
		NPP Task	Installation	Quantity 26 00 x Unit Price $217 65 x Factor 1 1351 = Total $6,423 42	
			Material only, labor under CTC 26511300-0029		
119	16 00 00 00-1400		ea	ge alv1-0-1-T-47-D-4-S-B-V-ST-K-N-W	$1,402 17
		NPP Task	Installation	Quantity 6 00 x Unit Price $205 88 x Factor 1 1351 = Total $1,402 17	
			Material only, labor under CTC 26511300-0029		
120	16 00 00 00-1401		ea	ge alv1-0-1-T-47-D-8-S-B-V-ST-K-N-W	$4,513 66
		NPP Task	Installation	Quantity 13 00 x Unit Price $305 88 x Factor 1 1351 = Total $4,513 66	
			Material only, labor under CTC 26511300-0029		
121	16 00 00 00-1402		EACH	LUMECON LWP-BH-25W	$60,134 12
		NPP Task	Installation	Quantity 114 00 x Unit Price $464 71 x Factor 1 1351 = Total $60,134 12	
			Material only, labor under CTC 26511300-0658		
122	16 00 00 00-1403		EACH	RAB BAYLED104NW	$14,582 77
		NPP Task	Installation	Quantity 26 00 x Unit Price $494 12 x Factor 1 1351 = Total $14,582 77	
			Material only, labor under CTC 26511300-0658		
123	16 00 00 00-1404		EACH	RAB FFLED52SF	$1,079 00
		NPP Task	Installation	Quantity 2 00 x Unit Price $475 29 x Factor 1 1351 = Total $1,079 00	
			Material only, labor under CTC 26563600-0079		

Record	Section - Item	Modifier	UOM	Description	Line Total
Category - RP1					
124	16000-1601		ea	CREE CR-LE-40LHE-40K-S-HD	$20,398 37
		NPP Task	Installation	Quantity 65 00 x Unit Price $276 47 x Factor 1 1351 = Total $20,398 37	
			Material only, labor under CTC 26511300-0029		
125	26 01 20 00-0002		EA	Lock Out/Tag Out Local Disconnect	$975.79
			Installation	Quantity 69.00 x Unit Price $16.30 x Factor 0.8676 = Total $975.79	
126	26 01 20 00-0004		EA	Lock Out/Tag Out Tags	$7.60
			Installation	Quantity 4.00 x Unit Price $2.19 x Factor 0.8676 = Total $7.60	
127	26 01 50 51-0149		EA	Recycle 4' Length Linear Fluorescent Lamps	$420.13
			Installation	Quantity 981.00 x Unit Price $0.45 x Factor 0.9517 = Total $420.13	
128	26 01 50 51-0151		EA	Recycle 8' Length Linear Fluorescent Lamps	$29.12
			Installation	Quantity 34.00 x Unit Price $0.90 x Factor 0.9517 = Total $29.12	
129	26 01 50 51-0154		EA	Recycle HID Lamps	$803.72
			Installation	Quantity 657.00 x Unit Price $1.41 x Factor 0.8676 = Total $803.72	
130	26 01 50 52-0036		EA	Fluorescent Ballast Removal	$1,915.32
			Installation	Quantity 541.00 x Unit Price $3.72 x Factor 0.9517 = Total $1,915.32	
131	26 05 33 13-0127		EA	1/2" x 2" Long RGS, Nipple	$584.69
			Installation	Quantity 78.00 x Unit Price $8.64 x Factor 0.8676 = Total $584.69	
			For ext sensors NPP 1030		
132	26 MO D0 00-0022	0022	EA	For Installation Above 14', Add	$78.50
			Installation	Quantity 78.00 x Unit Price $1.16 x Factor 0.8676 = Total $78.50	
			Above 14'		
133	26 05 33 16-0199		EA	1/2", Type FD, Deep, Single Gang Cast Aluminum BoxOne hub.	$3,964.27
			Installation	Quantity 78.00 x Unit Price $58.58 x Factor 0.8676 = Total $3,964.27	
			For ext sensors NPP 1030		
134	26 09 23 00-0004		EA	Wall Switch Replacement Occupancy Sensor, Double GangNote: Includes integral occupancy sensor and relay	$5,573.57
			Installation	Quantity 82.00 x Unit Price $71.42 x Factor 0.9517 = Total $5,573.57	
			For supplying and installing interior wall occupancy switches		
135	26 MO D0 00-0197	0197	EA	For >40, Deduct	-$351.75
			Installation	Quantity 80.00 x Unit Price $-4.62 x Factor 0.9517 = Total $-351.75	
			>40		

Record	Section - Item	Modifier	UOM	Description	Line Total
Category - RP1					
136	26 09 23 00-0004		EA	Wall Switch Replacement Occupancy Sensor, Double GangNote: Includes integral occupancy sensor and relay	$1,980.78
	Excludes Material		Installation	Quantity 78.00 x Unit Price $29.27 x Factor 0.8676 = Total $1,980.78	
				Labor only for installation of exterior sensors NPP 1030	
137	26 MO D0 00-0197	0197	EA	For >40, Deduct	-$312.65
			Installation	Quantity 78.00 x Unit Price $-4.62 x Factor 0.8676 = Total $-312.65	
				>40	
138	26 09 23 00-0006		EA	Ceiling Mount Sensor Coer >500 SF, T-Bar Or Exposed CeilingNote: Includes one relay, 8' of plenum rated control wire, mounting, j-box	$1,619.96
			Installation	Quantity 9.00 x Unit Price $189.13 x Factor 0.9517 = Total $1,619.96	
139	26 09 23 00-0007		EA	Install Additional Switching RelayNote: Includes 8' of plenum rated control wire, mounting, j-box	$332.11
			Installation	Quantity 6.00 x Unit Price $58.16 x Factor 0.9517 = Total $332.11	
140	26 09 23 00-0008		EA	On Board Occupancy Sensor For Light FixtureNote: Factory installed	$15,126.72
			Installation	Quantity 194.00 x Unit Price $81.93 x Factor 0.9517 = Total $15,126.72	
141	26 27 26 00-0137		EA	Blank Cover, Three Gang, Cast Metallic Weatherproof Cover (Killark® 3FSBC)	$1,312.18
			Installation	Quantity 78.00 x Unit Price $19.39 x Factor 0.8676 = Total $1,312.18	
				Foe ext sensor NPP 1030	
142	26 51 13 00-0029		EA	Remove And Reinstall Surface Mounted Or Pendant Light Fixture	$5,276.22
			Installation	Quantity 70.00 x Unit Price $79.20 x Factor 0.9517 = Total $5,276.22	
				Labor only NPP 0254, 0255, 0350, 0707, 1302, 1400	
143	26 51 13 00-0029		EA	Remove And Reinstall Surface Mounted Or Pendant Light Fixture	$13,399.21
			Installation	Quantity 195.00 x Unit Price $79.20 x Factor 0.8676 = Total $13,399.21	
				Labor only, NPP 0254,0255,0350,0707,0708,1302,1400,1401 Day Shift	
144	26 51 13 00-0043		EA	Retrofit An Existing 4' Strip Style Fluorescent Fixture With Reflector To Operate Two 4' (T8) Lamps	$334.20
	Excludes Material		Installation	Quantity 8.00 x Unit Price $48.15 x Factor 0.8676 = Total $334.20	
				Labor only 0507,0508 Day shift	
145	26 51 13 00-0043		EA	Retrofit An Existing 4' Strip Style Fluorescent Fixture With Reflector To Operate Two 4' (T8) Lamps	$183.30
	Excludes Material		Installation	Quantity 4.00 x Unit Price $48.15 x Factor 0.9517 = Total $183.30	
				Labor only NPP 0507, 0508	
146	26 51 13 00-0075		EA	4,300 Lumens, 2' x 4', LED Architectural Lighting Retrofit For Existing Recessed Lay-In/Troffer Fixtures (PlanLED FR3E-045) (DLC Certified)	$1,671.38
	Excludes Material		Installation	Quantity 60.00 x Unit Price $29.27 x Factor 0.9517 = Total $1,671.38	
				Labor only NPP 0603, 0604	

Record	Section - Item	Modifier	UOM	Description	Line Total
Category - RP1					
147	26 51 13 00-0075		EA	4,300 Lumens, 2' x 4', LED Architectural Lighting Retrofit For Existing Recessed Lay-In/Troffer Fixtures (PlanLED FR3E-045) (DLC Certified)	$152.37
	Excludes Material		Installation	Quantity 6.00 x Unit Price $29.27 x Factor 0.8676 = Total $152.37	
				Labor only 0603,0604 Day Shift	
148	26 51 13 00-0393		EA	98 System Watts, 6,340 Lumens, Pendant Mount, Wet Location, NEMA 4X, High Bay/Low Bay, LED Fixture (Cooper Champ® Pro PVM9L)	$11,791.00
	Excludes Material		Installation	Quantity 84.00 x Unit Price $101.12 x Factor 0.8676 = Total $7,369.46	
			Demolition	84.00 x $60.67 x 0.8676 = $4,421.53	
				Labor only NPP 1102, 1103, 1104, 1105, 1106	
149	26 51 13 00-0658		EA	7,000 Lumens, LED High Bay Fixture (PlanLED LUNA LN70)	$14,944.74
	Excludes Material		Installation	Quantity 67.00 x Unit Price $130.86 x Factor 0.9517 = Total $8,344.14	
			Demolition	106.00 x $65.43 x 0.9517 = $6,600.59	
				Labor only NPP 0109, 1402, 1403	
150	26 51 13 00-0658		EA	7,000 Lumens, LED High Bay Fixture (PlanLED LUNA LN70)	$19,754.94
	Excludes Material		Installation	Quantity 129.00 x Unit Price $130.86 x Factor 0.8676 = Total $14,645.90	
			Demolition	90.00 x $65.43 x 0.8676 = $5,109.04	
				Labor only 0109,1402,1403 Day shift	
151	26 56 23 00-0006		EA	70 Watt High Pressure Sodium, Non Cutoff, Polycarbonate Lens, Mini Wall Pack	$2,822.52
	Excludes Material		Installation	Quantity 25.00 x Unit Price $97.60 x Factor 0.8676 = Total $2,116.94	
			Demolition	25.00 x $32.53 x 0.8676 = $705.58	
				Labor only line NPP 0115, 0131	
152	26 56 23 00-0021		EA	70 Watt Metal Halide, Non Cutoff, Borosilicate Glass Lens, Small Wall Pack	$19,714.70
	Excludes Material		Installation	Quantity 131.00 x Unit Price $130.13 x Factor 0.8676 = Total $14,790.00	
			Demolition	131.00 x $43.33 x 0.8676 = $4,924.70	
				Labor only line NPP 0129, 0132, 0133, 0134	
153	26 56 23 00-0052		EA	250 Watt Metal Halide, Non Cutoff, Borosilicate Glass Lens, Large Wall Pack	$10,838.48
	Excludes Material		Installation	Quantity 48.00 x Unit Price $195.19 x Factor 0.8676 = Total $8,128.65	
			Demolition	48.00 x $65.07 x 0.8676 = $2,709.83	
				Labor only NPP 0135	
154	26 56 23 00-0092		EA	40 LEDs, 47 System Watts, Arm Mount, Rectangular, LED Area Fixture (CREE® BetaLED® Edge® ARE-EDG) (DLC Certified)	$894.76
	Excludes Material		Installation	Quantity 5.00 x Unit Price $137.51 x Factor 0.8676 = Total $596.52	
			Demolition	5.00 x $68.75 x 0.8676 = $298.24	
				Labor only NPP 0106, 0120	
155	26 56 23 00-0095		EA	100 LEDs, 111 System Watts, Arm Mount, Rectangular, LED Area Fixture (CREE® BetaLED® Edge® ARE-EDG) (DLC Certified)	$21,921.82
	Excludes Material		Installation	Quantity 105.00 x Unit Price $160.43 x Factor 0.8676 = Total $14,614.85	
			Demolition	105.00 x $80.21 x 0.8676 = $7,306.97	
				Labor only NPP 0105, 0107, 0121	

Record	Section - Item	Modifier	UOM	Description	Line Total
Category - RP1					
156	26 56 23 00-0122		EA	60 LEDs, 68 System Watts, Surface Mount, Rectangular, LED Parking Structure Fixture (CREE® BetaLED® Edge® PKG-EDG) (DLC Certified)	$377.79
	Excludes Material			Quantity / Unit Price / Factor / Total	
			Installation	2.00 x $145.14 x 0.8676 = $251.85	
			Demolition	2.00 x $72.58 x 0.8676 = $125.94	
				Labor only NPP 0128	
157	26 56 36 00-0028		EA	175 Watt Metal Halide PF-154 Series GE Flood Light	$910.53
	Excludes Material			Quantity / Unit Price / Factor / Total	
			Installation	4.00 x $174.91 x 0.8676 = $607.01	
			Demolition	4.00 x $87.46 x 0.8676 = $303.52	
				Labor only NPP 0111	
158	26 56 36 00-0071		EA	50 Watt Metal Halide TFM Series Lithonia Flood Light	$404.68
	Excludes Material			Quantity / Unit Price / Factor / Total	
			Installation	2.00 x $155.48 x 0.8676 = $269.79	
			Demolition	2.00 x $77.74 x 0.8676 = $134.89	
				Labor only NPP 1404	
159	26 56 36 00-0079		EA	250 Watt High Pressure Sodium TFL Series Lithonia Flood Light	$2,276.32
	Excludes Material			Quantity / Unit Price / Factor / Total	
			Installation	10.00 x $174.91 x 0.8676 = $1,517.52	
			Demolition	10.00 x $87.46 x 0.8676 = $758.80	
				Labor only NPP 0124, 0127	
160	26 56 36 00-0258		EA	240 LEDs, 264 System Watts, Adjustable Arm Mount, Rectangular, LED Flood Light (CREE® BetaLED® Edge® FLD-EDG) (DLC Certified)	$5,368.54
	Excludes Material			Quantity / Unit Price / Factor / Total	
			Installation	20.00 x $206.26 x 0.8676 = $3,579.02	
			Demolition	20.00 x $103.13 x 0.8676 = $1,789.51	
				Labor only NPP 0126	
Subtotal for Category - RP1:					**$567,075.01**
Category - RP4					
161	01 22 16 00-0002		EA	Reimbursable FeesReimbursable fees will be paid to the contractor for the actual cost, without mark-up, for which a receipt or bill is received. The Adjustment Factor applied to Reimbursable Fees will be 1.0000. The labor cost involved in obtaining all permits is in the Adjustment Factor. The base cost of the Reimbursable Fee is $1.00. The quantity used will adjust the base cost to the actual Reimbursable Fee (e.g. quantity of 125 = $125.00 Reimbursable Fee). If there are multiple Reimbursable Fees, each one shall be listed separately with a comment in the "note" block to identify the Reimbursable Fees (e.g. sidewalk closure, road cut, various permits, extended warrantee, expedited shipping costs, etc.). A copy of each receipt shall be included with the Proposal.	$5,745.00
				Quantity / Unit Price / Factor / Total	
			Installation	5,745.00 x $1.00 x 1.0000 = $5,745.00	
				Bonds, including insurance	
162	01 52 13 00-0004		MO	8' x 8' x 40' Storage Container	$471.97
				Quantity / Unit Price / Factor / Total	
			Installation	4.00 x $136.00 x 0.8676 = $471.97	
				2 Cont x 2 months	

Record	Section - Item	Modifier	UOM	Description	Line Total
Category - RP4					
163	01 MO D0 00-0004	0004	MO	For Delivery, Each Way, Add	$294.98
			Installation	Quantity 4.00 x Unit Price $85.00 x Factor 0.8676 = Total $294.98	
164	01 66 19 00-0059		EA	Handling Material For Over 125' Per 48" x 40" x 48" Container Per 125' Segment	$5,282.12
			Installation	Quantity 876.00 x Unit Price $6.95 x Factor 0.8676 = Total $5,282.12	
				Handling 125' per pallet	
165	01 74 19 00-0022		CYM	Hauling On Paved Roads, First 15 Miles	$563.38
			Installation	Quantity 585.00 x Unit Price $1.11 x Factor 0.8676 = Total $563.38	
166	01 74 19 00-0023		CYM	Hauling On Paved Roads, Miles Over Initial 15 Miles	$131.96
			Installation	Quantity 195.00 x Unit Price $0.78 x Factor 0.8676 = Total $131.96	
				Hauling first 15 miles	
167	16 00 00 00-0101	NPP Task	EA	RAB FXLED105T LED Fixture	$3,995 55
			Installation	Quantity 8 00 x Unit Price $440 00 x Factor 1 1351 = Total $3,995 55	
				Material only, labor under CTC 26563600-0097	
168	16 00 00 00-0106	NPP Task	ea	RAB ALED2T50	$6,926 75
			Installation	Quantity 13 00 x Unit Price $469 41 x Factor 1 1351 = Total $6,926 75	
				Material only, labor under CTC 26562300-0092	
169	16 00 00 00-0107	NPP Task	ea	RAB ALED2T78	$14,919 16
			Installation	Quantity 28 00 x Unit Price $469 41 x Factor 1 1351 = Total $14,919 16	
				Material only, labor under CTC 26562300-0095	
170	16 00 00 00-0109	NPP Task	ea	RAB BAYLED78NW	$18,829 24
			Installation	Quantity 47 00 x Unit Price $352 94 x Factor 1 1351 = Total $18,829 24	
				Material only, labor under CTC 26511300-0658	
171	16 00 00 00-0119	NPP Task	EA	RAB ALED2T78SF/D10/PC	$16,910 18
			Installation	Quantity 27 00 x Unit Price $551 76 x Factor 1 1351 = Total $16,910 17	
				Material only, labor under CTC 26562300-0095	
172	16 00 00 00-0125	NPP Task	EA	RAB FFLED52T	$419 99
			Installation	Quantity 1 00 x Unit Price $370 00 x Factor 1 1351 = Total $419 99	
				Material only, labor under CTC 26563600-0028	
173	16 00 00 00-0133	NPP Task	EA	RAB WPLED18/PC	$2,091 30
			Installation	Quantity 9 00 x Unit Price $204 71 x Factor 1 1351 = Total $2,091 30	
				Material only, labor under CTC 26562300-0021	
174	16 00 00 00-0134	NPP Task	EA	RAB WPLED26/PC	$4,398 76
			Installation	Quantity 18 00 x Unit Price $215 29 x Factor 1 1351 = Total $4,398 76	
				Material only, labor under CTC 26562300-0021	

Record	Section - Item	Modifier	UOM	Description	Line Total
Category - RP4					
175	16 00 00 00-0254		ea	Lith 2TLX4-60L-FW-A12-LP840	$1,549 09
		NPP Task	Installation	Quantity 4 00 x Unit Price $341 18 x Factor 1 1351 = Total $1,549 09	
			Material only, labor under CTC 26511300-0029		
176	16 00 00 00-0255		ea	LITH TLX4 30L FW A12 SLD LP840	$1,543 74
		NPP Task	Installation	Quantity 4 00 x Unit Price $340 00 x Factor 1 1351 = Total $1,543 74	
			Material only, labor under CTC 26511300-0029		
177	16 00 00 00-0350		ea	COLUMBIA LAW4-40LW-E-U	$3,765 91
		NPP Task	Installation	Quantity 27 00 x Unit Price $123 53 x Factor 1 1351 = Total $3,765 91	
			Material only, labor under CTC 26511300-0029		
178	16 00 00 00-0604		ea	EVOKIT 2X4 P 42L 42W 840 + 502435 kit	$8,844 70
		NPP Task	Installation	Quantity 40 00 x Unit Price $194 60 x Factor 1 1351 = Total $8,844 70	
			Material only, labor under CTC 26511300-0075		
179	16 00 00 00-0707		ea	P2 VTL-1X4-XL-F-UL-40K	$4,898 37
		NPP Task	Installation	Quantity 28 00 x Unit Price $154 12 x Factor 1 1351 = Total $4,898 37	
			Material only, labor under CTC 26511300-0029		
180	16 00 00 00-0950		ea	GARDCO 161 CWL 4 70LA6435 NW UNV BRP WS	$13,474 32
		NPP Task	Installation	Quantity 10 00 x Unit Price $1,187 06 x Factor 1 1351 = Total $13,474 32	
			Material only, labor under CTC 26562300-0050		
181	16 00 00 00-1030		ea	Sensorswitch SB010 ODP D P BZ 3V	$6,650 55
		NPP Task	Installation	Quantity 63 00 x Unit Price $93 00 x Factor 1 1351 = Total $6,650 55	
			Material only, labor under CTC 26592300-0004		
182	16 00 00 00-1105		ea	Holophne PLED2 08L 4K AS UN NA G L5-P3US-GR	$41,588 93
		NPP Task	Installation	Quantity 69 00 x Unit Price $531 00 x Factor 1 1351 = Total $41,588 93	
			Material only, labor under CTC 26511300-0393		
183	16 00 00 00-1405		EACH	RAB WPLED2T78	$14,582 77
		NPP Task	Installation	Quantity 26 00 x Unit Price $494 12 x Factor 1 1351 = Total $14,582 77	
			Material only, labor under CTC 26562300-0053		
184	16000-1601		ea	CREE CR-LE-40LHE-40K-S-HD	$12,552 84
		NPP Task	Installation	Quantity 40 00 x Unit Price $276 47 x Factor 1 1351 = Total $12,552 84	
			Material only, labor under CTC 26511300-0029		
185	26 01 20 00-0002		EA	Lock Out/Tag Out Local Disconnect	$975.79
			Installation	Quantity 69.00 x Unit Price $16.30 x Factor 0.8676 = Total $975.79	
186	26 01 20 00-0004		EA	Lock Out/Tag Out Tags	$7.60
			Installation	Quantity 4.00 x Unit Price $2.19 x Factor 0.8676 = Total $7.60	

Record	Section - Item	Modifier	UOM	Description						Line Total
Category - RP4										
187	26 01 50 51-0149		EA	Recycle 4' Length Linear Fluorescent Lamps						$47.97
				Quantity		Unit Price		Factor		Total
			Installation	112.00	x	$0.45	x	0.9517	=	$47.97
188	26 01 50 51-0153		EA	Recycle U-Shaped Or Circular Fluorescent Lamps						$17.17
				Quantity		Unit Price		Factor		Total
			Installation	44.00	x	$0.41	x	0.9517	=	$17.17
189	26 01 50 51-0154		EA	Recycle HID Lamps						$344.98
				Quantity		Unit Price		Factor		Total
			Installation	282.00	x	$1.41	x	0.8676	=	$344.98
190	26 01 50 52-0036		EA	Fluorescent Ballast Removal						$966.51
				Quantity		Unit Price		Factor		Total
			Installation	273.00	x	$3.72	x	0.9517	=	$966.51
191	26 05 33 13-0127		EA	1/2" x 2" Long RGS, Nipple						$472.25
				Quantity		Unit Price		Factor		Total
			Installation	63.00	x	$8.64	x	0.8676	=	$472.25
			For ext sensors NPP 1030							
192	26 MO D0 00-0022	0022	EA	For Installation Above 14', Add						$63.40
				Quantity		Unit Price		Factor		Total
			Installation	63.00	x	$1.16	x	0.8676	=	$63.40
			>14'							
193	26 05 33 16-0199		EA	1/2", Type FD, Deep, Single Gang Cast Aluminum BoxOne hub.						$3,201.91
				Quantity		Unit Price		Factor		Total
			Installation	63.00	x	$58.58	x	0.8676	=	$3,201.91
			For ext sensors NPP 1030							
194	26 09 23 00-0004		EA	Wall Switch Replacement Occupancy Sensor, Double GangNote: Includes integral occupancy sensor and relay						$1,599.86
	Excludes Material			Quantity		Unit Price		Factor		Total
			Installation	63.00	x	$29.27	x	0.8676	=	$1,599.86
			Labor only for installation of exterior sensors NPP 1030							
195	26 MO D0 00-0197	0197	EA	For >40, Deduct						-$252.52
				Quantity		Unit Price		Factor		Total
			Installation	63.00	x	$-4.62	x	0.8676	=	$-252.52
196	26 09 23 00-0004		EA	Wall Switch Replacement Occupancy Sensor, Double GangNote: Includes integral occupancy sensor and relay						$1,835.20
				Quantity		Unit Price		Factor		Total
			Installation	27.00	x	$71.42	x	0.9517	=	$1,835.20
			For supplying and installing interior wall occupancy switches							
197	26 09 23 00-0006		EA	Ceiling Mount Sensor Coer >500 SF, T-Bar Or Exposed CeilingNote: Includes one relay, 8' of plenum rated control wire, mounting, j-box						$6,299.83
				Quantity		Unit Price		Factor		Total
			Installation	35.00	x	$189.13	x	0.9517	=	$6,299.83
198	26 09 23 00-0007		EA	Install Additional Switching RelayNote: Includes 8' of plenum rated control wire, mounting, j-box						$553.51
				Quantity		Unit Price		Factor		Total
			Installation	10.00	x	$58.16	x	0.9517	=	$553.51

Record	Section - Item	Modifier	UOM	Description	Line Total
Category - RP4					
199	26 09 23 00-0008		EA	On Board Occupancy Sensor For Light FixtureNote: Factory installed	$3,664.72
				Quantity x Unit Price x Factor = Total	
			Installation	47.00 x $81.93 x 0.9517 = $3,664.72	
200	26 27 26 00-0137		EA	Blank Cover, Three Gang, Cast Metallic Weatherproof Cover (Killark® 3FSBC)	$1,059.83
				Quantity x Unit Price x Factor = Total	
			Installation	63.00 x $19.39 x 0.8676 = $1,059.83	
				For ext sensors NPP 1030	
201	26 51 13 00-0029		EA	Remove And Reinstall Surface Mounted Or Pendant Light Fixture	$1,992.70
				Quantity x Unit Price x Factor = Total	
			Installation	29.00 x $79.20 x 0.8676 = $1,992.70	
				Labor only NNP 0254,255,0350,0707,1302,1400, Day Shift	
202	26 51 13 00-0029		EA	Remove And Reinstall Surface Mounted Or Pendant Light Fixture	$5,577.72
				Quantity x Unit Price x Factor = Total	
			Installation	74.00 x $79.20 x 0.9517 = $5,577.72	
				Labor only NPP 0254, 0255, 0350, 0707, 1601	
203	26 51 13 00-0075		EA	4,300 Lumens, 2' x 4', LED Architectural Lighting Retrofit For Existing Recessed Lay-In/Troffer Fixtures (PlanLED FR3E-045) (DLC Certified)	$584.08
	Excludes Material			Quantity x Unit Price x Factor = Total	
			Installation	23.00 x $29.27 x 0.8676 = $584.08	
				Labor only NPP 0603,0604 Day Shift	
204	26 51 13 00-0075		EA	4,300 Lumens, 2' x 4', LED Architectural Lighting Retrofit For Existing Recessed Lay-In/Troffer Fixtures (PlanLED FR3E-045) (DLC Certified)	$473.56
	Excludes Material			Quantity x Unit Price x Factor = Total	
			Installation	17.00 x $29.27 x 0.9517 = $473.56	
				Labor only NPP 0604	
205	26 51 13 00-0393		EA	98 System Watts, 6,340 Lumens, Pendant Mount, Wet Location, NEMA 4X, High Bay/Low Bay, LED Fixture (Cooper Champ® Pro PVM9L)	$9,685.46
	Excludes Material			Quantity x Unit Price x Factor = Total	
			Installation	69.00 x $101.12 x 0.8676 = $6,053.49	
			Demolition	69.00 x $60.67 x 0.8676 = $3,631.97	
				Labor only NPP 1105	
206	26 51 13 00-0658		EA	7,000 Lumens, LED High Bay Fixture (PlanLED LUNA LN70)	$6,911.94
	Excludes Material			Quantity x Unit Price x Factor = Total	
			Installation	37.00 x $130.86 x 0.9517 = $4,607.96	
			Demolition	37.00 x $65.43 x 0.9517 = $2,303.98	
				Labor only NPP 0109	
207	26 51 13 00-0658		EA	7,000 Lumens, LED High Bay Fixture (PlanLED LUNA LN70)	$1,703.01
	Excludes Material			Quantity x Unit Price x Factor = Total	
			Installation	10.00 x $130.86 x 0.8676 = $1,135.34	
			Demolition	10.00 x $65.43 x 0.8676 = $567.67	
				Labor only NNP 0109 Day Shift	
208	26 56 23 00-0021		EA	70 Watt Metal Halide, Non Cutoff, Borosilicate Glass Lens, Small Wall Pack	$4,063.34
	Excludes Material			Quantity x Unit Price x Factor = Total	
			Installation	27.00 x $130.13 x 0.8676 = $3,048.32	
			Demolition	27.00 x $43.33 x 0.8676 = $1,015.01	
				Labor only NPP 0133, 0134	

Record	Section - Item	Modifier	UOM	Description	Line Total
Category - RP4					
209	26 56 23 00-0053		EA	400 Watt Metal Halide, Non Cutoff, Borosilicate Glass Lens, Large Wall Pack	$8,128.86
	Excludes Material			Quantity / Unit Price / Factor / Total	
			Installation	36.00 x $195.19 x 0.8676 =	$6,096.49
			Demolition	36.00 x $65.07 x 0.8676 =	$2,032.37
				Labor only NPP 0950, 1405	
210	26 56 23 00-0092		EA	40 LEDs, 47 System Watts, Arm Mount, Rectangular, LED Area Fixture (CREE® BetaLED® Edge® ARE-EDG) (DLC Certified)	$2,326.37
	Excludes Material			Quantity / Unit Price / Factor / Total	
			Installation	13.00 x $137.51 x 0.8676 =	$1,550.95
			Demolition	13.00 x $68.75 x 0.8676 =	$775.42
				Labor only NPP 0106	
211	26 56 23 00-0095		EA	100 LEDs, 111 System Watts, Arm Mount, Rectangular, LED Area Fixture (CREE® BetaLED® Edge® ARE-EDG) (DLC Certified)	$11,482.86
	Excludes Material			Quantity / Unit Price / Factor / Total	
			Installation	55.00 x $160.43 x 0.8676 =	$7,655.40
			Demolition	55.00 x $80.21 x 0.8676 =	$3,827.46
				Labor only NPP 0107, 0119	
212	26 56 23 00-0102		EA	40 LEDs, 47 System Watts, Arm Mount, Round, LED Area Fixture (CREE® BetaLED® Edge® ARE-EDR)	$26,246.22
				Quantity / Unit Price / Factor / Total	
			Installation	26.00 x $1,094.77 x 0.8676 =	$24,695.38
			Demolition	26.00 x $68.75 x 0.8676 =	$1,550.84
213	26 56 36 00-0028		EA	175 Watt Metal Halide PF-154 Series GE Flood Light	$227.63
	Excludes Material			Quantity / Unit Price / Factor / Total	
			Installation	1.00 x $174.91 x 0.8676 =	$151.75
			Demolition	1.00 x $87.46 x 0.8676 =	$75.88
				Labor only NPP 0125	
214	26 56 36 00-0097		EA	400 Watt Metal Halide TFA Series Lithonia Flood Light	$2,023.45
	Excludes Material			Quantity / Unit Price / Factor / Total	
			Installation	8.00 x $194.35 x 0.8676 =	$1,348.94
			Demolition	8.00 x $97.18 x 0.8676 =	$674.51
				Labor only NPP 0101	
Subtotal for Category - RP4:					**$292,736.77**
Category - RP5					
215	01 22 16 00-0002		EA	Reimbursable FeesReimbursable fees will be paid to the contractor for the actual cost, without mark-up, for which a receipt or bill is received. The Adjustment Factor applied to Reimbursable Fees will be 1.0000. The labor cost involved in obtaining all permits is in the Adjustment Factor. The base cost of the Reimbursable Fee is $1.00. The quantity used will adjust the base cost to the actual Reimbursable Fee (e.g. quantity of 125 = $125.00 Reimbursable Fee). If there are multiple Reimbursable Fees, each one shall be listed separately with a comment in the "note" block to identify the Reimbursable Fees (e.g. sidewalk closure, road cut, various permits, extended warrantee, expedited shipping costs, etc.). A copy of each receipt shall be included with the Proposal.	$2,622.00
				Quantity / Unit Price / Factor / Total	
			Installation	2,622.00 x $1.00 x 1.0000 =	$2,622.00
				Bonds, including insurance	

Record	Section - Item	Modifier	UOM	Description	Line Total
Category - RP5					
216	01 52 13 00-0004		MO	8' x 8' x 40' Storage Container	$471.97
				Installation: Quantity 4.00 x Unit Price $136.00 x Factor 0.8676 = Total $471.97	
				2 cont x 2 months	
217	01 MO D0 00-0004	0004	MO	For Delivery, Each Way, Add	$294.98
				Installation: Quantity 4.00 x Unit Price $85.00 x Factor 0.8676 = Total $294.98	
218	01 66 19 00-0059		EA	Handling Material For Over 125' Per 48" x 40" x 48" Container Per 125' Segment	$5,282.12
				Installation: Quantity 876.00 x Unit Price $6.95 x Factor 0.8676 = Total $5,282.12	
				Haul per 125'/pallet	
219	01 74 19 00-0022		CYM	Hauling On Paved Roads, First 15 Miles	$563.38
				Installation: Quantity 585.00 x Unit Price $1.11 x Factor 0.8676 = Total $563.38	
220	01 74 19 00-0023		CYM	Hauling On Paved Roads, Miles Over Initial 15 Miles	$131.96
				Installation: Quantity 195.00 x Unit Price $0.78 x Factor 0.8676 = Total $131.96	
				Dispos first 15 miles	
221	16 00 00 00-0109		ea	RAB BAYLED78NW	$7,211.20
		NPP Task		Installation: Quantity 18.00 x Unit Price $352.94 x Factor 1.1351 = Total $7,211.20	
				Material only, labor under CTC 26511300-0658	
222	16 00 00 00-0120		EA	RAB ELED4T50/PC	$21,008.75
		NPP Task		Installation: Quantity 38.00 x Unit Price $487.06 x Factor 1.1351 = Total $21,008.75	
				THE FIXTURE IS RAB ALED4T50/PC Material only, labor under CTC 26562300-0092	
223	16 00 00 00-0121		EA	RAB ALED4T78	$13,320.68
		NPP Task		Installation: Quantity 25.00 x Unit Price $469.41 x Factor 1.1351 = Total $13,320.68	
				Material only, labor under CTC 26562300-0095	
224	16 00 00 00-0133		EA	RAB WPLED18/PC	$464.73
		NPP Task		Installation: Quantity 2.00 x Unit Price $204.71 x Factor 1.1351 = Total $464.73	
				Material only, labor under CTC 26562300-0021	
225	16 00 00 00-0135		ea	RAB WPLED52/PC	$1,410.20
		NPP Task		Installation: Quantity 4.00 x Unit Price $310.59 x Factor 1.1351 = Total $1,410.20	
				Material only, labor under CTC 26562300-0052	
226	16 00 00 00-0707		ea	P2 VTL-1X4-XL-F-UL-40K	$5,948.01
		NPP Task		Installation: Quantity 34.00 x Unit Price $154.12 x Factor 1.1351 = Total $5,948.01	
				Material only, labor under CTC 26511300-0029	
227	16 00 00 00-1030		ea	Sensorswitch SB010 ODP D P BZ 3V	$3,061.36
		NPP Task		Installation: Quantity 29.00 x Unit Price $93.00 x Factor 1.1351 = Total $3,061.36	
				Material only, labor under CTC 26592300-0004	

Record	Section - Item	Modifier	UOM	Description	Line Total
Category - RP5					
228	16 00 00 00-1105		ea	Holophne PLED2 08L 4K AS UN NA G L5-P3US-GR	$36,575 24
		NPP Task	Installation	Quantity 64 00 x Unit Price $531 00 x Factor 1 1351 = Total $36,575 24	
				Material only, labor under CTC 26511300-0393	
229	26 01 20 00-0002		EA	Lock Out/Tag Out Local Disconnect	$975.79
			Installation	Quantity 69.00 x Unit Price $16.30 x Factor 0.8676 = Total $975.79	
230	26 01 20 00-0004		EA	Lock Out/Tag Out Tags	$7.60
			Installation	Quantity 4.00 x Unit Price $2.19 x Factor 0.8676 = Total $7.60	
231	26 01 50 51-0149		EA	Recycle 4' Length Linear Fluorescent Lamps	$55.67
			Installation	Quantity 130.00 x Unit Price $0.45 x Factor 0.9517 = Total $55.67	
232	26 01 50 51-0154		EA	Recycle HID Lamps	$184.72
			Installation	Quantity 151.00 x Unit Price $1.41 x Factor 0.8676 = Total $184.72	
233	26 01 50 52-0036		EA	Fluorescent Ballast Removal	$230.12
			Installation	Quantity 65.00 x Unit Price $3.72 x Factor 0.9517 = Total $230.12	
234	26 05 33 13-0127		EA	1/2" x 2" Long RGS, Nipple	$217.39
			Installation	Quantity 29.00 x Unit Price $8.64 x Factor 0.8676 = Total $217.39	
				For ext sensors NPP 1030	
235	26 MO D0 00-0022	0022	EA	For Installation Above 14', Add	$29.19
			Installation	Quantity 29.00 x Unit Price $1.16 x Factor 0.8676 = Total $29.19	
236	26 05 33 16-0199		EA	1/2", Type FD, Deep, Single Gang Cast Aluminum BoxOne hub.	$1,473.90
			Installation	Quantity 29.00 x Unit Price $58.58 x Factor 0.8676 = Total $1,473.90	
				For ext sensors NPP 1030	
237	26 09 23 00-0004		EA	Wall Switch Replacement Occupancy Sensor, Double GangNote: Includes integral occupancy sensor and relay	$271.88
			Installation	Quantity 4.00 x Unit Price $71.42 x Factor 0.9517 = Total $271.88	
				For supplying and installing interior wall occupancy switches	
238	26 09 23 00-0004		EA	Wall Switch Replacement Occupancy Sensor, Double GangNote: Includes integral occupancy sensor and relay	$736.44
		Excludes Material	Installation	Quantity 29.00 x Unit Price $29.27 x Factor 0.8676 = Total $736.44	
				Labor only for installation of exterior sensors NPP 1030	
239	26 09 23 00-0008		EA	On Board Occupancy Sensor For Light FixtureNote: Factory installed	$467.84
			Installation	Quantity 6.00 x Unit Price $81.93 x Factor 0.9517 = Total $467.84	

Record	Section - Item	Modifier	UOM	Description	Line Total
Category - RP5					
240	26 27 26 00-0137		EA	Blank Cover, Three Gang, Cast Metallic Weatherproof Cover (Killark® 3FSBC)	$487.86
				Installation: Quantity 29.00 x Unit Price $19.39 x Factor 0.8676 = Total $487.86	
				For ext sensors NPP 1030	
241	26 51 13 00-0029		EA	Remove And Reinstall Surface Mounted Or Pendant Light Fixture	$2,562.74
				Installation: Quantity 34.00 x Unit Price $79.20 x Factor 0.9517 = Total $2,562.74	
				Labor only NPP 0707	
242	26 51 13 00-0393		EA	98 System Watts, 6,340 Lumens, Pendant Mount, Wet Location, NEMA 4X, High Bay/Low Bay, LED Fixture (Cooper Champ® Pro PVM9L)	$8,983.62
	Excludes Material			Installation: Quantity 64.00 x Unit Price $101.12 x Factor 0.8676 = Total $5,614.83	
				Demolition: Quantity 64.00 x Unit Price $60.67 x Factor 0.8676 = Total $3,368.79	
				Labor only NPP 1105	
243	26 51 13 00-0658		EA	7,000 Lumens, LED High Bay Fixture (PlanLED LUNA LN70)	$3,362.57
	Excludes Material			Installation: Quantity 18.00 x Unit Price $130.86 x Factor 0.9517 = Total $2,241.71	
				Demolition: Quantity 18.00 x Unit Price $65.43 x Factor 0.9517 = Total $1,120.86	
				Labor only NPP 0109	
244	26 56 23 00-0021		EA	70 Watt Metal Halide, Non Cutoff, Borosilicate Glass Lens, Small Wall Pack	$300.99
	Excludes Material			Installation: Quantity 2.00 x Unit Price $130.13 x Factor 0.8676 = Total $225.80	
				Demolition: Quantity 2.00 x Unit Price $43.33 x Factor 0.8676 = Total $75.19	
				Labor only NPP 0133	
245	26 56 23 00-0052		EA	250 Watt Metal Halide, Non Cutoff, Borosilicate Glass Lens, Large Wall Pack	$903.21
	Excludes Material			Installation: Quantity 4.00 x Unit Price $195.19 x Factor 0.8676 = Total $677.39	
				Demolition: Quantity 4.00 x Unit Price $65.07 x Factor 0.8676 = Total $225.82	
				Labor only NPP 0135	
246	26 56 23 00-0092		EA	40 LEDs, 47 System Watts, Arm Mount, Rectangular, LED Area Fixture (CREE® BetaLED® Edge® ARE-EDG) (DLC Certified)	$6,800.14
	Excludes Material			Installation: Quantity 38.00 x Unit Price $137.51 x Factor 0.8676 = Total $4,533.54	
				Demolition: Quantity 38.00 x Unit Price $68.75 x Factor 0.8676 = Total $2,266.61	
				Labor only NPP 0120	
247	26 56 23 00-0095		EA	100 LEDs, 111 System Watts, Arm Mount, Rectangular, LED Area Fixture (CREE® BetaLED® Edge® ARE-EDG) (DLC Certified)	$5,219.48
	Excludes Material			Installation: Quantity 25.00 x Unit Price $160.43 x Factor 0.8676 = Total $3,479.73	
				Demolition: Quantity 25.00 x Unit Price $80.21 x Factor 0.8676 = Total $1,739.75	
				Labor only NPP 0121	

Subtotal for Category - RP5: **$133,637.73**

Proposal Total **$1,400,319.97**

This proposal total represents the correct total for the proposal. Any discrepancy between line totals, sub-totals and the proposal total is due to rounding of the line totals and sub-totals.

The Percent of NPP on this Proposal: **61.8491%**

Subcontractor Listing

Date Printed: 1/5/2016

Work Order Number: A52WWLT1

Work Order Title: Inland Empire Utilities Agency (IEUA) - Lighting

Amount: $1,400,319.97

Name of Contractor	Duties	Amount	%
No Subcontractors have been selected for this Work Order		$0.00	0.00

Name: Jeff Johnson

Title:

Firm or Corporate Name: Facility Solutions Group

Address: 801 Richfield Road, , Placentia CA 92870

Telephone Number:

Signature: Date: