Los Angeles Department of Water & Power

(LADWP)

EFFICIENCY SOLUTIONS

PORTFOLIO BUSINESS PLAN

FYs 2014/15 – 2019/20

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Los Angeles Department of Water & Power (LADWP)

Efficiency Solutions Portfolio Business Plan Executive Summary

FYs 2014/15 – 2019/20

Overview

The Los Angeles Department of Water & Power (LADWP) is the largest municipal utility in the nation, providing reliable energy and water services to 3.9 million residents and 450,000 businesses in the City of Los Angeles. While numerous accomplishments have been made – including achieving 20% renewable energy sales in 2010 and water use reduction of over 100,000 acre feet per year since 1977 – significant challenges lie ahead. Increasing renewable energy to 33% by 2020, reducing potable water use by 64,000 AFY by 2035, the continued rebuilding of coastal generation units, replacement of coal, cleanup of the San Fernando Valley Groundwater Basin, infrastructure reliability investments, and ramping up energy and water efficiency programs are all critical and concurrent strategic actions that LADWP has to carry out over the coming years.

Energy and water efficiency play a vital role in meeting future demands and are the cornerstone of helping customers to manage their energy and water usage and costs. The integration of LADWP's efficiency programs enables a customer-focused approach and facilitates partnering with other agencies and utilities. This Efficiency Solutions Portfolio Business Plan includes joint programs that address both a customer's energy and water usage as well as individual programs. LADWP has long partnered with the Metropolitan Water District of Southern California (MWD) regarding water conservation and efficiency programs and entered into an agreement with Southern California Gas Company (SoCalGas) in FY 2012/13 to provide combined energy, water and natural gas efficiency programs.

LADWP's Board of Commissioners has approved very aggressive energy savings targets to be achieved by 2020, an increase of 50 percent over prior goals. The Efficiency Solutions section is modifying existing programs and developing new programs to achieve these higher savings levels. Efficiency Solutions will continue to monitor staffing levels to ensure they do not become a barrier to program success.

As part of its planning process, LADWP has committed to a number of energy and water efficiency activities to meet regulatory mandates and to meet the City's energy and water needs. In FY 2013/14, LADWP conducted an Energy Efficiency Potential Study that assessed the feasibility and cost-effectiveness of various energy efficiency goals. In August of 2014, the Board of Commissioners formally adopted Scenario 10 of the Potential Study and approved increasing the energy efficiency goal to 15% by 2020. LADWP's power operations planning will be updated to include the following energy efficiency goals:

- Leverage energy efficiency as part of the strategy for eliminating coal from LADWP's energy portfolio
- Achieve an energy efficiency goal of 15% by 2020
- Contribute to greenhouse gas emissions reduction through reduced energy usage

Water related actions have been incorporated into the 2010 Urban Water Management Plan (UWMP), the master planning document for LADWP's water operations. The UWMP includes the following water conservation and efficiency goals:

- Reduce potable water demands by 64,000 AFY by 2035
- Meet SB x7-7 Water Conservation Act of 2009 per capita water use mandate by 2020
- Maximize local resources and reduce future reliance on imported water

The program business plans presented in this Efficiency Solutions Portfolio Business Plan comprise the detailed plan for LADWP to achieve its energy and water efficiency goals. This portfolio includes energy efficiency programs, water conservation and efficiency programs and joint energy and water efficiency programs. LADWP seeks to create a balanced portfolio of efficiency programs that provides opportunities for all customers and customer segments to benefit from cost-effective energy and water efficiency. This approach targets large energy and water users, assists Hard-to-Reach customers who would not otherwise be able to invest in energy and water efficiency services, broadly addresses energy end uses in the built environment, focuses on reducing consumption during times of peak demand, and provides quality job opportunities for the local workforce. Efficiency programs include financial incentives for the installation of a variety of efficiency measures, free water saving devices, technical assistance incentives for business and industry, codes and standards, tiered pricing, education and awareness, turf replacement and landscape irrigation efficiency programs. These programs provide energy and water conservation and efficiency opportunities to all customer segments, in all Council Districts.

Efficiency and conservation benefit the City by reducing annual and peak demand, improving energy and water supply reliability, reducing infrastructure expansion costs and avoiding greenhouse gas emissions associated with direct and embedded energy use.

The following Program Summary Table summarizes the programs and partnerships of the energy and water efficiency portfolio.

LADWP Efficiency Solutions Portfolio Program Summary

	Program	Partnerships	
		Partner	Lead
Joint Energy and Water	Small Business Direct Install (SBDI) Program	SoCalGas	LADWP
	Home Energy Improvement Program (HEIP)		LADWP
	Los Angeles Unified School District Direct Install (LAUSD DI) Program	LAUSD, SoCalGas	LADWP
	Los Angeles Department of Water & Power (LADWP) Facilities Upgrade		LADWP
	Codes, Standards, and Ordinances (CSO) Program	SoCalGas	LADWP
	Outreach, Education, and Advertising (OEA) Program		LADWP
	Program Outreach & Community Partnerships (POCP) Program	Non-Profit Orgs	LADWP
	Emerging Technologies Program (ETP)	SoCalGas	LADWP
Energy	Refrigerator Exchange Program (REP)	ARCA	LADWP
	Refrigerator Turn-In & Recycle Program (RETIRE)	ARCA	LADWP
	Consumer Rebate Program (CRP)		LADWP
	Consumer Electronics (CE) Program		LADWP
	Residential Lighting Efficiency Program (RLEP)		LADWP
	Behavior-Based Efficiency Program (BEP)		LADWP
	Energy Savings Assistance Program (ESAP)	SoCalGas	LADWP
	Home Upgrade Energy Upgrade California® Program (HU EUC)	SoCalGas	SoCalGas
	City Plants (CP) Program	City, LADPW	City, LADPW
	California Advanced Home Program (CAHP)	SoCalGas	SoCalGas
	Commercial Lighting Incentive Program (CLIP)		LADWP
	Food Service Program (FSP)		LADWP
	Custom Performance Program (CPP)		LADWP
	Savings By Design Program (SBD)	SoCalGas	SoCalGas
	Energy Efficiency Technical Assistance Program (EETAP)		LADWP
Water	SoCal Water$mart Rebates (SCWR)	MWD	LADWP
	Free Water Conservation Items (FWCI)	SoCalGas	SoCalGas
	Water Conservation Technical Assistance Program (WC TAP)		LADWP
	Los Angeles Recreation and Parks (LARAP) Irrigation Efficiency	LARAP	LADWP

ENERGY EFFICIENCY

Energy Efficiency Guiding Principles

In order to plot a strategic course towards achieving its energy efficiency objectives, the LADWP Board adopted the following Guiding Principles on August 8, 2012, to shape the design and implementation of the Energy Efficiency Portfolio:

- LADWP will aggressively promote and achieve energy efficiency across all customer segments and energy end uses as a key part of LADWP's long-term, supply-side energy procurement strategy.

- Residential customers will be assisted in achieving ultra-high levels of energy efficiency in and around their homes with proven economical potential for energy efficiency, demand response, and clean energy production routinely realized on a fully integrated, site-specific basis.

- Commercial customers of all sizes will be assisted in achieving ultra-high levels of energy efficiency in and around their businesses with proven economical potential for energy efficiency, demand response and clean energy production routinely realized on a fully integrated, site-specific basis.

- Industrial customers will be empowered to demonstrate leadership in proven, economical energy efficiency and resource management, which will positively impact their operations.

- Eligible low-income customers will receive tangible economic benefits of energy efficiency through the mass adoption of proven, economical low-income energy efficiency measures.

- The future benefits of the widespread adoption of energy efficiency throughout LADWP territory will be leveraged to support the continued development of quality job opportunities for the local workforce including opportunities at LADWP to address future needs for critical skilled craft positions.

- LADWP is committed to transparency in the administration of its overall energy efficiency portfolio, and will report semi-annually on progress towards saving energy, serving a broad range of customers throughout the City, as well as on the training and job creation that results from energy efficiency investments. LADWP will provide performance measurement and verification of actual realized energy savings.

- LADWP will collaborate with community organizations to provide outreach and education for its diverse customer base, including Hard-to-Reach customers such as small business, low-income customers and multi-unit dwellings.

Program Budget and Savings

The Energy Efficiency Portfolio Budget and Savings Tables on the following pages have been updated to reflect the new goal of 15% energy efficiency by 2020. They present updated values for the total projected program budget, projected program impact and projected energy savings and demand reduction for the energy efficiency portfolio along with the projected budget for individual programs, all of which have been derived based on Scenario 10 of the Potential Study.

ENERGY EFFICIENCY PORTFOLIO BUDGET AND IMPACT

Fiscal Year	**FY 13-14 Actual**	**FY 14-15**	**FY 15-16**	**FY 16-17**	**FY 17-18**	**FY 18-19**	**FY 19-20**
Projected Program Budget	$78,000	$101,493	$144,848	$177,779	$193,792	$189,822	$171,872
Projected Savings	3.7%	5.0%	6.8%	8.8%	10.9%	12.8%	14.5%
Projected Program Impact							
MW	38.1	53.6	75.4	93.0	102.9	101.8	91.0
GWh	252	310	442	515	541	520	471
CO2 Avoided	134,872	165,233	234,759	231,266	239,752	226,672	201,055

PROGRAM	**Actual**	**Budget**	**Budget**	**Budget**	**Budget**	**Budget**	**Budget**
Small Business Direct Install Program	$15,839	$25,332	$19,796	$15,369	$14,369	$14,461	$14,130
LAUSD Direct Install	$5,407	$1,303	$8,934	$7,616	$7,971	$2,090	$6,194
Refrigerator Exchange	$4,522	$1,928	$7,885	$9,024	$10,782	$11,099	$9,588
Refrigerator Turn-In & Recycle	$166	$742	$762	$2,142	$2,499	$1,599	$1,378
Home Energy Improvement Program	$8,421	$4,456	$12,092	$26,816	$26,955	$34,680	$19,273
Home Upgrade Energy Upgrade California	$153	$652	$653	$871	$1,045	$1,110	$1,110
Consumer Rebate Program	$2,887	$1,186	$6,500	$7,541	$8,021	$7,229	$8,503
Energy Savings Assistance Program	$0	$5,000	$5,000	$10,000	$10,000	$5,000	$4,000
Residential Lighting Efficiency Program	$1	$3,375	$9,404	$9,304	$9,813	$9,813	$6,053
Behavior-Based Efficiency Program	$3	$635	$1,896	$5,253	$4,649	$4,573	$4,762
Consumer Electronics Program	$0	$2,970	$3,000	$3,000	$3,000	$3,000	$1,300
Subtotal Mass Market	**$37,400**	**$47,580**	**$75,922**	**$96,937**	**$99,105**	**$94,653**	**$76,291**
Custom Performance Program	$12,682	$24,022	$30,452	$33,538	$35,626	$33,701	$28,613
California Advanced Homes	$240	$594	$817	$1,360	$1,710	$2,520	$3,104
Commercial Lighting Incentive Program	$8,752	$7,011	$11,436	$14,122	$20,338	$17,624	$18,021
Savings By Design	$470	$153	$1,073	$2,564	$3,613	$4,207	$4,468
Food Service Program	$139	$3,433	$2,136	$3,139	$3,819	$3,463	$3,518
Upstream HVAC	$0	$0	$2,160	$2,100	$2,100	$2,100	$2,100
Energy Efficiency Technical Assistance Program	$565	$1,000	$1,200	$1,500	$2,000	$2,000	$2,000
Subtotal CII Programs	**$22,847**	**$36,213**	**$49,273**	**$58,323**	**$69,205**	**$65,614**	**$61,824**
Codes, Standards and Ordinances	$20	$1,724	$1,077	$1,520	$2,031	$2,619	$3,002
City Plants	$2,251	$2,251	$2,251	$2,251	$2,251	$2,251	$2,251
LADWP Facilities	$2,455	$4,374	$3,606	$3,973	$4,369	$4,794	$5,252
Program Outreach & Community Partnerships	$810	$851	$719	$774	$832	$891	$954
Emerging Technologies	$129	$988	$2,000	$2,000	$2,000	$2,000	$2,298
Subtotal Cross-Cutting Programs	**$5,665**	**$10,187**	**$9,653**	**$10,519**	**$11,482**	**$12,556**	**$13,756**
General Program Support	**$12,088**	**$7,512**	**$10,000**	**$12,000**	**$14,000**	**$17,000**	**$20,000**
Total LADWP Energy Efficiency	**$78,000**	**$101,493**	**$144,848**	**$177,779**	**$193,792**	**$189,822**	**$171,872**

* Program Budget numbers for FY 2015/16 and later are estimates only and have not been approved by either the Board of Commissioners or the City Council.

ENERGY EFFICIENCY PORTFOLIO ENERGY SAVINGS

	FY 13-14 Actual	FY 14-15	FY 15-16	FY 16-17	FY 17-18	FY 18-19	FY 19-20
PROGRAM	**GWh Savings**	**GWh Savings**	**GWh Savings**	**GWh Savings**	**GWh Savings**	**GWh Savings**	**GWh Savings**
Small Business Direct Install Program	39.0	39.2	46.7	53.8	53.8	46.7	40.0
LAUSD Direct Install	10.0	1.4	11.0	2.4	3.1	3.3	3.3
Refrigerator Exchange	5.0	11.8	10.3	16.7	20.7	22.0	15.9
Refrigerator Turn-In & Recycle	3.9	14.6	16.6	25.0	31.2	33.3	27.3
Home Energy Improvement Program	3.7	7.5	9.3	18.4	18.4	27.6	14.4
Home Upgrade Energy Upgrade California	0.7	1.0	1.0	1.4	1.8	1.9	1.9
Consumer Rebate Program	2.1	7.4	9.3	13.6	17.0	18.5	18.8
Energy Savings Assistance Program	0.0	5.7	11.4	11.4	11.4	11.4	11.4
Residential Lighting Efficiency Program	0.0	8.3	60.0	80.0	80.0	80.0	80.0
Behavior-Based Efficiency Program	0.0	7.3	14.5	14.5	14.5	14.5	14.5
Consumer Electronics Program	0.0	7.3	10.0	8.3	8.6	8.9	8.9
Subtotal Mass Market	**64.2**	**111.4**	**200.0**	**245.6**	**260.4**	**267.9**	**236.3**
Custom Performance Program	64.8	69.4	87.5	96.4	102.4	97.0	82.4
California Advanced Homes	0.0	1.4	2.0	3.3	4.1	6.1	7.5
Commercial Lighting Incentive Program	38.0	33.6	42.8	59.1	74.2	59.2	59.8
Savings By Design	6.0	0.2	0.7	1.7	2.4	2.8	2.9
Food Service Program	1.0	10.3	11.8	17.8	22.3	23.9	23.9
Upstream HVAC	0.0	0.0	6.0	6.0	6.0	6.0	6.0
Energy Efficiency Technical Assistance Program	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Subtotal CII Programs	**109.8**	**114.9**	**150.8**	**184.2**	**211.5**	**194.9**	**182.5**
Codes, Standards and Ordinances	74.8	80.1	87.6	81.6	65.6	53.6	48.6
City Plants	1.7	1.7	1.7	1.7	1.7	1.7	1.7
LADWP Facilities	1.0	1.8	1.8	1.8	1.8	1.8	1.8
Program Outreach & Community Partnerships	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Emerging Technologies	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Subtotal Cross-Cutting Programs	**77.5**	**83.6**	**91.2**	**85.2**	**69.2**	**57.2**	**52.2**
General Program Support	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**
Total LADWP Energy Efficiency	**251.6**	**310.0**	**442.0**	**515.0**	**541.0**	**520.0**	**471.0**

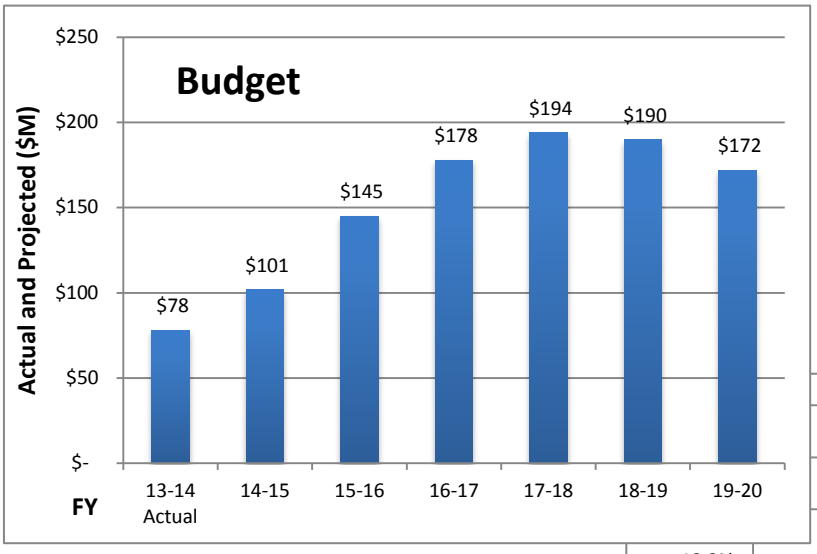
ENERGY EFFICIENCY PORTFOLIO DEMAND REDUCTION

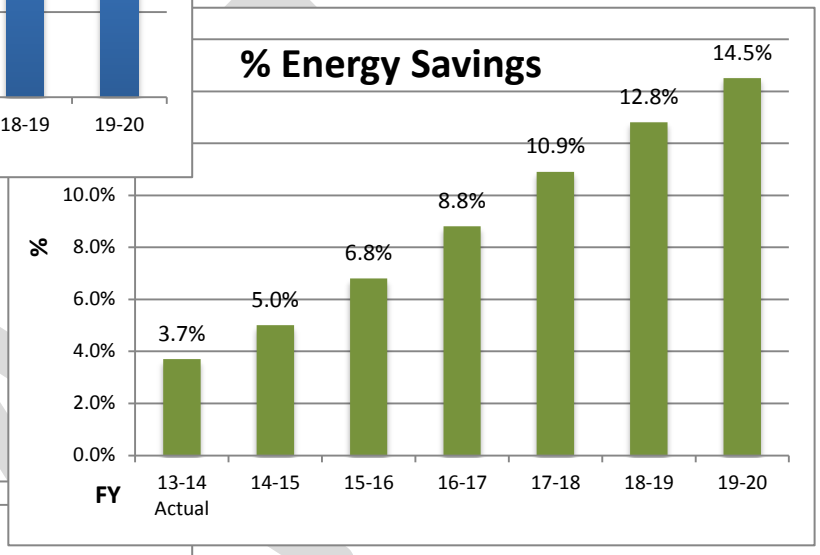
	FY 13-14 Actual	FY 14-15	FY 15-16	FY 16-17	FY 17-18	FY 18-19	FY 19-20
PROGRAM	**MW**	**MW**	**MW**	**MW**	**MW**	**MW**	**MW**
Small Business Direct Install Program	1.9	7.3	9.2	10.7	10.7	9.2	7.9
LAUSD Direct Install	2.1	0.3	2.3	0.5	0.6	0.6	0.6
Refrigerator Exchange	0.7	2.5	2.2	3.6	4.4	4.7	3.4
Refrigerator Turn-In & Recycle	0.6	3.1	3.6	5.4	6.7	7.1	5.9
Home Energy Improvement Program	1.6	4.4	3.7	6.1	6.1	8.6	5.7
Home Upgrade Energy Upgrade California	1.0	1.6	1.8	2.7	3.4	3.6	3.6
Consumer Rebate Program	0.6	1.7	1.9	2.8	3.5	3.8	3.8
Energy Savings Assistance Program	0.0	2.5	5.1	5.1	5.1	5.1	5.1
Residential Lighting Efficiency Program	0.0	1.0	7.2	9.6	9.6	9.6	9.6
Behavior-Based Efficiency Program	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Consumer Electronics Program	0.0	0.7	1.5	2.5	2.9	3.2	2.4
Subtotal Mass Market	**8.6**	**25.2**	**38.5**	**48.9**	**53.0**	**55.6**	**48.0**
Custom Performance Program	11.2	20.6	24.2	26.7	28.4	26.9	22.9
California Advanced Homes	0.0	0.4	0.4	0.8	1.1	1.5	2.0
Commercial Lighting Incentive Program	7.9	6.6	8.5	11.7	14.7	11.7	11.8
Savings By Design	1.0	0.1	0.2	0.5	0.7	0.9	0.9
Food Service Program	0.1	1.4	1.7	2.5	3.1	3.4	3.4
Upstream HVAC	0.0	0.0	1.3	1.3	1.3	1.3	1.3
Energy Efficiency Technical Assistance Program	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Subtotal CII Programs	**20.0**	**27.8**	**36.2**	**43.5**	**49.3**	**45.7**	**42.3**
Codes, Standards and Ordinances	9.1	0.0	0.0	0.0	0.0	0.0	0.0
City Plants	0.0	0.0	0.0	0.0	0.0	0.0	0.0
LADWP Facilities	0.3	0.6	0.6	0.6	0.6	0.6	0.6
Program Outreach & Community Partnerships	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Emerging Technologies	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Subtotal Cross-Cutting Programs	**9.5**	**0.6**	**0.6**	**0.6**	**0.6**	**0.6**	**0.6**
General Program Support	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**
Total LADWP Energy Efficiency	**38.1**	**53.6**	**75.4**	**93.0**	**102.9**	**101.8**	**91.0**

ENERGY EFFICIENCY PORTFOLIO METRIC TONS CO_2 AVOIDED

	FY 13-14 Actual	FY 14-15	FY 15-16	FY 16-17	FY 17-18	FY 18-19	FY 19-20
PROGRAM	**CO2 Avoided**	**CO2 Avoided**	**CO2 Avoided**	**CO2 Avoided**	**CO2 Avoided**	**CO2 Avoided**	**CO2 Avoided**
Small Business Direct Install Program	20,914	20,893	24,784	24,171	23,853	20,339	17,073
LAUSD Direct Install	5,373	759	5,856	1,097	1,353	1,420	1,390
Refrigerator Exchange	2,657	6,296	5,479	7,510	9,153	9,574	6,787
Refrigerator Turn-In & Recycle	2,075	7,759	8,838	11,207	13,825	14,505	11,653
Home Energy Improvement Program	1,968	4,012	4,928	8,258	8,149	12,034	6,146
Home Upgrade Energy Upgrade California	352	507	506	642	792	830	813
Consumer Rebate Program	1,100	3,954	4,918	6,116	7,523	8,047	8,015
Energy Savings Assistance Program	0	3,038	6,055	5,119	5,052	4,969	4,866
Residential Lighting Efficiency Program	0	4,447	31,870	35,925	35,453	34,873	34,147
Behavior-Based Efficiency Program	0	3,864	7,702	6,511	6,426	6,321	6,189
Consumer Electronics Program	0	3,868	5,312	3,732	3,807	3,871	3,799
Subtotal Mass Market	**34,439**	**59,398**	**106,247**	**110,287**	**115,387**	**116,783**	**100,878**
Custom Performance Program	34,718	36,980	46,459	43,274	45,399	42,269	35,177
California Advanced Homes	0	766	1,049	1,476	1,831	2,654	3,202
Commercial Lighting Incentive Program	20,358	17,931	22,747	26,530	32,877	25,827	25,525
Savings By Design	3,224	112	374	757	1,052	1,205	1,253
Food Service Program	557	5,466	6,271	8,003	9,894	10,399	10,194
Upstream HVAC	0	0	3,187	2,694	2,659	2,615	2,561
Energy Efficiency Technical Assistance Program	0	0	0	0	0	0	0
Subtotal CII Programs	**58,858**	**61,254**	**80,088**	**82,734**	**93,712**	**84,969**	**77,910**
Codes, Standards and Ordinances	40,114	42,699	46,549	36,660	29,088	23,380	20,760
City Plants	911	906	903	763	753	741	726
LADWP Facilities	551	976	973	822	812	798	782
Program Outreach & Community Partnerships	0	0	0	0	0	0	0
Emerging Technologies	0	0	0	0	0	0	0
Subtotal Cross-Cutting Programs	**41,576**	**44,581**	**48,425**	**38,245**	**30,652**	**24,920**	**22,267**
General Program Support	**-**	**-**	**-**	**-**	**-**	**-**	**-**
Total LADWP Energy Efficiency	**134,872**	**165,233**	**234,759**	**231,266**	**239,752**	**226,672**	**201,055**

* Reported in metric tons and based on LADWP 2012 Integrated Resource Plan CO2 emission factors.


Budget
Actual and Projected ($M)
$250
$200
$150
$100
$50
$-
$78
$101
$145
$178
$194
$190
$172
FY
13-14 Actual
14-15
15-16
16-17
17-18
18-19
19-20


% Energy Savings
%
10.0%
8.0%
6.0%
4.0%
2.0%
0.0%
3.7%
5.0%
6.8%
8.8%
10.9%
12.8%
14.5%
FY
13-14 Actual
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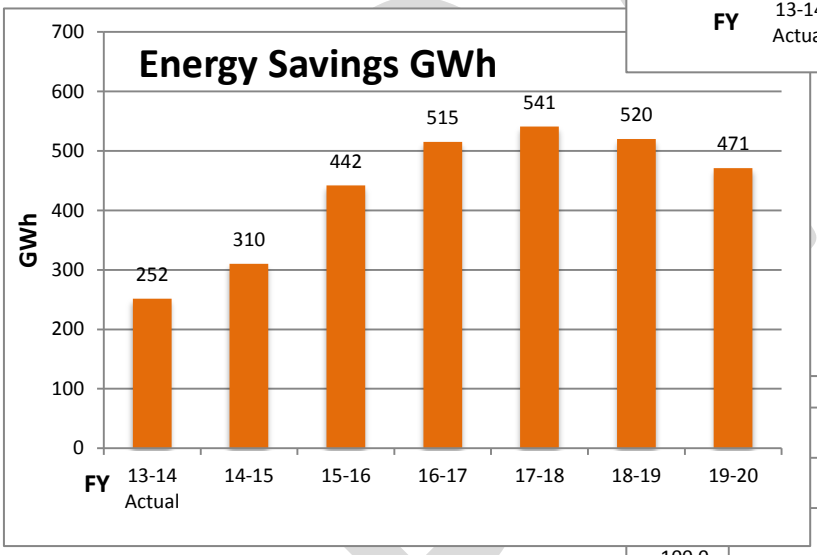
19-20


Energy Savings GWh
GWh
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600
500
400
300
200
100
0
252
310
442
515
541
520
471
FY
13-14 Actual
14-15
15-16
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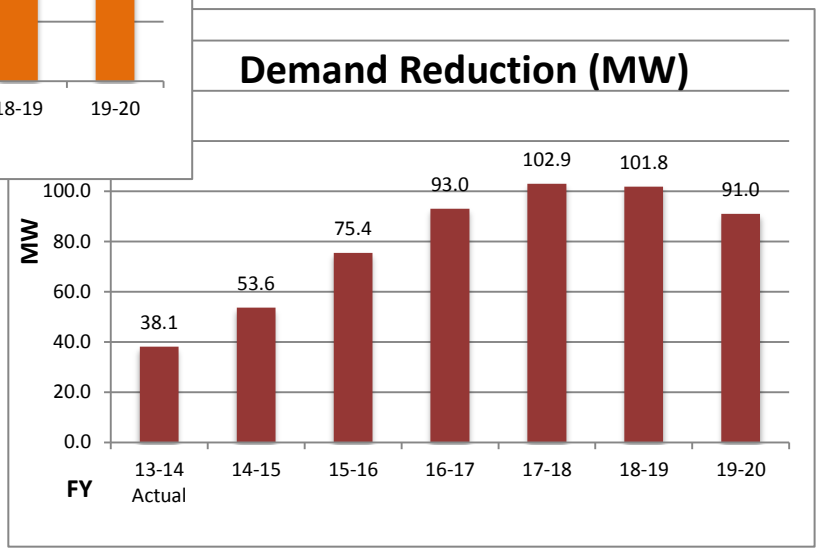
18-19
19-20


Demand Reduction (MW)
MW
100.0
80.0
60.0
40.0
20.0
0.0
38.1
53.6
75.4
93.0
102.9
101.8
91.0
FY
13-14 Actual
14-15
15-16
16-17
17-18
18-19
19-20

Program Cost-Effectiveness

- **TRC** **2.4**
- **PAC** **2.8**
- **$/kWh** **$0.05**

The generally accepted cost-effectiveness standard for energy efficiency in the industry is a TRC of 1.0 or above. Anything at or above that benchmark is considered to be cost-effective, as this indicates that the "benefit" gained is greater than or equal to the "cost" to capture savings in the program or measure.

With a TRC of 2.4, the LADWP Energy Efficiency Portfolio is considered cost-effective. This is due to the comprehensive mix of customer segment project types, energy end-uses, and measures served by the portfolio. Every effort will be made to continue to develop and implement measures and programs that are cost-effective, in support of AB 2021.

Program Descriptors

Market Sector	All LADWP Customers (Mass Market and Commercial, Industrial & Institutional (CII))
Program Status	Continuing
Launch Date	Ongoing
Measures Targeted	All Cost-Effective Measures (Mass Market & CII)
Engagement Channels	LADWP Account Managers LADWP Customers Manufacturers/Vendors/Retailers/Contractors City Council Constituent Centers & Neighborhood Councils CBOs/Faith Based Organizations Non-Profit Organizations Environmental Community LA Business Community/Chambers of Commerce Other Utilities
Target Customers	All LADWP Residential and Non-Residential Customers
# Customers	1.46 million LADWP electric customers
Economic Climate	As the economy of the City of Los Angeles improves, energy efficiency continues to play an important role. By seeking out all cost-effective measures to assist customers in reducing their energy costs, LADWP's efficiency programs will increase the residential

customers' disposable income and strengthen the revenue position, profitability and support for business expansion in this economic cycle.

Program Description

As the nation's largest POU (Publicly Owned Utility), LADWP strives to strengthen its position as a state and nation-leading energy efficiency administrator, partnering with California IOUs/POUs to ensure consistent, statewide programs, incorporate best practices and to seek out all cost-effective energy efficiency measures, in compliance with AB 2021 and maximizing benefit to its customers. LADWP's budget and energy savings goals place it among the nation's leaders in energy efficiency and position it well to meet the goals mandated in AB 2021. LADWP's portfolio commitment further strengthens its position as a state POU leader, potentially leading other California POUs to adopt similarly aggressive energy efficiency portfolio budgets.

LADWP's portfolio strives to make water and energy efficiency offerings available to all of its rate classes and market segments, including residential and non-residential resource and non-resource programs. LADWP seeks to implement all cost-effective energy efficiency, including emerging technologies, as appropriate, and capitalize on integration opportunities within its own portfolio (water and electricity), as well as natural gas offerings, through its partnership with Southern California Gas Company, as appropriate. The portfolio also includes direct installation programs for those Hard-to-Reach markets, as well as energy efficiency incentives, technical assistance and other assistance, as appropriate, to ensure that energy efficiency opportunities are available to all customers, in all Council Districts.

Program Objectives & Expected Outcomes

As the nation's largest municipal utility, LADWP believes in investing in the future success of Los Angeles and taking prudent steps that will assist its customers, contribute to the economic vitality of Los Angeles and enhance the customer experience. The objectives of this portfolio are to include cost-effective electric, natural gas and water offerings to all rate classes, via a variety of delivery channels, that further position LADWP as a progressive, nation-leading POU in energy efficiency, as well as assist customers to control their energy expenditures now and into the future.

LADWP's Energy Efficiency Portfolio seeks to utilize its budget to administer a cost-effective suite of energy efficiency programs to benefit all residential and non-residential rate classes, providing net benefits to ratepayers that exceed these budget investments, as well as benefits to the environment. This portfolio offers cost-effective electric, natural gas and water solutions for all residential and non-residential customer rate classes, in all Council Districts, that may eliminate the need for additional touch points for energy efficiency until new measures and/or programs are developed with additional technologies not yet offered.

These objectives also include, but are not limited to:

- Compliance with AB 2021
- Seek out and install cost-effective electric, natural gas and water solutions that will improve the energy performance of customers' facilities and give them additional control over their water and energy expenses

- Achieve program electric, water, and natural gas savings via incentives, technical assistance, bundled measure installations, energy efficient upgrades, and other improvement strategies to customers in all Council Districts
- Enhance customer experience with LADWP and its energy efficiency programs
- Enhance revenue performance, profitability and economic vitality
- Support economic growth and investment back into the community (jobs, capital investments, etc.)

Program Strategy and Implementation

LADWP's overarching energy efficiency strategy is to utilize a variety of delivery channels and partners to ensure that it has something to offer to all of its Mass Market and CII customers, seeking out all cost-effective energy efficiency, in compliance with AB 2021 and to provide maximum benefit to all its customer segments in all Council Districts. LADWP is utilizing the Mass Market/CII segmentation as a best practice enhancement to our portfolio to better capture program and market synergies, as Mass Market customers (residential and small business) have very similar needs and utilize similar technologies, allowing LADWP to better serve its customers by conceptualizing and organizing the Energy Efficiency Portfolio in this way.

The specific strategies may vary somewhat within each of the programs, but generally include the following, as appropriate:

- Integrate energy solutions, as applicable, including water, electricity and natural gas (via partnership with Southern California Gas Company)
- Partner with statewide IOUs and POUs, as appropriate, to ensure appropriate level of consistency to benefit those customers that have facilities in multiple utility service territories
- Leverage existing delivery channels, as appropriate, to ensure a cost-effective portfolio that benefits the LADWP ratepayers
- Leverage market partners (manufacturers, vendors, retailers, architects, CBOs, ESCOs, etc.) to market and deliver programs in a cost-effective manner
- Partner with local, state and national policy makers, legislators, regulators, etc. to ensure that the portfolio continues to be in compliance with all laws and regulations

The Guiding Principles Table on the next page, shows how the Energy Efficiency Portfolio incorporates the LADWP Board adopted Guiding Principles.

Energy Efficiency Guiding Principles

LADWP's Energy Efficiency Portfolio is designed to incorporate all of the LADWP Board adopted Guiding Principles.	Promote & achieve energy efficiency across all customer segments	Assist Residential customers in achieving ultra-high levels of energy efficiency in and around their homes	Assist Commercial customers of all sizes to achieve ultra-high levels of energy efficiency in and around their businesses	Empower Industrial customers to demonstrate leadership in proven, economical energy efficiency and resource management	Ensure eligible low-income customers receive tangible economic benefits of energy efficiency	Support the continued development of quality job opportunities for the local workforce	Administration Transparency - Report progress semi-annually & verify savings	Collaborate with community organizations to provide outreach and education for our diverse customer base, including Hard-To-Reach customers
Mass Market Programs								
Small Business Direct Install	x		**X**			**X**		**X**
LAUSD Direct Install	x		**X**		x	**X**		x
Refrigerator Exchange	x	x			**X**	x		x
Refrigerator Turn-In & Recycling	x	**X**			x	x		x
Home Energy Improvement Program	x	x			**X**	**X**		**X**
Home Upgrade - Energy Upgrade California	x	**X**				x		**X**
Consumer Rebate Program	x	**X**						
Energy Savings Assistance Program	x				X			
Residential Lighting Efficiency Program	x	**X**						
Behavior-Based Efficiency Program	x	**X**						
Consumer Electronics Program	x	**X**	X		x			
CII Programs								
Custom Performance Program	x		**X**	**X**		x		
California Advanced Homes	x	**X**			**X**	x		
Commercial Lighting Incentive Program	x		**X**	x		x		
Savings by Design	x		**X**	**X**				
Food Service Program	x		**X**	x		x		
Upstream HVAC	x		**X**	**X**				
Energy Efficiency Technical Assistance	x		**X**	**X**				
Crosscutting Programs								
Codes, Standards and Ordinances	**X**	**X**	**X**	**X**	**X**			
City Plants	x	**X**	x		x			**X**
LADWP Facilities Upgrade			**X**			**X**		
Program Outreach & Community Partnerships	**X**	**X**	**X**	**X**	**X**	x		**X**
Emerging Technologies	**X**	**X**	**X**	**X**	**X**	x		
Overall EE Portfolio	**X**	**X**	**X**	**X**	**X**	**X**	**X**	**X**

Legend	
X	**Primary Focus of Program**
x	**Other Program Benefits**

Water Conservation and Efficiency

Background

Los Angeles has historically taken a leadership role in water conservation and consistently ranks among the lowest in per person water consumption when compared to the nation's largest cities. This significant accomplishment has resulted from the City's sustained implementation of effective water conservation programs since 1977. Cumulative annual water savings related to hardware installation since the inception of LADWP's water conservation program total more than 100,000 AFY. Additional water conservation has been achieved through changes in customer behavior and lifestyle changes.

Over the years, LADWP has been instrumental both at the state and local level in the advancement of water conservation practices and technologies. LADWP is a member of the California Department of Water Resources (DWR) Independent Technical Panel which provides information and recommendations to DWR and the Legislature on new demand management measures (DMM), technologies, and approaches and is a member of the DWR Urban Stakeholder Committee which provides technical and policy input to DWR as it implements SB x7-7. It also is a founding member of the California Urban Water Conservation Council (CUWCC), a partnership of water suppliers, environmental groups, and others interested in conserving California's water. LADWP has played a significant role in the governance and policy making at the CUWCC, holding a seat on the Board of Directors as well as numerous committees and playing a leading role in developing the CUWCC Best Management Practices (BMPs). At the local level, LADWP partners with the Metropolitan Water District of Southern California (MWD) in region-wide programs and water conservation studies and is a leading driver in advancing codes, standards and ordinances for water efficient equipment.

LADWP presents its water conservation goals in the UWMP which includes a forecast of future water demands and water supplies, identifies future water supply projects, provides a summary of water conservation and best management practices and provides a single and multi-dry year management strategy. The UWMP is updated every 5 years with the next update due in 2015. In addition, LADWP is currently preparing a water reliability plan that may accelerate the UWMP water conservation goals and is conducting a Water Conservation Potential Study that will provide important information on attainable water conservation levels that may further modify the goals presented in the UWMP and this Portfolio Business Plan.

Water Conservation and Efficiency Guiding Principles

In order to maintain water supply reliability and cost-effectiveness for its customers, LADWP established a set of Guiding Principles to accelerate the development and implementation of water recycling, stormwater capture, and water conservation and expedite cleanup of the San Fernando Basin (SFB), maximizing local resources and minimizing the need to import water.

Guiding Principles, adopted via LADWP Board Resolution on August 22, 2012:

- LADWP will analyze the feasibility, cost, and rate implications of increasing water conservation, water recycling, and stormwater capture goals to levels and dates of achievement that improve upon the goals

currently established in the UWMP. Such increases and acceleration must consider technical feasibility and relative cost of implementation compared to the alternative of purchase of water from MWD.

- LADWP will continue to work towards completing its Groundwater System Improvement Study of the SFB so that it can develop an effective groundwater basin cleanup plan in order to restore LADWP's pumping capacity and allow for additional groundwater pumping due to stormwater capture and recycled water recharge.

- LADWP will continue to work with the Upper Los Angeles River Area Watermaster to develop a methodology whereby LADWP can receive increased pumping rights associated with stormwater recharge projects.

- LADWP will continue to work to identify potential projects and customers necessary to accelerate, achieve, or exceed its recycled water goal of 59,000 acre-feet per year (AFY) by 2035 cost effectively, while finalizing the Recycled Water Master Planning documents.

- LADWP will develop a Water Conservation Potential Study to quantify realistic conservation potentials for residential, commercial, industrial, and institutional customer classes; and, to determine how best to allocate its resources to optimize its hardware conservation program and accelerate, achieve, or exceed its goal of 64,000 AFY of hardware conservation by 2035 cost effectively.

- LADWP will develop a Stormwater Capture Master Plan to quantify the maximum stormwater capture potential within the City and investigate potential strategies to increase stormwater capture in order to accelerate, achieve, or exceed its goal of 25,000 AFY of stormwater capture by 2035 cost effectively.

- LADWP will proactively pursue public education, stakeholder engagement, and outreach opportunities in order to address public concerns, gain public support, and inform customers on the necessity of aggressively developing local water supplies in order to maintain LADWP's long-standing reputation of providing reliable water services to its customers cost effectively.

- LADWP is committed to transparency in the administration of its overall Local Water Supply Program, and will regularly report progress towards goals, performance measurements, and verification of actual realized water use savings and local supply production.

LADWP is also committed to a number of water conservation policies and goals resulting from legislation, code changes, local ordinances and industry group recommendations. These include:

- SB x7-7 Water Conservation, which requires 20% reduction in statewide per capita water use by 2020 and interim goals by 2015 and links compliance with these targets to eligibility for state water management grants and loans after AB 1420 sunsets in 2016.

- AB 1420 Urban Water Management Planning, which requires that eligibility for any state funded water management grant or loan made to an urban water supplier be conditioned on the implementation of DWR defined Demand Management Measures (DMMs).

- AB 1465 Urban Water Management Planning, which allows water suppliers to adopt CUWCC BMPs in place of DWR Demand Management Measures in their UWMP to meet AB 1420 requirements.

- AB 1881 Water Conservation, which requires local municipalities to implement a landscape ordinance that is at least as effective as the State of California's updated Model Water Efficient Landscape Ordinance (MWELO).

- Los Angeles Retrofit on Resale Ordinance, which requires the installation of ultra-low flow toilets and water saving showerheads in single family and multi-family residences prior to the close of escrow.

- Los Angeles Water Efficiency Requirements Ordinance, which sets minimum efficiency standards for certain plumbing fixtures, appliances and equipment.

- Los Angeles Emergency Water Conservation Plan Ordinance, which establishes five phases of water conservation of which Phase I, II and III have been implemented by LADWP.

- CUWCC Best Management Practices, which identify proven water conservation measures recommended for implementation by retail water agencies.

Program Budget and Savings

The Water Conservation Program Budget and Savings Table on the following page, presents the total projected program budget, projected program impact and projected water savings for the water conservation portfolio along with the projected budget for individual programs.

WATER CONSERVATION AND EFFICIENCY PORTFOLIO BUDGET

	FY 2013/14	FY 2014/15	FY 2015/16	FY 2016/17	FY 2017/18	FY 2018/19	FY 2019/20
Projected Program Budget ($x1,000)	**$35,208**	**$36,901**	**$36,087**	**$37,232**	**$37,374**	**$38,066**	**$38,766**
Projected Program Impact							
AFY Annual	3,476	3,621	3,723	3,794	3,906	3,985	4,064
AFY Cumulative	18,264	21,885	25,608	29,402	33,308	37,293	41,357
GWh Savings LADWP	2.7	2.8	2.9	2.9	3.0	3.1	3.1
GWh Savings MWD	9.0	9.4	9.6	9.8	10.1	10.3	10.5
CO2 Avoided Direct (LADWP)	1,428	1,479	1,515	1,305	1,326	1,331	1,329
CO2 Avoided Indirect (MWD)	2,782	2,898	2,980	3,036	3,127	3,189	3,253

	FY 2013/14	FY 2014/15	FY 2015/16	FY 2016/17	FY 2017/18	FY 2018/19	FY 2019/20
Water Efficiency Only Programs							
SoCal WaterSmart Rebates (SCWR)	$18,458	$19,458	$19,816	$20,191	$20,589	$20,932	$21,268
Free Water Conservation Items (FWCI)	$907	$918	$966	$985	$1,038	$1,069	$1,110
Water Conservation Technical Assistance Program (WC TAP)	$1,090	$1,091	$1,096	$1,097	$1,101	$1,102	$1,103
Los Angeles Recreation and Parks (LARAP) Irrigation Efficiency	$3,000	$3,000	$3,000	$3,000	$3,000	$3,000	$3,000
Subtotal Water Only Programs	**$23,455**	**$24,466**	**$24,879**	**$25,273**	**$25,727**	**$26,103**	**$26,482**
Joint Energy and Water Efficiency Programs							
Small Business Direct Install (SBDI)	$657	$821	$1,303	$1,775	$1,871	$1,926	$2,001
Home Energy Improvement Program (HEIP)	$1,417	$1,433	$1,508	$1,537	$1,620	$1,668	$1,733
LAUSD Direct Install	$71	$72	$75	$77	$81	$83	$87
LADWP Facilities Upgrade	$3,586	$3,196	$1,468	$1,512	$837	$872	$897
Codes, Standards & Ordinances (CSO)	$2,806	$3,525	$3,579	$3,698	$3,800	$3,903	$3,987
Outreach, Education and Advertising (OEA)	$3,216	$3,388	$3,274	$3,360	$3,437	$3,511	$3,579
Emerging Technologies Program (ETP)							
Program Outreach & Community Partnerships (POCP)							
Subtotal Joint Programs	**$11,753**	**$12,435**	**$11,207**	**$11,958**	**$11,646**	**$11,963**	**$12,285**
General Program Support							
Total Water Efficiency & Conservation	**$35,208**	**$36,901**	**$36,087**	**$37,232**	**$37,374**	**$38,066**	**$38,766**

* Program Budget numbers for FY 2014/15 and later are estimates only and have not been approved by either the Board of Commissioners or the City Council.

Program Cost-Effectiveness

- **$/AF** $413

The method used for assessing cost-effectiveness for LADWP's water conservation and efficiency programs is to compare the cost per AF of water saved to the avoided marginal cost of the first source of water supply that would be eliminated as a result of the savings. For LADWP, the first source of supply that would be eliminated is the purchase of water from MWD. The overall cost of water saved through the LADWP Water Conservation and Efficiency Program is $413/AF, which is substantially less than the 2013 MWD water rate of $847/AF for Tier 1 full service treated water. The program is cost effective by this standard.

Reducing water usage also results in energy savings along with a reduction in associated greenhouse gas emissions, reported here as metric tons of avoided carbon dioxide (CO_2) emissions. The total energy savings associated with the reduction in water purchased from MWD includes the energy used by MWD to import the water and the energy used by LADWP to treat the water, distribute the water and treat the wastewater, where applicable. In assessing the energy savings and the avoided CO_2 emissions associated with water savings, the CO_2 emissions associated with the LADWP energy savings are considered direct avoided emissions and those associated with the MWD energy savings are considered indirect avoided emissions.

The cost per kilowatt hour (kWh) of energy saved and the cost per ton of CO_2 emissions avoided associated with the water savings are yet to be determined. However, both the energy savings and the CO_2 emissions avoided are co-benefits of the water savings and the cost per kWh and per metric ton avoided may be provided in the future for informational purposes only.

Program Descriptors

Market Sector	Residential, Multi-Family and Commercial, Industrial & Institutional
Program Status	Continuing
Launch Date	Ongoing
Measures Targeted	All Cost-Effective Measures
Engagement Channels	LADWP Account Managers and Customers Manufacturers, Vendors, Retailers, Contractors City Council District Offices and Neighborhood Councils City Departments, Building and Safety (LADBS), Recreation and Parks (LARAP) Community Based Organizations (CBOs), Non-Profits, Environmental Community Los Angeles Unified School District (LAUSD) Los Angeles Business Community, Chambers of Commerce Professional and Trade Organizations Metropolitan Water District (MWD), Southern California Gas Company (SoCalGas)

California Urban Water Conservation Council

Target Customers All LADWP Residential and Non-Residential Customers

 # Customers 675,000 LADWP water customers serving approximately 3.9 million people

Economic Climate The City of Los Angeles, including LADWP residential and non-residential customers, is emerging from an extended period of recessionary conditions and is beginning to show positive signs of recovery. In order to assist customers, LADWP continues to seek out cost-effective water conservation and efficiency measures to enable customers to reduce their water costs. These measures increase residential customers' disposable income, reduce costs for businesses, and increase investment in products and services related to water conservation and efficiency improvements. All of which contribute to economic growth and the expansion of job opportunities in Los Angeles.

Program Description

LADWP's Water Conservation and Efficiency Portfolio is designed to achieve water conservation through a variety of measures reaching out to all customer sectors. These measures range from distributing free items to providing rebates for customized approaches. They include partnerships with MWD, SoCalGas, LAUSD and LARAP. Measures are provided to introduce customers to water conservation, encourage them to include water conservation in their purchases and improvements, and incentivize them to extend their efforts beyond simple measures into deeper savings. Outreach is included to inform customers of available programs and educate them in changes they can make to conserve water in their everyday activities. Finally, as these efforts increase the market penetration of new and more efficient technologies, LADWP leads the development of codes, standards and ordinances to raise the bar for water conservation and efficiency.

The Water Conservation and Efficiency Portfolio includes a set of measures that focus solely on water. Three of these programs, SoCal WaterSmart Rebates, Free Water Conservation Items and the Water Conservation Technical Assistance Program, are continuing programs that LADWP has been offering in various forms since 1977. In 2007, LADWP adopted a Memorandum of Understanding with the City Department of Recreation and Parks for LADWP to provide assistance to LARAP to increase the water efficiency of their irrigation operations, convert irrigation systems to recycled water use, and reduce their water costs.

Water savings are also achieved through joint energy efficiency and water conservation programs that provide direct and indirect savings. Four of these programs involve the direct installation of water and energy saving measures for small businesses, qualifying residential units including multi-family, LAUSD and LADWP facilities. Other joint energy and water programs provide indirect benefits through outreach, education, development of codes, standards and ordinances, and support for emerging technologies.

Each program is designed to provide opportunities to various market sectors. The targeted sectors include residential, mulit-family, commercial, industrial, and institutional customers. Programs are also provided that address specific sub-sectors such as small business, hard-to-reach residential and non-residential, and low-income customers. A variety of engagement channels are also utilized including vendors, contractors, retailers,

LADWP and partner websites, social media, community based organizations, advertising, education, community and business events, LADWP Customer Service Centers, manufacturers, Neighborhood Councils, City Council Constituent Centers, direct mail and outbound canvassing, universities and industry associations.

LADWP plans to continue to make investments in conservation programs and expand its focus on landscape water use efficiency and conservation opportunities in the commercial, industrial and institutional (CII) sectors. LADWP's conservation planning process includes working with other City departments to ensure that mutual needs are addressed and goals are achieved (e.g., landscape water use efficiency and dry weather runoff reduction).

Program Objectives

As the nation's largest municipal utility, LADWP believes in investing in the future success of Los Angeles and taking prudent steps that will assist its customers, contribute to the economic vitality of Los Angeles and enhance the customer experience. The objectives of this portfolio are to provide a suite of cost-effective water conservation and efficiency programs via a variety of delivery channels to benefit all residential and non-residential rate classes, providing net benefits to ratepayers that exceed these budget investments, as well as benefits to the environment.

LADWP's customer base includes 675,000 water customer accounts and 1.47 million electric customer accounts serving approximately 3.9 million people. Water demand within LADWP's service area has averaged 634,000 acre-feet per year (AFY) over the past 25 years, with single family and multi-family residential uses making up approximately 65% of the demand.

Customer Accounts and Water Demand by Sector – 25-Year Average

	Customer Accounts	Average Water Demand (AFY)	% of Total Water Demand
Single Family	479,369	226,845	35.8%
Multi-family	123,679	187,432	29.6%
Commercial, Industrial and Institutional	71,869	177,776	28.0%
Other		42,155	6.6%
Total	**674,917**	**634,208**	**100.0%**

In addition to the overall objectives, this portfolio of programs is designed to:

- Achieve UWMP goal of reducing potable water use by 64,368 AFY by 2035
- Comply with SB x7-7 per capita water use reduction targets
- Implement CUWCC Best Management Practices
- Seek out and install cost-effective water conservation solutions that will improve the water efficiency of customers' facilities and give them additional control over their water expenses
- Achieve program water savings via incentives, technical assistance, direct install, education and other improvement strategies to customers in all Council Districts
- Continue to play a leading role in the development of water conservation policies, regulations, codes, standards and ordinances at the state and local level
- Enhance customer experience with LADWP and its water conservation programs
- Enhance revenue performance, profitability and economic vitality

- Support economic growth and invest back into the local community

Program Strategy

LADWP's overarching water conservation strategy is to utilize a variety of delivery channels and partners to develop and offer cost-effective water conservation measures to all of its customer segments, in all Council Districts. Specific strategies include:

- Continue to take a leadership role in the CUWCC to develop cost-effective measures and BMPS
- Partner with MWD and other urban water retail agencies, to implement programs and co-fund studies for emerging technologies and practices
- Leverage existing delivery channels, as appropriate, to ensure a cost-effective portfolio that benefits the LADWP ratepayers
- Leverage market partners (manufacturers, vendors, retailers, architects, CBOs, etc.) to market and deliver programs in a cost-effective manner
- Partner with local, state and national policy makers, legislators, regulators, etc. to ensure that the portfolio continues to be in compliance with all laws and regulations

The Guiding Principles Table on the next page, shows how the Water Conservation and Efficiency Program Portfolio incorporates the LADWP Board adopted Guiding Principles, Urban Water Management Plan Goals, and legislative mandates.

Water Conservation and Efficiency Guiding Principles

LADWP's Water Conservation and Efficiency Portfolio is designed to incorporate the LADWP Board adopted Guiding Principles, Urban Water Management Plan Goals, and legislative mandates.	Achieve Urban Water Management Plan goal of 64,000 AFY of hardware conservation by 2035, cost effectively	Achieve SB x7-7 mandate of 20% reduction by 2020 in gallons per capita per day use	Comply with the CUWCC Best Management Practices for Utility Operations and Education	Comply with CUWCC Best Management Practices for Residential, Commercial, Industrial, Institutional and Landscape	Administrative Transparency – Will report progress semi-annually & verify savings
Water Efficiency Only Programs					
SoCal Water$mart Rebates	**X**	**X**	**X**	**X**	
Free Water Conservation Items	**X**	**X**	**X**	**X**	
Water Conservation Technical Assistance Program	**X**	**X**	**X**	**X**	
Los Angeles Recreation and Parks Irrigation Efficiency	**X**	**X**		**X**	
Joint Energy and Water Efficiency Programs					
Small Business Direct Install	**X**	x		x	
Home Energy Improvement Program	**X**	x		x	
LAUSD Direct Install	**X**	x		**X**	
LADWP Facilities Upgrade Program	**X**	x	**X**	**X**	
Codes, Standards & Ordinances	**X**	x	**X**	**X**	
Outreach, Education and Advertising	**X**	**X**	**X**	**X**	
Emerging Technologies Program	**X**	x			
Program Outreach & Community Partnerships	x	x	x	x	
Overall Water Efficiency and Conservation Portfolio	**X**	**X**	**X**	**X**	**X**

Legend	
X	Primary Focus of Program
x	Other Benefits of Program

LADWP

Small Business Direct Install (SBDI) Program Business Plan

FYs 2014/2015 – 2019/20

Program Overview

The Small Business Direct Install (SBDI) Program is a free direct-install program that targets small and medium business customers in the LADWP service territory. LADWP is partnering with Southern California Gas Company (SoCalGas) on this Program to offer a tri-resource efficiency program aiming to reduce the use of electricity, water and natural gas.

Fiscal Year	FY 13-14 Actual	FY 14-15	FY 15-16	FY 16-17	FY 17-18	FY 18-19	FY 19-20
Projected Program Budget* (x$1,000)							
Energy	$15,839	$25,332	$19,796	$15,369	$14,369	$14,461	$14,130
Water	$657	$821	$1,303	$1,775	$1,871	$1,926	$2,001
Projected Program Impact							
Energy							
MW	1.9	7.3	9.2	10.7	10.7	9.2	7.9
GWh	39.0	39.2	46.7	53.8	53.8	46.7	40.0
CO_2 Avoided	20,914	20,893	24,784	24,171	23,853	20,339	17,073

* Program Budget numbers for FY 2015/16 and later are estimates only and have not been approved by either the Board of Commissioners or the City Council.

Program Cost-Effectiveness

Energy Efficiency

- **TRC** 2.7
- **PAC** 0.8
- **$/KWh** $0.17

Water Efficiency

- **$/AF** TBD

The generally accepted cost-effectiveness standard for energy efficiency in the industry is a TRC of 1.0 or above. Anything at or above that benchmark is considered to be cost effective, as this indicates that the "benefit" gained is greater than or equal to the "cost" to capture savings in the program or measure. Reducing energy usage also results in avoided greenhouse gas (GHG) emissions, reported here as metric tons of carbon dioxide (CO_2) emissions avoided. The CO_2 avoided for energy savings is based on the current and projected CO_2 emissions factors for LADWP's power portfolio.

With a TRC of 2.7, SBDI is considered cost effective for energy efficiency. This is primarily due to the focus on lighting measures, which SBDI plans to capitalize on. Every effort will be made to continue to keep SBDI cost effective, installing all cost-effective energy efficiency measures, in support of AB 2021.

The method used for assessing cost-effectiveness for LADWP's water conservation and efficiency programs is to compare the cost per AF of water saved to the avoided marginal cost of the first source of water supply that would be eliminated as a result of the savings. For LADWP, the first source of supply that would be eliminated is the purchase of water from MWD.

Reducing water usage also results in energy savings along with a reduction in associated greenhouse gas emissions. The total energy savings associated with the reduction in water purchased from MWD includes the energy used by MWD to import the water and the energy used by LADWP to treat the water, distribute the water and treat the wastewater, where applicable. In assessing the energy savings and the avoided CO_2 emissions associated with water savings, the CO_2 emissions associated with the LADWP energy savings are considered direct avoided emissions and those associated with the MWD energy savings are considered indirect avoided emissions. These energy savings and CO_2 emissions reductions are not reported here but may be included in the future.

Program Descriptors

Market Sector Commercial

Program Status Existing

Launch Date FY 2012/13

Measures Targeted
- Small Business Products
- General Lighting
- Water Conservation Measures
  - Faucet Aerators – Kitchen and Restroom
  - Pre-Rinse Spray Nozzles
  - Low Flow Showerheads
  - High Efficiency Toilets
- Natural Gas Conservation Measures

Engagement Channels
- Outbound Canvassing
- Direct Mail
- Community/Civic Events
- City Council Constituent Centers
- Neighborhood Councils
- CBO Deployment
- Chambers of Commerce

Target Customers Non-residential small and medium size customers

Qualifications Must be a LADWP non-residential electric customer in good standing
Currently limited to A1 rate customers, less than 30 KW, but considering expansion to A2 rate customers up to 150 kW

 # Customers Initial design targets LADWP's A1 customers

Staffing Plan The staff is comprised of employees from the Efficiency Solutions Program Management Group and contract personnel. Contract personnel staff is comprised of Local 11 shop workers, including electricians, plumbers etc. as needed. The Water Conservation Group funds the water efficiency items for the program but does not charge any staff to the program.

Program Description

The SBDI Program targets small to medium business customers in the LADWP service territory, offering upgrades to targeted systems, including lights, water and natural gas. LADWP is partnering with Southern California Gas Company on SBDI, with LADWP as the lead utility. This program is designed to integrate electric, water and natural gas efficiency measures. LADWP is leveraging its Integrated Support Services Group (ISS), contract personnel, an IT system, and strategically located community based organizations (CBOs) to market and implement the SBDI Program. The design is intended to maximize the electric, water and natural cost savings, in a cost-effective manner.

SBDI is a direct install program managed by the LADWP Efficiency Solutions Program Management Group and implemented with the assistance of an external vendor. As the program is currently designed, the external vendor approaches potentially qualifying small/medium businesses and solicits their participation in the program. LADWP ISS staff or contract personnel then conduct an initial assessment to ascertain the qualifying measures that are applicable to the customer. If the business is interested in having the measures installed, ISS or contractor personnel schedule and complete the installation.

As part of this program, LADWP utilizes an IT platform to matriculate customers into the program and facilitate the performance of building energy assessments. The web-based IT system also tracks the project status throughout the installation cycle, aggregates energy savings, and enhances the customer's experience with LADWP. When installation is complete, customer information and savings are input into the tracking database. It is the intention of SBDI, to install all cost-effective natural gas, water and electric measures, as agreed to by LADWP and its partner in the SBDI Program, SoCalGas.

Program Objectives and Expected Outcome

As the nation's largest municipal utility, LADWP believes in investing in the future success of Los Angeles and taking prudent steps that will assist its customers, contribute to the economic vitality of Los Angeles and enhance the customer experience. The objectives of SBDI are to install cost-effective electric, natural gas and water measures to small and medium size non-residential customers, positioning LADWP as a progressive,

nation-leading publicly owned utility in energy efficiency and water conservation, as well as to assist these customers in controlling their energy and water expenses now and into the future.

This program offers targeted cost-effective electric, natural gas and water solutions for small to medium-sized business customers that should eliminate the need for additional touch points for energy efficiency and water conservation until new measures and/or programs are developed with additional technologies not yet offered.

The objectives of the program include:

- Seek out and install cost-effective electric, natural gas and water solutions that will improve the energy and water performance of small and medium size non-residential customer facilities
- Achieve program electric, water, natural gas savings via bundled measure installations, energy and water efficient upgrades, and other improvement strategies to small business customers in all Council Districts
- Enhance customer experience with DWP and its energy and water efficiency programs
- Assist small businesses to reduce their energy and water costs, resulting in reduced operating costs to the end-use customer
- Enhance revenue performance, profitability and economic vitality
- Give LADWP an avenue to help businesses prosper
- Assist LADWP in reducing its cost of procurement of energy and water, which may ultimately be passed through to the customer base
- Assist SoCalGas (LADWP's project partner) in reducing procurement of natural gas
- Reduce GHG emissions and carbon footprint of the LADWP customer base
- Expanded opportunities to increase the job pipeline and bring jobs to Los Angeles
- Through the Utility Pre-Craft Trainee (UPCT) program, establish a pipeline of trained and motivated talent that is equipped to enter the LADWP workforce and eventually fill vacancies in our critical craft positions due to upcoming retirements

Ultimately, the goal or expected outcome of SBDI is to provide cost-effective efficiency (electric, water, natural gas) to as many small and medium size LADWP non-residential customers as possible. Eventually, there may be opportunities to expand the SBDI Program to include additional measures, depending on cost-effectiveness, budget, success of the Program, and existing programs.

Program Strategy and Implementation

This Program includes a partnership with SoCalGas that is facilitated by a master utility agreement between LADWP and SoCalGas, which allows each utility to co-fund the other's programs.

The current strategies include:

- Leveraging and deploying existing and newly developed channels to reach out directly to LADWP small and medium size business customers
- Leveraging and culling the LADWP database to employ outbound canvassing strategies

- Leveraging direct mailing pieces to aggressively market SBDI and to inform the business community of services available to them
- Leveraging existing CBOs and other community organizations to market the Program and its availability to LADWP small/medium business customers
- Leveraging water efficiency measures and resources through joint energy and water programs
- Performing post-inspections on a random sample of projects to ensure quality control of installed work

The program is administered using an IT platform that enhances the matriculation of participating customers, enhancing the customer experience and allowing for improved online tracking and completion times. Implementation for SBDI began in 2012 and has become increasingly available as the program has entered into later implementation stages. The current program design is targeting a one to two week turn-around from assessment to completion, with a goal to minimize the turn-around time as much as is practical, depending on size and complexity of the customer's measures to be installed.

Program Barriers

The barriers to the SBDI program may be greater than in other programs. While some barriers may be more problematic than others, it is currently agreed that the barriers listed below can be overcome. These barriers include:

- Identifying and gaining the participation of qualified small and medium size business customers
- Contractor difficulties ramping up for scope and scale of program
- Identifying qualified contractors for measure installations

Integration and Transformation Opportunities

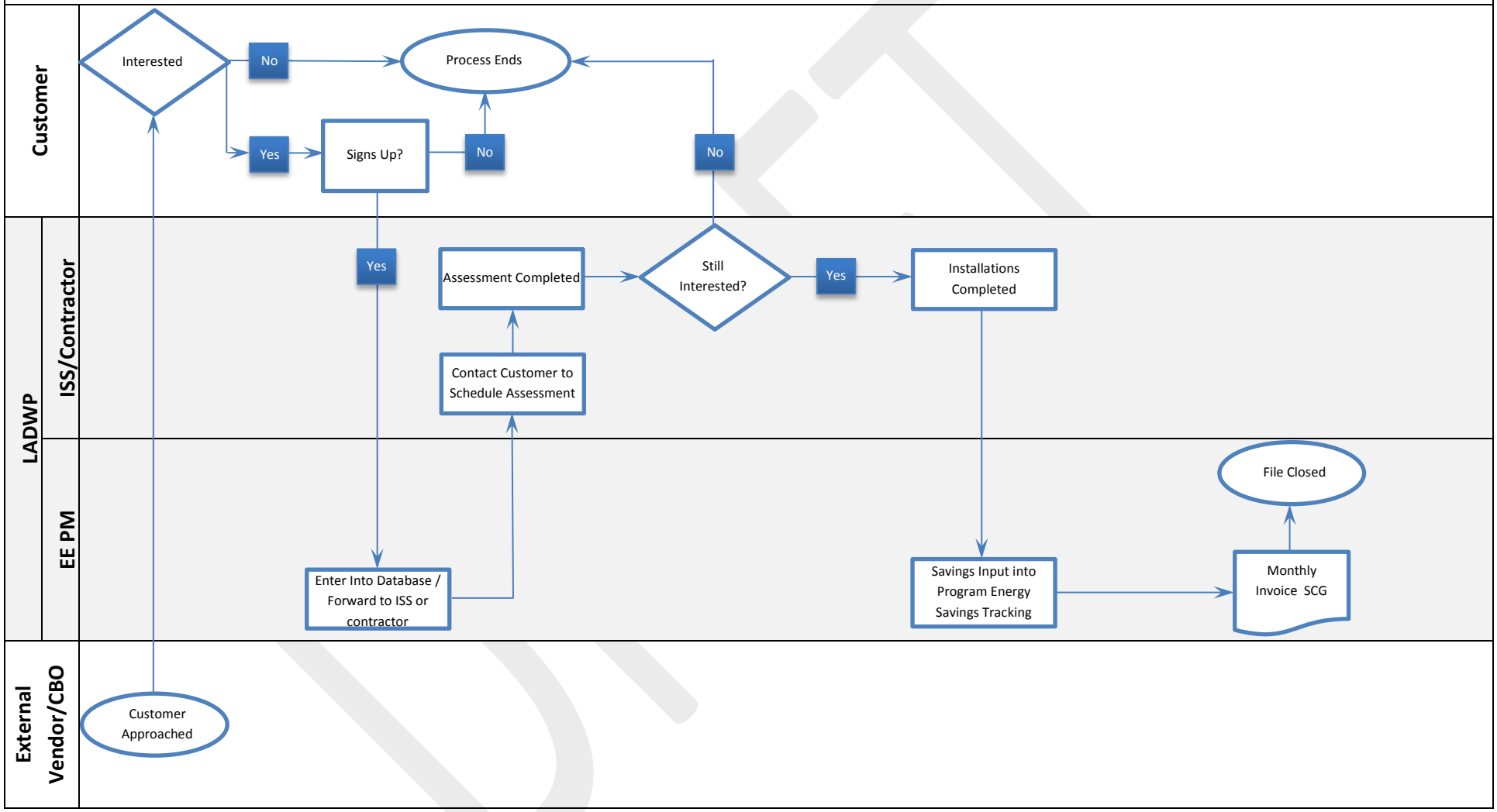
As SBDI is a direct install program, opportunities for traditional market transformation are limited, as currently designed. However, SBDI will offer direct install measures at no cost to all qualifying customers, which ultimately has the same effect in transforming the market directly through saturation. As SBDI will be available to all small and medium size customers, it effectively may raise the floor/base level for all such measures, allowing LADWP to support further adoption of codes and standards related to such measures. This type of program should accelerate the acceptance and installation of such measures, which may also accelerate political willingness to adopt higher standards, as customers that couldn't meet standards previously, will be taken care of in this program.

Long-Term Vision/Goals

The goal of the SBDI Program is to serve as many small and medium size LADWP non-residential customers as possible with cost-effective water, electric and natural gas measures that are approved and included in the program. Ultimately, the goal is to expand the program beyond the current 30 KW ceiling to non-residential customers up to 150 kW. As future program changes are developed and/or envisioned, the SBDI Program Business Plan will be updated and communicated to key stakeholders.

2014/15 Los Angeles Department of Water and Power

Small Business Direct Install (SBDI) Program Process Flow



LADWP

Home Energy Improvement Program (HEIP) Business Plan

FYs 2014/15 – 2019/20

Program Overview

The Home Energy Improvement Program (HEIP) is a comprehensive direct install whole-house retrofit program that offers residential customers a full suite of free products and services to improve the energy and water efficiency in the home by upgrading/retrofitting the home's envelope and core systems. While not limited to low-income customers, HEIP's priority is to serve LADWP's neediest customers.

Fiscal Year	FY 13-14 Actual	FY 14-15	FY 15-16	FY 16-17	FY 17-18	FY 18-19	FY 19-20
Projected Program Budget* (x$1,000)							
Energy	$8,421	$4,456	$12,092	$26,816	$26,955	$34,680	$19,273
Water	$1,417	$1,433	$1,508	$1,537	$1,620	$1,668	$1,733
Projected Program Impact							
Energy							
MW	1.6	4.4	3.7	6.1	6.1	8.6	5.7
GWh	3.7	7.5	9.3	18.4	18.4	27.6	14.4
CO_2 Avoided	1,968	4,012	4,928	8,258	8,149	12,034	6,146

* Program Budget numbers for FY 2015/16 and later are estimates only and have not been approved by either the Board of Commissioners or the City Council.

Program Cost-Effectiveness

Energy Efficiency

- **TRC** 0.2
- **PAC** 0.2
- **$/KWh** $1.21

Water Efficiency

- **$/AF** TBD

The generally accepted cost-effectiveness standard for energy efficiency in the industry is a TRC of 1.0 or above. Anything at or above that benchmark is considered to be cost effective, as this indicates that the "benefit" gained is greater than or equal to the "cost" to capture savings in the program or measure. Reducing energy usage also results in avoided greenhouse gas (GHG) emissions, reported here as metric tons of carbon dioxide (CO_2) emissions avoided. The CO_2 avoided for energy savings is based on the current and projected CO_2 emissions factors for LADWP's power portfolio.

HEIP has a TRC of 0.2, which is typical for programs of this design that are intended to deliver customer benefits beyond the cost-effectiveness standards. This is also common for many residential measures and programs, due to codes and standards, transformation of market measures, energy savings per installation and various other

factors occurring in the residential segment. However, HEIP is designed to ensure that LADWP provides access to its energy and water efficiency programs and services to all customer segments and all demographics.
The method used for assessing cost-effectiveness for LADWP's water conservation and efficiency programs is to compare the cost per AF of water saved to the avoided marginal cost of the first source of water supply that would be eliminated as a result of the savings. For LADWP, the first source of supply that would be eliminated is the purchase of water from MWD.

Reducing water usage also results in energy savings along with a reduction in associated greenhouse gas emissions. The total energy savings associated with the reduction in water purchased from MWD includes the energy used by MWD to import the water and the energy used by LADWP to treat the water, distribute the water and treat the wastewater, where applicable. In assessing the energy savings and the avoided CO_2 emissions associated with water savings, the CO_2 emissions associated with the LADWP energy savings are considered direct avoided emissions and those associated with the MWD energy savings are considered indirect avoided emissions. These energy savings and CO_2 emissions reductions are not reported here but may be included in the future.

While HEIP is not cost effective by traditional economic metrics on its own, it directly supports one or more of LADWP's Guiding Principles for its Energy Efficiency (EE) Portfolio, which is cost effective overall, in compliance with California statutory requirements. (Please see the EE Portfolio Executive Summary for more information on the Guiding Principles and the overall cost-effectiveness of LADWP's EE Portfolio, as well as the table identifying which Guiding Principles the HEIP Program specifically supports.)

Program Descriptors

Market Sector	Residential
Program Status	Existing
Launch Date	2012
Measures Targeted	Residential Consumer Products Whole House Model
Engagement Channels	Direct Mail Flyers LADWP Website Social Media Hotline Program Outreach & Community Partnership Program
Target Customers	Residential

Qualifications All residential customers are eligible but the program targets Low, Moderate and Fixed-income, including LADWP's Low-Income Rate and Lifeline customers, as well as targeted zip codes, based on census data, to identify the areas in genuine need.

 # Customers Ultimately, the intent and desire of HEIP is to offer energy efficiency and water conservation opportunities to all of LADWP's residential customers either by energy and water efficiency upgrades, home energy and water assessments with conservation recommendations, or participation in another program.

Staffing Plan The staff is comprised of employees from the Efficiency Solutions Program Management Group, which manages the Intake portion of the project. Integrated Support Services (ISS) carpenters, roofers and Utility Pre-Craft Trainees are utilized as needed. The Water Conservation Group provides funding for hardware but no staff for the program. The long-term staffing implications of HEIP are planned to remain static over the initial 5 years.

Program Description

HEIP is a comprehensive whole house retrofit program that offers residential customers a full suite of products and services to improve the energy and water efficiency in the home by upgrading/retrofitting the home's core systems. The program is targeted to primarily serve LADWP's low-, moderate-, and fixed-income single- and multi-family residential customers, although no income restrictions are in place. The program will simply be marketed only to the targeted market.

The energy and water saving potential within each residence is determined by a detailed assessment that identifies and estimates the basis for a remediation/retrofit plan. The customer is presented with the findings at the conclusion of the residential assessment and informed of recommended measures to be installed. The customer is contacted at a later time by an Intake Representative to schedule an installation appointment.

A whole house energy and water retrofit approach that focuses on improving and/or upgrading the home's core systems can significantly improve a home's energy and water performance. This could present an opportunity for significant energy and water savings, depending on the measures to be installed and the baseline efficiency of each home. The assessments are performed by the Integrated Support Services (ISS) staff and presented to each LADWP customer as a free service. The assessment identifies energy and water saving opportunities by assessing the following systems:

- **The Building Envelope**
  - Blower Door diagnostic testing to assess shell integrity
  - Air Sealing
  - Insulation
  - Door repair/replacement
  - Window repair
  - Weatherstripping

- Cover Plate Gaskets
- Attic Venting

- **HVAC System**
  - Higher SEER
  - Duct leakage diagnostics performed
  - Duct system repairs (if applicable)
  - Window Air Conditioning Units
  - Combustion Appliance Safety diagnostic testing
  - Repair or properly vent combustion systems

- **Plumbing Systems (Water)**
  - Low flow toilets
  - Low flow showerheads
  - Flow restricting faucet aerators
  - Hot water pipe wrapping

- **Lighting Systems**
  - Install energy efficient lamps and fixtures indoors and outdoors (CFLs, LEDs)

- **Appliance Systems**
  - Replace older, inefficient refrigerators with Energy Star rated models under the Refrigerator Exchange Program (REP)

HEIP seeks to continue building on the success of the ARRA Weatherization Program and how popular it was with customers. As such, LADWP developed an in-house program to reach a wider array of customers, across multiple tiers and expand the program to reach additional customers to help them reduce their energy and water consumption, increase their expendable income and enhance their customer experience with LADWP.

The rationale for this approach to the targeted customer market, is that low, moderate and fixed-income customers often do not have the resources to undertake these upgrades on their own, even though they stand to benefit greatly. HEIP ensures that those building envelopes receive the needed weatherization measures, targeting the low to moderate-income households within the LADWP service territory. This model, utilizing council districts and census data, allows LADWP to target the customers that are truly in need, allowing LADWP to provide a much needed service to help these customers to better control their energy and water consumption while simultaneously taking demand off the LADWP grid and reducing GHG emissions.

Program Objectives and Expected Outcome

This program offers comprehensive solutions to LADWP's residential customers to improve the efficiency of their homes, by providing free home energy and water assessments and diagnostics and limited energy and water efficiency upgrades. Eligible measures are installed free of charge by trained and qualified personnel. This

program also provides general conservation education literature at the conclusion of the assessment and a list of recommended measures that are not eligible under this program.

The objectives of this program include:

- Seek out and install comprehensive energy and water solutions that improve the energy and water performance in the homes of participating residential customers
- Achieve program energy and water savings via bundled measure installations, energy and water efficiency upgrades and other home system improvement strategies
- Matriculate customers from all tier levels into the program, but giving first consideration to low-income and Lifeline Discount Rate customers
- Provide program services to residential customers in all Council Districts
- Enhance customer experience with LADWP
- Through the Utility Pre-Craft Trainee (UPCT) program, establish a pipeline of trained and motivated talent that is equipped to enter the LADWP workforce and eventually fill vacancies in our critical craft positions due to upcoming retirements

Additionally, HEIP contributes to the greater economy and job creation in the City of Los Angeles. The administration of HEIP provides an incremental increase in staff. The vocational training administered through this Program could have potential benefits to the overall energy and water efficiency field, in Los Angeles and California, and provide additional trained energy and water efficiency experts and additional opportunities for trained vocational experts in this program.

Program Strategy and Implementation

The Los Angeles area DOE ARRA-funded Weatherization Program was designed to offer services to income-qualified residents in the City. LADWP has expanded the population of program participants by offering services to all residential customer segments, but targets and gives first consideration to low-income and Lifeline Discount Rate customers. The HEIP team expands its outreach to non-discount rate customers using U.S. Census data to identify the communities within our service territory with the lowest household median income, and once identified, those customers receive via direct mail, CBOs, etc. a HEIP information packet. As applications are received and processed, customers are notified of schedule and expectations for delivery of the program. Assessment and installation dates are also set.

The following components make up the basic implementation of the program:

- **Program Outreach**
    - Direct Mail – Mail batches of approximately 10,000 customers each are created according to CD and zip, and delivered to the vendor for mailing. Each customer receives a program information packet that includes a letter or flyer and a program application.

- Flyers – Program flyers are distributed via direct mail, utilized for community event support, distributed to CDs for each constituent centers, and any other appropriate outreach channel likely to build Program awareness.
- Website – Program information, including an online application, is available on the LADWP website.
- Social Media – Social networking mediums are being considered as a potential Program promotion channel.
- Hotline - A toll-free program hotline has been established to provide customers with additional and more immediate methods of contacting HEIP personnel.
- Program Outreach & Community Partnership Program – Some of the grantees that participate in the POCP program provide services to hard-to-reach customers that help them participate in the HEIP program.

- **Customer Intake**
  - Applications are reviewed for completeness by the intake team, and afterwards entered into the Program database for tracking.
  - Customer files are created and include the signed application.
  - Customer files are forwarded to the ISS field team for scheduling of assessment and measure installation.
  - Intake team provides telephone support throughout the duration of the program period. Intake staff initiates phone calls to customers for the purpose of obtaining missing application information or responding to a customer inquiry, and they handle incoming program calls and forward to the appropriate HEIP personnel.

- **Construction Team**
  - ISS field team contacts customer to schedule home assessment.
  - Field assessor conducts a detailed audit to determine what measures can be implemented.
  - Diagnostic testing is performed (Blower Door, Duct Leakage, Combustion Appliance Safety).
  - Scope of Work (for each individual home) is defined and documented.
  - Installation and repair work is scheduled and performed.
  - Energy and water savings are based upon installs recorded in the Program Energy Savings Tracking Database.
  - Customer HEIP file is closed out.

This program is designed to serve a wide residential market base in the LADWP service territory. The development and design of this program is intended to take the best practices from the California Statewide Whole House Program (Home Upgrade - Energy Upgrade California).

HEIP is designed to take key energy and water design measures and practices and implement on an individualized basis, to best serve each LADWP participant. Depending on demand, customer participation is provided on a first come first serve basis, with priority consideration extended to the customers with greatest need. HEIP is also leveraging the IT platform developed and implemented for SBDI to improve tracking of jobs, work, and results.

Program Barriers

The barriers, while not extraordinary, are real, and may result in LADWP being unable to provide this service to customers that would otherwise benefit from proposed services. Where realistically feasible, efforts may be taken to mitigate these barriers.
These potential barriers include, but may not be limited to:

- Trust – (A portion of customers may not believe the program is free)
- Condition of the home – (Asbestos, etc.)
- Presence of hazardous materials
- Landlord refusal to allow participation

Ultimately, the safety of employees and customers will be the first priority. Any of these barriers could result in LADWP's inability to serve an otherwise deserving customer.

Integration and Transformation Opportunities

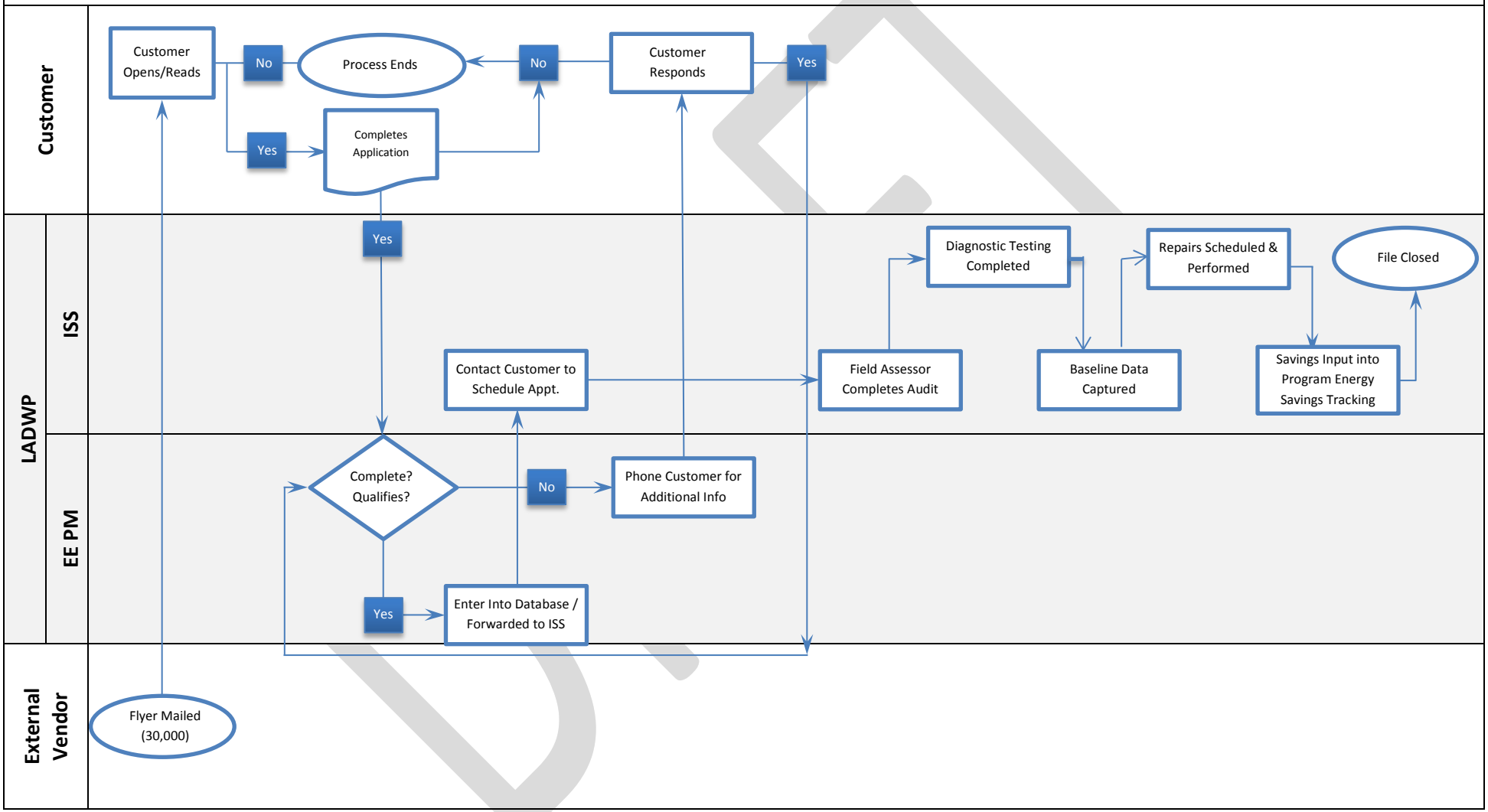
The design and intent of HEIP is to offer the residential customer a full suite of services, including tips, energy efficiency measures, water efficiency measures and natural gas measures, as appropriate. When customers qualify for other programs (e.g. refrigerator replacement, etc.), those services are seamlessly offered to the customer, as appropriate. As other opportunities may be identified, (e.g. Common areas of multi-family complexes) referrals are made.

Long-Term Vision/Goals

The long-term goal of HEIP, as it is initially designed, is to provide all of LADWP's residential customer segments with the same level of energy and water conservation and energy and water efficiency, in time. This will result in increased awareness of energy and water consumption, increased control of bills and a feeling of empowerment, as well as additional expendable income to assist with living expenses and contribute to the greater economy of Los Angeles.

2014/15 Los Angeles Department of Water and Power

Home Energy Improvement Plan (HEIP) Program Process Flow



LADWP

LAUSD Direct Install Program Business Plan

FYs 2014/15 – 2019/20

Program Overview

The Los Angeles Unified School District Direct Install (LAUSD DI) Program is designed to improve energy and water efficiency throughout LAUSD's facilities through upgrades in electric, water and natural gas consuming systems, in partnership with the Southern California Gas Company (SoCalGas). This Program provides energy efficiency design assistance, project management experience and retrofitting installation, utilizing LADWP engineering and ISS (Integrated Support Staff), to assist LAUSD facilities in need of aid in reducing energy usage and corresponding utility expenses.

Fiscal Year	FY 13-14 Actual	FY 14-15	FY 15-16	FY 16-17	FY 17-18	FY 18-19	FY 19-20
Projected Program Budget* (x$1,000)							
Energy	$5,407	$1,303	$8,934	$7,616	$7,971	$2,090	$6,194
Water	$71	$72	$75	$77	$81	$83	$87
Projected Program Impact							
Energy							
MW	2.1	0.3	2.3	0.5	0.6	0.6	0.6
GWh	10.0	1.4	11.0	2.4	3.1	3.3	3.3
CO_2 Avoided	5,373	759	5,856	1,097	1,353	1,420	1,390

* Program Budget numbers for FY 2015/16 and later are estimates only and have not been approved by either the Board of Commissioners or the City Council.

Program Cost-Effectiveness

Energy Efficiency

- **TRC** **1.1**
- **PAC** **1.1**
- **$/KWh** **$0.13**

Water Efficiency

- **$/AF** **TBD**

The generally accepted cost-effectiveness standard for energy efficiency in the industry is a TRC of 1.0 or above. Anything at or above that benchmark is considered to be cost effective, as this indicates that the "benefit" gained is greater than or equal to the "cost" to capture savings in the program or measure. Reducing energy usage also results in avoided greenhouse gas (GHG) emissions, reported here as metric tons of carbon dioxide (CO_2) emissions avoided. The CO_2 avoided for energy savings is based on the current and projected CO_2 emissions factors for LADWP's power portfolio.

With a TRC of 1.1 for energy projects, LAUSD DI is considered cost effective. This is primarily due to the focus on lighting measures, which this program, as designed, capitalizes on, but also includes natural gas measures (in partnership with SoCalGas). As the energy efficiency measures of this program focus on lighting and HVCAC in institutional applications, the TRC should remain well above the 1.0 threshold and a benefit to LADWP, its customers and the environment. Additionally, every effort will be made to continue to keep this program cost effective in the future, installing all cost-effective lighting, water and natural gas efficiency measures.

The method used for assessing cost-effectiveness for LADWP's water conservation and efficiency programs is to compare the cost per AF of water saved to the avoided marginal cost of the first source of water supply that would be eliminated as a result of the savings. For LADWP, the first source of supply that would be eliminated is the purchase of water from MWD. The cost of water saved through the LAUSD DI Program is not known at this time because the program only recently began tracking water savings. Water savings cost-effectiveness data will be provided after the close of FY 2013/14.

Reducing water usage also results in energy savings along with a reduction in associated greenhouse gas emissions. The total energy savings associated with the reduction in water purchased from MWD includes the energy used by MWD to import the water and the energy used by LADWP to treat the water, distribute the water and treat the wastewater, where applicable. In assessing the energy savings and the avoided CO_2 emissions associated with water savings, the CO_2 emissions associated with the LADWP energy savings are considered direct avoided emissions and those associated with the MWD energy savings are considered indirect avoided emissions. These energy savings and CO_2 emissions reductions are not reported here but may be included in the future.

Program Descriptors

Market Sector Institutional

Program Status Existing

Launch Date 2012/13

Measures Targeted **Lighting**

- Delamping
- T12 to T8
- Occupancy sensors
- Photocell install
- Timer switches
- Magnetic to electronic programmable ballasts
- High pressure sodium to compact fluorescent
- Magnesium halide to compact fluorescent
- Incandescent to compact fluorescent

HVAC

Remote Operated HVAC Fan Controller

Water and Natural Gas

Hot Water Pipe Insulation
Hot Fluid Tank Insulation
Faucet Aerators
Low Flow Showerheads
Low Flow Kitchen Pre-rinse Spray Nozzles
Thermostat Fan controllers

Water Only

Toilet Dual Flush Handle
Urinal Flushometer Valve Kit
Toilet Leak Detection Test
Half-flush Handle Installations

Natural Gas

In partnership with SoCalGas

Engagement Channels Energy Efficiency Engineering Group
ISS (Integrated Support Services)
LAUSD Electricians

Target Customers Los Angeles Unified School District (LAUSD)

Qualifications Must be a LAUSD facility and LADWP customer
Must have outdated lighting and/or inoperable or absent lighting controls
Must not require additional non-energy efficiency or abatement work

 # Customers 1 – LAUSD is LADWP's largest customer, totaling approximately 1.7% of LADWP load, including approximately 800 schools and 1,400 buildings.

Staffing Plan The staff is comprised of employees from the Efficiency Solutions Engineering Group and LADWP's ISS team with support from the Water Conservation Group. The Efficiency Solutions Engineering Group manages the program, providing engineering support, program development, equipment verification, project progress tracking, and energy and water efficiency savings tracking. LAUSD DI completed lighting retrofits at 12 schools during the 2013/14 fiscal year, for a total of 15 schools completed to date.

Program Description

The LAUSD DI Program was launched in October, 2012 in response to the opportunities for energy and water efficiency within the District, the District's budget challenges and the numerous opportunities to be able to capture water, natural gas and electricity savings and budget to improve the financial standing of the District and enhance the learning environment for the students of LAUSD. The program is designed to provide technical design, project management experience and retrofitting installation of lighting, HVAC, water and natural gas measures, utilizing LADWP engineering and ISS staff and in partnership with SoCalGas.

A Memorandum of Understanding (MOU) has been drafted between LADWP and LAUSD that describes the multi-pronged strategy that LADWP will deploy to assist LAUSD in improving energy and water efficiency within its facilities. LADWP will provide up to $16,700,000 per fiscal year towards LAUSD's efficiency efforts, plus standard efficiency program incentives as applicable and available. The term of the MOU is 3 years, and is expected to go before the LADWP Board of Commissioners in January 2015.

The LADWP funding will be apportioned among four programmatic strategies comprising the program. The allocation of funding levels among the four strategies may be adjusted over time to fit the identified efficiency opportunities in LAUSD facilities as needed, to the extent the combined costs do not exceed $16,700,000 per fiscal year, plus efficiency program incentives as applicable. The apportionment of the funding is as follows:

Program Strategies and Budget

Strategy	Budget per Fiscal Year
Direct Installation	$12,000,000
Proposition 39 Support	$300,000 + incentives
Pilot Activities	$2,000,000
Water Conservation Incentives	$2,400,000 (1st year)

The program consists of four primary programmatic strategies:

- **LADWP Direct Install program for LAUSD facilities -** LADWP will provide qualified staff and materials to install agreed-upon energy efficiency measures at eligible LAUSD schools. LAUSD shall only submit schools for the Direct Install Program that will not receive Prop 39 funding, in order to minimize confusion and maximize transparency. Measures include lighting retrofits, occupancy sensors, low flow showerheads and faucet aerators, and pre-rinse spray valves.

- **LADWP support for LAUSD's Proposition 39-funded efficiency projects** - To ensure LAUSD is able to fully realize the efficiency potential presented by the Prop 39 funding that is allocated to LAUSD, LADWP will provide dedicated support to LAUSD's Prop 39-funded efficiency efforts. This support will take the form of LADWP incentives for all of LAUSD's qualifying Prop 39-funded efficiency projects, dedicated LADWP staff resources to assist LAUSD in receiving LADWP incentives, LADWP funding of up to $300,000 per fiscal year for LAUSD to procure the services of a project coordination firm or contract staff to assist

LAUSD's Prop 39 funding application process to the California Energy Commission (CEC), as well as LAUSD's application processes for efficiency incentive programs offered by both LADWP and SoCalGas, as applicable on a project-specific basis. Adding utility incentive funding to all qualified Prop 39-funded efficiency projects will allow LAUSD to achieve significantly more efficiency savings overall than with Prop 39 funding alone.

- **LADWP funding for LAUSD pilot efficiency activities -** LADWP will provide funding for various technical and educational pilot efficiency activities ("Pilot Activities") that LADWP and LAUSD mutually agree show potential to support enhancing efficiency and efficiency awareness in its facilities. Such Pilot Activities may include, but are not limited to, advanced lighting, air conditioning and building operations controls; water and gas saving measures and technologies; onsite non-potable water reuse; on-site stormwater capture and recharge, training for LAUSD maintenance and operations staff; and educational training and classroom curricula/programs around efficiency for LAUSD staff and students.

- **LADWP Water Conservation Incentives** - LADWP will provide funding through existing water conservation programs, for the installation of approximately 5,500 high-efficiency toilets and up to 1,500 high-efficiency urinals, to be installed by LAUSD within 6 months of the execution of the MOU.

Program Objectives and Expected Outcomes

LADWP believes in investing in the future success of Los Angeles. Part of this success hinges on LADWP's largest customer, the LAUSD. The objectives of this Program are to include comprehensive electric, water and natural gas efficiency offerings to LAUSD facilities that continue to position LADWP as a progressive publicly owned utility in energy and water efficiency, as well as assist LAUSD to control its energy and water expenditures and enhance the learning environment for its students, now and into the future.

LAUSD DI is designed to leverage the resources and programs of LADWP, SoCalGas, Prop 39, and LAUSD to make cost-effective energy and water efficiency measures available to LAUSD facilities, as necessary and appropriate. The objectives of LAUSD DI include:

- Seek out and install comprehensive energy and water solutions that will improve the energy and water performance in the buildings of participating LAUSD buildings
- Assist LAUSD in fully realizing the efficiency potential presented by Prop 39 funding
- Improve the learning environment for LAUSD students
- Provide program services to LAUSD schools in all Council Districts
- Assist LAUSD to reduce its energy and water consumption, resulting in reduced operating costs to this end-use customer
- Reduce GHG emissions and carbon footprint of the LAUSD as a customer
- Give LADWP, SoCalGas and LAUSD an opportunity to partner and lead by example in energy and water efficiency
- Expand opportunities to increase the job pipeline and bring jobs to Los Angeles

- Through the Utility Pre-Craft Trainee (UPCT) program, establish a pipeline of trained and motivated talent that is equipped to enter the LADWP workforce and eventually fill vacancies in our critical craft positions due to upcoming retirements

Ultimately, the goal of the program is to ensure that energy and water efficiency upgrades are made at all LAUSD facilities in which such upgrades are cost effective, benefitting LADWP/SoCalGas customers, LAUSD, and the environment. These practices lead to better illumination levels, better HVAC performance, reduced water consumption and a reduction in operating and maintenance costs because of longer lasting, better performing equipment.

Program Strategy and Implementation

The strategy for this program is for LADWP to partner with LAUSD and SoCalGas to identify and assist those LAUSD facilities that need aid in reducing energy and water usage. LADWP's partnership with SoCalGas is facilitated by a master inter utility agreement between LADWP and SoCalGas which allows each utility to co-fund the other's programs.

This program was initially conceptualized in 2012, with the first project installation beginning in October 2012. The LAUSD DI Program was designed to give assistance to those LAUSD facilities that need assistance in reducing energy and water consumption and/or managing controls and systems. The program started with the retrofit priority based on the schools' potential for energy savings, as calculated by kilowatt-hours per square foot (kWh/ft2) and Energy Use Intensity (EUI; kBtu/ft2). As the program moves forward and scales up to multiple concurring retrofits, the priority list may need to be modified to show energy savings potential by region, so as to coordinate ISS crew work in a more efficient and effective manner.

This program currently focuses on lighting, HVAC, water and natural gas applications, which have proven to be very cost-effective technologies in the institutional segment and will provide benefits to the District for many years to come.

With approximately 800 schools in the Los Angeles Unified School District, there are more than 1,400 buildings within these schools with numerous potential retrofit projects available that can make a significant difference to the District and its students. This program offers LADWP, SoCalGas and LAUSD a real opportunity to make a difference in GHG emissions, a healthy learning environment for students, a reduction in energy and water consumption and a corresponding reduction in utility expenses.

LADWP has seized this opportunity to proactively partner with LAUSD and SoCalGas to develop and implement a program that has multiple benefits to the environment, society, students and the Los Angeles economy. The LADWP-LAUSD DI program is expected to be renewed in January 2015 for two years through December 2016. The program will evolve in this time period, primarily due to the availability to LAUSD of Proposition 39 funds, which are intended to provide energy efficiency improvements to schools. The two agencies will maintain close coordination on the various energy efficiency projects to ensure cost-effective measures are installed, energy

savings are confirmed, and savings are recorded by LADWP whether projects are installed by LADWP crews or by LAUSD with Prop 39 funds.

Program Barriers

Barriers to the program include:

- Staff resources in the Efficiency Solutions Engineering Group
- End-use adoption and education of redesign
- Site specific approvals from LAUSD
- Building construction limitations with respect to plumbing retrofits
- Increasingly more stringent Title 24 requirements

Integration and Transformation Opportunities

LAUSD DI is founded on the principal of integration, utilizing proven energy and water saving electric, natural gas and water technologies. Additional opportunities may exist and be incorporated, which may include:

Energy Efficiency Outreach and Education Activities – Under the Pilot Activities allowed under the MOU with LAUSD, LADWP may provide grant funding to a number of non-profit organizations to provide energy efficiency and water conservation outreach and education to LAUSD schools. Programs may include formal classroom curricula, art-based activities and outdoor experiences to demonstrate the need to care wisely for our natural resources and to ensure we are not wasting them. LADWP plans to partner with SoCalGas on these activities.

HVAC - A remotely operated HVAC fan controller that will be strategically placed in qualifying facilities within Los Angeles Unified School District, accompanied by training to appropriate personnel, to assist the District in better controlling its HVAC equipment, saving energy and reducing HVAC related expenses.

Remote Assessments and Monitoring – A technical consultant has been brought on board to provide data analytics-based remote assessment and continuous monitoring services to a select group of LAUSD facilities. Remote assessment capability will allow a much faster and more economical assessment of energy efficiency opportunities to better prioritize the provision of direct install services to LAUSD facilities in order to achieve the maximum savings as soon as possible. The continuous monitoring services will help ensure persistence of energy savings by quickly identifying treated schools that start to "backslide" in their operational performance.

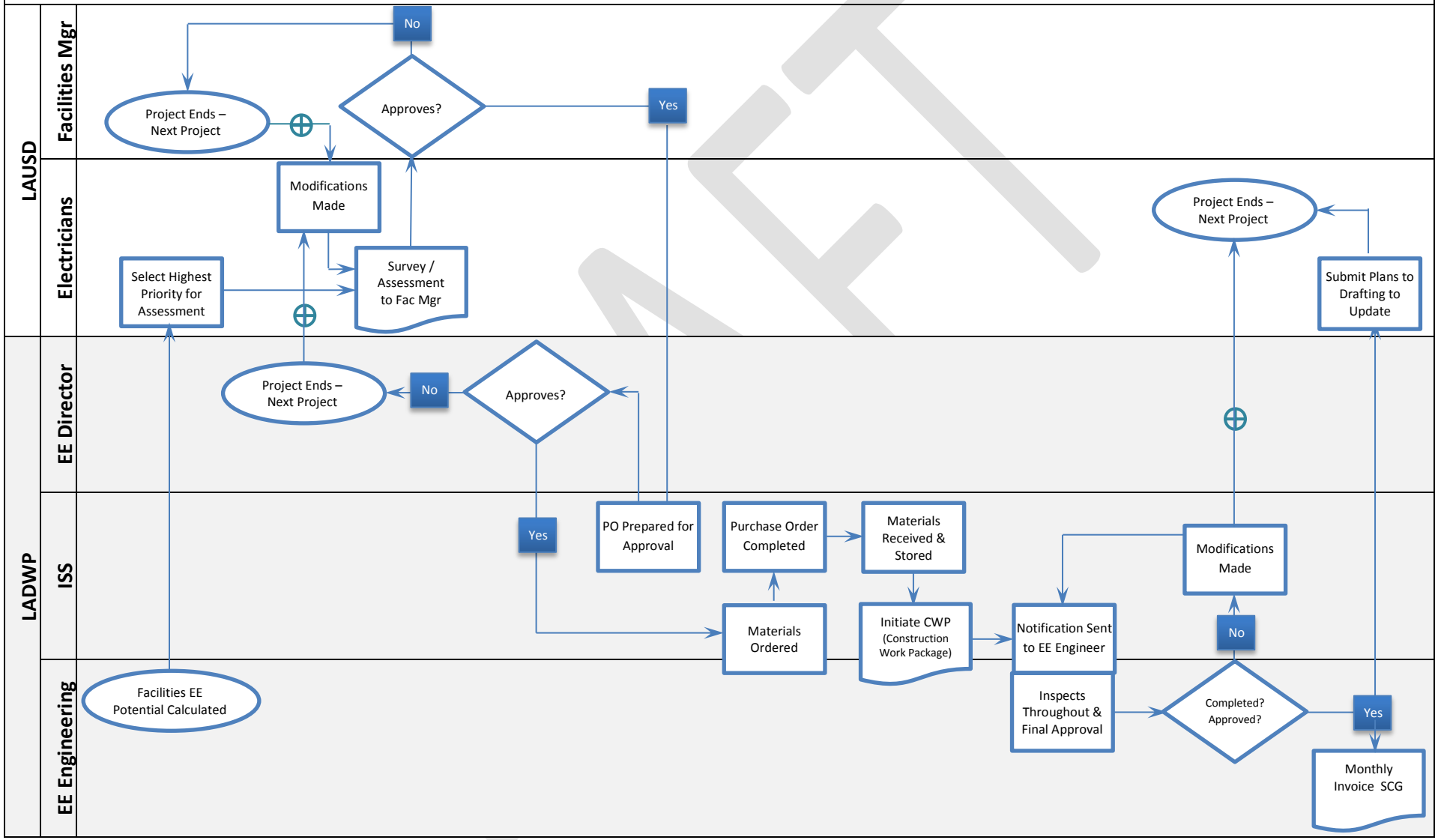
The transformation opportunities for LAUSD DI include implementing energy and water saving measures to produce a more efficiently operating school district, incorporating occupancy and schedule controls. Ultimately, this transformation should lead to end-use adoption by LAUSD personnel, which will lead to an enhanced learning environment and persistent energy and water savings for years to come.

Long-Term Vision/Goals

The long-term vision of the LAUSD DI is for LADWP to lead and partner with LAUSD and SoCalGas to seek out all LAUSD facilities that have energy and water savings potential, implemented in order of potential savings, to install electric, water and natural gas measures, controls and sensors so as to enhance the learning environment and reduce energy and water consumption in all applicable LAUSD facilities. In addition, LADWP will be working closely with LAUSD to extend the present MOU between the two entities to ensure this program partnership continues as long as LAUSD facilities have unrealized energy efficiency opportunities.

2014/15 Los Angeles Department of Water and Power

LAUSD Direct Install Program Process Flow



LADWP

LADWP Facilities Upgrade Program Business Plan

FYs 2014/15 – 2019/20

Program Overview

The LADWP Facilities Upgrade Program strives to improve energy and water efficiency throughout LADWP's facilities with energy efficiency upgrades in HVAC and lighting and water efficiency upgrades in plumbing fixtures, leak correction and landscaping improvements. It identifies and assists those LADWP facilities to reduce energy and water usage, which will result in a reduction in energy and water consumption and procurement expense for LADWP that would otherwise be borne by LADWP customers.

Fiscal Year	FY 13-14 Actual	FY 14-15	FY 15-16	FY 16-17	FY 17-18	FY 18-19	FY 19-20
Projected Program Budget* (x$1,000)							
Energy	$2,455	$4,374	$3,606	$3,973	$4,369	$4,794	$5,252
Water	$3,586	$3,196	$1,468	$1,512	$837	$872	$897
Projected Program Impact							
Energy							
MW	0.3	0.6	0.6	0.6	0.6	0.6	0.6
GWh	1.0	1.8	1.8	1.8	1.8	1.8	1.8
CO_2 Avoided	551	976	973	822	812	798	782

* Program Budget numbers for FY 2015/16 and later are estimates only and have not been approved by either the Board of Commissioners or the City Council.

Program Cost-Effectiveness

Energy Efficiency

- **TRC** **N/A**
- **PAC** **N/A**
- **$/KWh** **N/A**

Water Efficiency

- **$/AFY** **N/A**

The generally accepted cost-effectiveness standard for energy efficiency in the industry is a TRC of 1.0 or above. Anything at or above that benchmark is considered to be cost effective, as this indicates that the "benefit" gained is greater than or equal to the "cost" to capture savings in the program or measure. Reducing energy usage also results in avoided greenhouse gas (GHG) emissions, reported here as metric tons of carbon dioxide (CO_2) avoided. The CO_2 avoided for energy savings is based on the current and projected CO_2 emissions factor for LADWP's power portfolio.

The method used for assessing cost-effectiveness for LADWP's water conservation and efficiency programs is to compare the cost per AF of water saved to the avoided marginal cost of the first source of water supply that would

be eliminated as a result of the savings. For LADWP, the first source of supply that would be eliminated is the purchase of water from MWD.

Reducing water usage also results in energy savings along with a reduction in associated greenhouse gas emissions. The total energy savings associated with the reduction in water purchased from MWD includes the energy used by MWD to import the water and the energy used by LADWP to treat the water, distribute the water and treat the wastewater, where applicable. In assessing the energy savings and the avoided CO_2 emissions associated with water savings, the CO_2 emissions associated with the LADWP energy savings are considered direct avoided emissions and those associated with the MWD energy savings are considered indirect avoided emissions. These energy savings and CO_2 emissions reductions are not reported here but may be included in the future.

As this program is an upgrade program for LADWP facilities, specifically using Department funding, traditional program cost-effectiveness metrics are not applicable. However, as this program is focused on lighting, HVAC, plumbing fixtures, irrigation and cooling tower controllers in commercial applications, the TRC for energy upgrades will be well above the 1.0 threshold and the cost of water saved will be less than $847 per AFY, if measured. Thus, both the energy and water savings are a benefit to LADWP, its customers and the environment. Additionally, every effort will be made to continue to keep this program cost effective, installing all cost-effective energy and water saving measures.

Program Descriptors

Market Sector Commercial/LADWP Facilities

Program Status Ongoing

Launch Date 2009

Measures Targeted

Energy Efficiency

HVAC

Variable Frequency Drive (VFD)
Variable Refrigerant Volume (VRV)
Variable Air Volume (VAV)
Thermal Energy Storage (TES) – Ice/ Chilled Water Storage
Turbocor – Frictionless Chiller
Corrosive Resistant Ventilation
Building Automation System (BAS)/ Energy Management System (EMS)

Lighting

T12 to T8 Fixtures
T12 to T5 Fixtures
High Pressure Sodium (HPS) to Induction or LED
Mercury Vapor to Induction or LED

Indoor High Bay High Pressure Sodium (HPS) to Induction or LED Fixtures
Timer Switches
Occupancy Sensors
Dimmable lamps/ballast
Daylighting controls

Water Efficiency

Plumbing
High-efficiency faucets
High-efficiency toilets
Dual-function flush valves
High-efficiency urinals
Waterless urinals
High-efficiency showerheads
Leak correction
Gray water system

Building
Cooling tower pH controller
Cooling tower conductivity controller

Landscape and Irrigation
California Friendly landscaping, turf removal
Rotating spray heads
Weather-based irrigation control systems
Leak correction

Engagement Channels
Efficiency Solutions Engineering Group
Water Conservation Group
Efficiency Solutions Engineering Group
Facilities Operation and Maintenance (O&M)
Building Superintendents

Target Customers
LADWP Facilities

Qualifications
Must be a LADWP facility
Energy savings (kWh/year) must exceed 20% over existing lighting system
Payback period must be less than 3 years for lighting system
Payback period must be less than 10 years for HVAC system
Cost-effectiveness for water must be less than cost of MWD water

 # Customers
1 (LADWP - Multiple Buildings/Projects)

Staffing Plan

The staff is comprised of employees from the Efficiency Solutions (ES) Program Management Group, the ES Engineering Group, the Water Conservation Group, the Water Conservation Policy Group, and the Integrated Support Services (ISS) team. The Efficiency Solutions Engineering Group provides the lead staff on the projects utilizing electrical, mechanical and structural engineers. The Water Conservation Group provides support as needed with regard to water measures. The ISS group staffing varies from project to project, based on complexity of project and available manpower. The Water Conservation Policy Group and the Water Conservation Group lead the outdoor retrofit projects with both water and power facility management.

Program Description

The LADWP Facilities Upgrade Program was established in 2009 in response to the City of Los Angeles Green LA directive. The program reduces energy and water consumption in LADWP facilities through energy efficiency and water conservation measures. The program is designed to provide technical design, project management experience and expertise in retrofitting LADWP facilities, with high efficiency HVAC equipment, lighting fixtures, plumbing fixtures, irrigation equipment and California Friendly landscaping utilizing LADWP engineering staff. The program performs a range of services including:

- Redesign lighting and HVAC systems
- Analyze and evaluate new lighting and HVAC concepts
- Analyze and evaluate new plumbing fixtures and irrigation control devices
- Test and procure more efficient lighting, HVAC, plumbing and irrigation equipment, including emerging technologies
- Create photometric designs
- Test existing facility illumination levels
- Initiate construction work packages (CWP)
- Develop cost analysis
- Design new lighting and HVAC systems that will reduce maintenance costs
- Provide confirmation of IAQ requirements to meet or exceed ASHRAE and Title 24 Standards

Projects are identified prioritized and scoped by LADWP Staff. LADWP ISS construction personnel then install the projects. Examples of project tasks include:

Energy

- Install Turbocor – Frictionless Chiller, utilizing magnetic bearings
- Convert T12 light fixtures to T8 or T5 light fixtures
- Convert outdoor high-pressure sodium (HPS) and mercury vapor (MV) fixtures to induction or LED
- Convert indoor high bay HPS fixtures to induction fixtures
- Convert parking structure HPS and MV fixtures to induction or LED fixtures
- Install and program timer switches

- Install and program occupancy sensors
- Install dimmable lamps/ballasts
- Install daylighting controls
- Install Variable Frequency Drives (VFD)
- Thermal Energy Storage (TES)
- Variable Refrigerant Volume/Variable Refrigerant Flow
- Install Building Automation System (BAS)/Energy Management System (EMS)

Water

- Install ultra-low flow and waterless urinals
- Install dual flush handles in men's and women's restrooms
- Install high efficiency faucets in restrooms, breakrooms and kitchen facilities
- Install high efficiency showerheads
- Correct leaks in piping, fixtures and valves
- Install pH and conductivity controllers in cooling towers where appropriate
- Remove turf and replacing with California Friendly landscaping
- Install weather-based irrigation controls
- Install high-efficiency drip, and pop-up rotating sprinkler heads where appropriate and cost effective

Program Objectives and Expected Outcome

Ultimately, the goal of the program is to ensure that energy and water conservation upgrades are made at all LADWP facilities in which such upgrades are cost effective, benefitting LADWP, its customers and the environment.

The objectives of program include:

- Identify and install cost-effective electric lighting and HVAC measures in LADWP facilities
- Identify and install cost-effective plumbing, cooling tower, irrigation and landscaping measures in LADWP facilities
- Assist LADWP to reduce its energy and water costs, resulting in reduced operating costs
- Improve energy and water efficiency while reducing or minimizing operating and maintenance requirements
- Provide better lighting and space conditioning at reduced energy levels.
- Establish LADWP as a leader in energy efficiency and water conservation
- Reduce GHG emissions and carbon footprint of LADWP facilities
- Expand opportunity to increase job pipeline and bring jobs to Los Angeles
- Demonstrate the implementation of new energy and water efficiency technologies to encourage commercial acceptance and establish a market for these products
- Enhance revenue performance, profitability and economic vitality
- Retrofit LADWP facilities to current code requirements.

- Meet or exceed California Title 24 lighting requirements established by the Illuminating Engineering Society of North America (IESNA), and meet or exceed California Title 24 HVAC requirements established by the American Society of Heating, Refrigerating, and Air-Conditioning Engineers (ASHRAE), and by the Indoor Air Quality (IAQ) organizations.
- Provide demonstration gardens for the public to learn about California Friendly landscaping.

Program Strategy and Implementation

The strategy for this program is to identify and assist those LADWP facilities that need help in reducing energy usage and water consumption. The LADWP Facilities Program was established in 2009. The first retrofit project was completed in January 2010. Since then, there have been more than 38 projects, consisting of portions of 21 different facilities completed through FY 2013/14. Although approximately 150 power-funded facilities exist in LADWP's system, there are many buildings within each facility and potentially more than 300 retrofit projects may be available. Also, there are over 150 water-funded facilities in LADWP that potentially can have over 300 retrofit projects.

The energy efficiency portion of the program focuses on lighting and HVAC applications, which have proven to be very cost-effective technologies in the non-residential segment. Prior projects and experience have shown that the facilities with the highest potential energy savings are warehouses, fleet work/repair stations, outdoor parking lots, parking garages, and utilitarian luminaries, and thus have highest priority in the retrofit timeline. Retrofitting office space is usually planned during office remodeling to reduce the impact on office staff and should be scheduled after all other higher energy savings facilities have been completed.

The water efficiency portion of the program focuses on plumbing fixtures, irrigation systems and California Friendly landscaping. Prior projects and experience have shown that the facilities with the highest potential water savings are office buildings, high occupancy facilities and large landscaped areas.

Some of the previous retrofit projects include:

- Lincoln Heights Warehouse - HPS lighting fixtures were retrofitted with Induction technology and timer switch resulting in 70% savings.
- Harbor Generating Station Outdoor Stadium Lighting – HPS pole-mounted stadium light fixtures were retrofitted with LED technology resulting in 65% energy savings.
- Saticoy Parking Structure - HPS lighting fixtures were retrofitted with bi-level LED technology with motion sensors resulting in 60% energy savings.
- Main St. Bldg. 3, 7, and 17 – Variable Refrigerant Volume resulting in 50% savings.
- Sylmar East Converter Station – Chiller Plant Retrofit with Ice Thermal Energy Storage (TES) resulting in 100% peak load shifting.
- John Ferraro Building – Chiller Replacement, Fan VFDs, Gym exhaust, and infiltration – Ongoing.
- John Ferraro Building – Toilet and urinal replacement, dual flush valves and metering faucets in restrooms.

Due to limited resources in the ES Engineering Group, their involvement for HVAC projects has been scaled back to an advisory role, leveraging other facility design groups to have a more active role in facility efficiency. ES Engineering has been holding quarterly meetings with all design group stakeholders with the goal of creating a standard that can be used department wide for all future Capital Improvement projects. In coordination with the Green Team and the leadership of the newly created Sustainability Office, ES Engineering will help facilitate technical expertise in the field and transfer of knowledge to other groups within the department in support of developing a department-wide policy. The LADWP Facilities Upgrade Program is anticipated to continue for many years due to the large number of qualifying LADWP facility projects and the limited staffing and resources. In addition, LADWP plans to expand data analytics to LADWP facilities, to ensure strategic targeting for upgrades, persistence monitoring of energy savings, and potential demand response capabilities.

Program Barriers

As this is an on-going program, the barriers are known and listed below, but can be overcome. These barriers include, but may not necessarily be limited to:

- Staff resources in ES Engineering, ISS, etc.
- Accounting structure and budgets
- Coordination and approval of projects
- Transition of gardening staff from maintaining turf to installing and maintaining California Friendly landscape

Integration and Transformation Opportunities

The LADWP Facilities Upgrade Program, as it is currently designed, has various opportunities for integration. As resources are limited, LADWP's program design is to aggressively pursue energy and water efficiency that is most cost effective, with the quickest payback, realizing maximum benefits to its customers. However, it also provides an opportunity to test measures included in, or under consideration for, other LADWP energy efficiency and water conservation programs and to assess the economic and technical feasibility of these measures. This information is used by LADWP to improve its own programs and is provided to regulatory agencies and industry groups to be used in the development of new codes and standards.

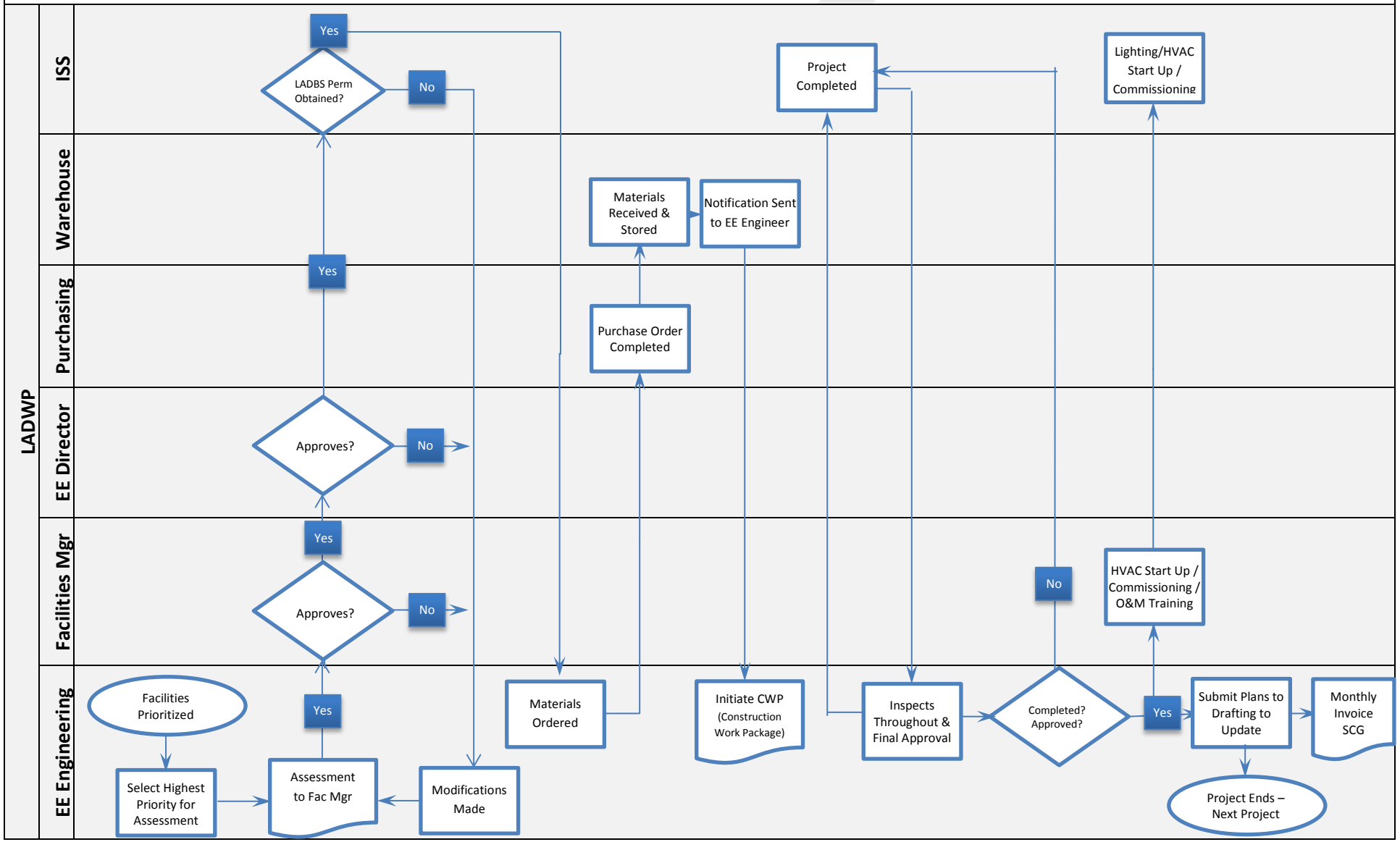
This program is not designed to transform the market, in a traditional sense, as it is primarily utilizing proven, cost-effective energy and water efficiency technologies in LADWP's own facilities. However, this program will ultimately have the same effect in transforming the market directly through saturation and as it utilizes direct install opportunities to analyze and evaluate new design and operation concepts and test and procure more efficient lighting, HVAC, plumbing, irrigation and cooling tower control equipment, including emerging technologies. This type of program focus accelerates the acceptance and installation of such transformational measures, which also accelerates political willingness to adopt higher standards.

Long-Term Vision/Goals

The goal of the program is to install cost-effective energy and water efficiency measures in LADWP's numerous facilities. Projects will be prioritized based on greatest potential for energy and water savings and fastest payback on its investments. In leading by example in the energy and water efficiency space, LADWP continues to position itself as a national leader in energy efficiency and water conservation. In fact, LADWP anticipates significantly expanding this program over the next few years to ensure that we are setting an example in aggressive adoption of energy efficiency measures; i.e. "walking our talk".

2014/15 Los Angeles Department of Water and Power

LADWP Facilities (Lighting/HVAC) Program Process Flow



LADWP

Codes, Standards & Ordinances (CSO) Program Business Plan

FYs 2014/15 – 2019/20

Program Overview

The Codes, Standards & Ordinances (CSO) Program conducts advocacy activities to improve building, appliance and water use efficiency regulations. These activities include monitoring and active participation in code and standard development, legislative review, sponsorship of local ordinances, and participation in policy efforts with other City departments, state agencies, and utilities. The goal of this program is to promote sustainability with regard to water and energy use. The principal audience includes the LA City Department of Building and Safety, LA City Planning, LA City Department of Public Works, and the LA City Council, which together develop and adopt codes and standards specific to Los Angeles that go beyond state and federal regulation. Other audiences include state agencies, which conduct periodic rulemakings to update energy efficiency and water conservation regulations and standards, and industry groups that conduct research and develop industry specific standards.

Fiscal Year	FY 13-14 Actual	FY 14-15	FY 15-16	FY 16-17	FY 17-18	FY 18-19	FY 19-20
Projected Program Budget* (x$1,000)							
Energy	$20	$1,724	$1,077	$1,520	$2,031	$2,619	$3,002
Water	$2,806	$3,525	$3,579	$3,698	$3,800	$3,903	$3,987
Projected Program Impact							
Energy							
MW	9.1	0.0	0.0	0.0	0.0	0.0	0.0
GWh	74.8	80.1	87.6	81.6	65.6	53.6	48.6
CO_2 Avoided	40,114	42,699	46,549	36,660	29,088	23,380	20,760

* Program budget numbers for FY 2015/16 and later are estimates only and have not been approved by either the Board of Commissioners or the City Council.

Program Cost-Effectiveness

Energy Efficiency

- **TRC** Unknown (at this time)
- **PAC** Unknown (at this time)
- **$/KWh** Unknown (at this time)

Water Efficiency

- **$/AF** Unknown (at this time)

The generally accepted cost-effectiveness standard for energy efficiency in the industry is a total resource cost (TRC) of 1.0 or above. Anything at or above that benchmark is considered to be cost effective, as this indicates that the "benefit" gained is greater than or equal to the "cost" to capture savings in the program or measure. Reducing energy usage also results in avoided greenhouse gas (GHG) emissions. The avoided GHG emissions for

energy savings is based on the current and projected carbon dioxide (CO_2) emissions factor for LADWP's power portfolio and is reported here as metric tons of CO_2 avoided.

The method used for assessing cost-effectiveness for LADWP's water conservation and efficiency programs is to compare the cost per AF of water saved to the avoided marginal cost of the first source of water supply that would be eliminated as a result of the savings. For LADWP, the first source of supply that would be eliminated is the purchase of water from MWD. Reducing water usage also results in energy savings along with a reduction in associated greenhouse gas emissions, reported here as metric tons of avoided carbon dioxide (CO_2) emissions. The total energy savings associated with the reduction in water purchased from MWD includes the energy used by MWD to import the water and the energy used by LADWP to treat the water, distribute the water and treat the wastewater, where applicable. In assessing the energy savings and the avoided CO_2 emissions associated with water savings, the CO_2 emissions associated with the LADWP energy savings are considered direct avoided emissions and those associated with the MWD energy savings are considered indirect avoided emissions.

This program promotes energy and water efficiency in the LADWP community by focusing on the development of codes, standards and ordinances that raise the bar on energy efficiency and water conservation for all customers. Potential energy and water savings are not known at this time however, the CSO Program plays a vital role in expanding the implementation of proven energy and water efficiency solutions to the broader community with long lasting savings.

Program Descriptors

Market Sector All - Residential, Multi-family, Commercial, Industrial, Institutional

Program Status Continuing

Launch Date Existing

Measures Targeted All, utilizing codes, standards and ordinances to raise the bar on efficiency of established and commercialized measures and technologies

- Building Component Codes and Standards (City and State)
- Appliance Standards (State and Federal)
- Los Angeles Construction Code Ordinances
- Los Angeles Green Building Code Ordinance (LAGBC)
- Los Angeles Water Conservation Ordinances
- Best Management Practices for Retail Water Agencies (State)

Engagement Channels

- LADWP Leadership
- LADWP Engineering Team
- LADWP Water Resources Team
- Department of Building and Safety (DBS)
- Department of City Planning (DCP)

Department of Public Works (Bureau of Sanitation, BOS)
Los Angeles City Council
California Building Standards Commission (BSC)
California Department of Housing and Community Development (HCD)
California Energy Commission (CEC)
California Department of Water Resources (DWR)
California Urban Water Conservation Council (CUWCC)
International Association of Plumbing and Mechanical Officials (IAPMO)
International Code Council (ICC)
Metropolitan Water District (MWD)
National Sanitary Foundation International (NSF)
United States Green Building Council (USGBC)
Alliance for Water Efficiency (AWE)
American Council for an Energy-Efficient Economy (ACEEE)
Appliance Standard Awareness Project (ASAP)

Target Customers All Residential and Non-Residential

Qualifications CSO is not a program that customers specifically apply for, or are approved, but it does impact all customers, directly or indirectly, and does provide positive results for LADWP and its customers.

Staffing Plan The staff is comprised of employees from the Efficiency Solutions Engineering Group and the Water Conservation Policy Group.

Program Description

The CSO Program addresses the needs of the ratepayers of the City of Los Angeles for water and energy conservation and sustainability through direct involvement with code-setting bodies for buildings, fixtures and appliance codes and standards in the strengthening of water and energy efficiency requirements. This program investigates emerging technologies and new methods of construction that promote conservation and sustainability and advocates for, and in some cases, develops local ordinances to address water and energy savings mandates specific to the requirements of the City of Los Angeles. Where it is not feasible or practical to impose a mandate, the program develops rebate programs to incentivize the installation of advanced technologies and methods of construction. Where it is not feasible or practical to develop rebate programs, information on new codes, standards and new technologies that the LADWP wishes to promote is disseminated through the Outreach, Education and Advertising Program.

The CSO Program seeks to embed energy and water efficient measures in new construction and existing building stock by transitioning proven cost effective technologies into building codes and appliance and equipment standards at the local, state, and national levels. Within the City of Los Angeles, LADWP works with LADBS, LADCP, LADPW and the City Council to develop language for codes, standards and new ordinances, meets with

stakeholders to get their input, and gives presentations and answer questions for LADWP's legal department, the Board of Commissioners, City Council, and the Mayor's Office. After the passage of new ordinances or codes, the CSO Program provides training and technical support to City departments, and LADWP's Customer Service Centers and Public Affairs Office, as needed.

Resulting ordinances have included:

- Emergency Water Conservation Plan Ordinance (Imposes restrictions on water use in commercial, industrial and residential applications)
- Retrofit on Resale Ordinance (Requires retrofitting of high efficiency plumbing fixtures in existing residential buildings on resale)
- The High Efficiency Plumbing Fixtures Ordinance (HEPF) (Mandates higher efficiency standards than those prescribed by state codes)
- The Los Angeles Green Building Code (Amends and enhances the California Green Building Code)
- The Landscape Ordinance (Adopts requirements for water efficient landscape and irrigation systems)
- The Low Impact Development Ordinance (Adopts requirements for reduced rainwater runoff from sites)

A primary task of this program has been to participate in the Codes and Standards Statewide Team with the investor owned utilities across the State. The Codes and Standards Statewide Team works with the California Energy Commission and sponsors studies that will be used to evaluate proposed changes to future editions of the California Energy Code. The program also includes providing enhanced training on the Title 24 Code to City of LA Inspectors and Plan Checkers. Participation in this effort to increase energy efficiency mandated in the California Energy Code and other efforts allows the members of the statewide team to claim the savings associated with these code changes based on the energy delivered by each of the participating utilities. LADWP was able to claim 71.2 GWh of energy savings and 9.1 MW of demand reduction for the 2013/14 fiscal year.

At the state and regional level, the Efficiency Solutions Engineering Group works with the BSC, HCD, CEC and IAPMO during code development cycles to update building and appliance energy and water use efficiency regulations and standards. Through the LADWP Facilities Upgrade Program, the Efficiency Solutions Engineering Group conducts technical studies of emerging technologies, analyzing the engineering and economic performance aspects of the technology and developing metrics that are used in new building and plumbing codes. Besides developing and implementing codes and standards, the Efficiency Solutions Engineering Group reviews legislation affecting buildings with regard to the efficient use of water and energy resources.

LADWP is also a leader in efforts to affect longer term change in water conservation, through planning, voluntary standards and legislation at the state and regional level. The Water Conservation Policy Group interfaces with and provides input to DWR regarding the California Water Plan and Urban Water Management Planning and is a member of the DWR Urban Stakeholder Committee and Independent Technical Panel. Over the last 19 years, LADWP also has taken a lead role in the governance and policy making at the CUWCC, holding a seat on the Board of Directors and numerous committees and actively participating in the development of Best Management Practices and educational tools for water agencies. As a member agency of the Metropolitan Water District (MWD), LADWP collaborates with other water agencies in emerging technology studies, pilot

programs, and exchanging information on implementation experience with new conservation programs and technologies.

In addition LADWP reviews and comments on the content of State Senate and Assembly Bills and rule-making actions of state agencies like the California Air Resources Board (CARB) and the State Water Resources Control Board to influence policy regarding buildings, appliances, energy efficiency and urban water conservation. LADWP also works with national partners such as ACEEE, ASAP, AWE, and NSF to influence the US Congress, the Environmental Protection Agency (EPA) and the United States Department of Energy (DOE) in setting national energy and water policy that impacts California.

Program Objectives and Expected Outcome

The goal of the CSO Program is to maximize water and energy savings through the adoption and enforcement of regulations that mandate high efficiency fixtures, appliances, components, and practices that are practical and use less water and energy. Actively participating in the development of new codes, standards and ordinances at the local, state and national level, is a necessity for ensuring that the latest water and energy efficiency requirements get expeditiously incorporated into the codes and standards so that the City can benefit from the reduction in demand. Through the CSO Program, LADWP ensures that the minimum thresholds for new appliances, new construction, and energy and water use are raised, requiring more efficient technologies. This helps customers reduce their energy and water expenses, reduces LADWP's energy and water procurement expenses, contributes to a greener environment, and helps maintain the service reliability that customers have grown accustomed to expect.

Additionally, the CSO Program objectives include:

- Continuing to support expansion of local codes and ordinances to identify current code and compliance shortcomings, new technologies and processes, and latest thinking on breadth (scope) and depth (stringency) of possible standards
- Developing proposals to accelerate regulations for both Title 20 appliance efficiency standards and Title 24 building standards
- Supporting activities such as statewide and local reach standards (e.g., codes that include California Green Building Standard) and the coordinated development and adoption of advanced local government ordinances
- Supporting and leading the CUWCC in developing practices and policies that advance urban water conservation in California
- Continuing to participate in the DWR Urban Stakeholder Committee and Independent Technical Panel in developing standards for state legislation and the California Water Plan
- Coordinating with both internal and external organizations on an ongoing basis, including voluntary programs and national standards organizations

Water and energy efficiency standards must be continually updated to ensure program success in meeting LADWP's ambitious AB 2021 and UWMP goals. However, a host of market barriers can delay new measure

introduction and adoption. Delayed adoption in turn diminishes, slows, or even eliminates the potential energy, water and environmental benefits of new measures, as well as the attractiveness of investing in and developing these measures. The CSO Program helps break down these barriers, raises the bar on current energy and water efficiency and incentivizes manufacturers to develop and builders to install new and emerging technologies to replace older, less efficient technologies.

Program Strategy and Implementation

The strategy for this program is to continually strengthen and expand building and appliance codes and standards, City ordinances, and state and national legislation for energy and water efficiency. These on-going efforts have resulted in greater efficiency in the use of utility services and compelling economic benefits. Additionally, the CSO Program works with and compliments other LADWP programs within its energy and water efficiency portfolios to help meet overall goals.

LADWP will continue to monitor, provide comments, and participate in the development of sustainable codes, standards and ordinances by various agencies. LADWP is currently pursuing several promising code enhancements at the local, state, and national level. As these codes are adopted, appropriate steps will be incorporated into the LADWP portfolio.

LADWP is also assessing methods of expanding support for City code development and implementation in order to enhance the effectiveness of the CSO Program. Meeting LADWP's ultimate energy and water efficiency goals will require progressive code development and consistent implementation and enforcement. The CSO Program is currently proposing a collaborative effort with LADBS to increase the effectiveness of compliance with Title 24 and the LAGBC, to ensure that the energy and water savings intended by these codes are being fully realized.

Some of the ideas under consideration include:

- Assessing LA Code development to incorporate an additional 10% energy efficiency along with the new Title 24 requirements and to develop a path to zero net energy, including appliances for Title 20 compliance
- Providing training or conducting informational meetings for LADBS staff addressing energy efficiency and water conservation topics
- Establishing a focused approach to processing Title 24 compliance documentation, either by cross-training LADBS staff to conduct one-stop reviews across all building systems or by providing a LADWP engineer to conduct this part of the review.
- Addressing non-compliance with Title 24 requirements through education of contractors, engineers and architects and developing a method for holding non-compliant architects, engineers and contractors accountable for their actions
- Providing cross-support to ensure compliance with the City's energy and water ordinances through collaborative inspection and response measures.
- Tracking Market Transformation indicators to allow for accurate evaluation and gauge effectiveness of the program

California consumers report that they are eager for solutions to climate change and other environmental issues. LADWP has implemented and will continue to implement the CSO Program by taking a leadership role in promoting effective planning, voluntary standards and legislation to increase water conservation and energy efficiency as well as working with other organizations to influence policy regarding buildings, appliances, energy efficiency, urban water conservation and national energy and water policy that impacts California.

Program Barriers

Barriers for Codes and Standards include:

- Manufacturer resistance
- Regulatory resistance
- Builder resistance
- Political resistance
- Customer resistance
- Economic resistance

Integration and Transformation Opportunities

CSO is comprehensive in nature and potentially impacts all measures and practices that relate to energy efficiency and water conservation. Codes, standards and ordinances related to outdoor water use also provide integration opportunities with the City's stormwater management objectives.

CSO has a profound impact on transformation. As codes, standards, and ordinances advance, less efficient building practices, landscaping practices, and appliances are taken out of the market and/or made obsolete. These codes, standards and ordinances act as economic and legal signals to manufacturers, contractors, builders, and others that they may need to develop new practices or measures for the market to replace previous practices or measures, especially if they were profitable. Investment by these market participants into new practices, measures, appliances, and other actions is the very definition of transformation. As such, this is a program in which LADWP's participation is critical.

One of the most cost-effective ways to bring about the transformation of the City's building stock in terms of energy and water savings involves the development and implementation of codes, standards and ordinances that enable sustainable building operations to become an increasing reality in the City. The proper mix of rebates, incentives, and the inherent economic benefits of installing more efficient appliances, irrigation systems and equipment in the built environment, clearly would not be possible without the role played by CSO. Additionally, integrating new technologies into codes, standards and ordinances quickly reduces the cost of higher efficiency devices, facilitating broader voluntary implementation and saving customers money.

LADWP adopted a new strategy to allow for early code adoption in the existing building stock. As of October 1 2014, LADWP began using existing (as found) baselines as the basis for energy savings, thus incorporating Codes and Standards savings in the traditional downstream incentive programs. This new methodology of accounting for Codes and Standards will provide greater monetary benefit to the customer to overcome any economic barriers and allow for LADWP to account for Codes and Standards savings on a project level basis rather than an

adopted high-level estimate taken from a statewide study. As a result of this methodology, LADWP will need to keep track of development within Los Angeles through its sister Department of Building and Safety (LADBS). By differentiating participating customers from non-participating customers, LADWP will be able to provide higher levels of accuracy from the participating side while keeping count of the non-participating customers in an effort to avoid double counting the savings. This level of data integration with LADBS will also provide LADWP access to key market indicators that will gauge the effectiveness of the CSO Program as well as the incentive programs.

Long-Term Vision/Goals

The long-term vision for CSO is to continue to give Los Angeles a voice in the development of the local, state and federal codes, standards and ordinances of the future. In assisting with the development of higher codes and standards, the goal is to continue to develop aggressive minimum thresholds for new appliances, new construction, and energy and water use, requiring more efficient technologies, more efficient practices, and contributing to market transformation in all market segments. The introduction of technological innovations and best practices will ensure that water conservation and energy efficiency for buildings, landscaping, and commercial operations are accomplished in a sustainable manner to accommodate the growth of these sectors.

The availability of technological innovations that have been tested and listed for use in the marketplace can then be incorporated into long-term goals for conservation into respective Green Building Initiatives and programs consistent with the LADWP UWMP and IRP. The adoption of sustainable codes, standards and ordinances substantially contributes toward achieving LADWP's energy efficiency and water conservation goals.

LADWP

Outreach, Education and Advertising (OEA) Program Business Plan

FYs 2014/15 – 2019/20

Program Overview

The Outreach, Education, and Advertising (OEA) Program serves to increase customer awareness and understanding of water use, increase visibility of LADWP's water conservation programs, inform the public of water supply issues and encourage community involvement. The program involves a range of measures including preparation and distribution of water conservation materials to the public, sponsorship and support of educational programs, preparation of content for LADWP's website, and providing direction for print, television and radio advertising. The OEA Program is designed to reach out to all sectors of the public by a variety of channels.

Fiscal Year	2013/14	2014/15	2015/16	2016/17	2017/18	2018/19	2019/20
Projected Program Budget* ($x1,000)							
Water	$3,216	$3,388	$3,274	$3,360	$3,437	$3,511	$3,579

* Program Budget numbers for FY 2014/15 and later are estimates only and have not been approved by either the Board of Commissioners or the City Council.

Program Cost-Effectiveness

- $/AF N/A

This program focuses on promoting water conservation and efficiency in the LADWP community and providing outreach for other LADWP water conservation incentive programs. Cost-effectiveness standards are not applicable to this program because actual water savings attributable to the program are difficult to quantify or attributed to other LADWP incentive programs. However, this program plays a critical role in ensuring the effectiveness of the other water conservation programs offered by LADWP by informing the public about these programs, why water efficiency is important, and what they can do to save water in their homes, businesses, schools and institutions. The program is also used to promote specific water conservation programs at various times, to increase participation in those programs.

Program Descriptors

Market Sectors All – Residential, Multi-family, Commercial, Industrial, and Institutional (CII)

Program Status Continuing

Launch Date Continuing

Measures Targeted All measures offered by LADWP water conservation programs
Behavioral measures that can be implemented by customers
Water supply and resource awareness

Engagement Channels

Outreach

- Community, business, and educational events
- Informational materials – fact sheets, flyers, water conservation displays, power point presentations, etc.

Education

- Los Angeles Unified School District (LAUSD) education programs and curriculum
- Teacher training and fellowships

Advertising

- Print - newspaper, public transit signage, fleet vehicle signage,
- Radio, television, and movie theatres
- LADWP website and social media, SoCalGas and MWD websites

Target Customers Residential, Multi-Family, CII

Qualifications None.

 # Customers LADWP serves 675,000 water customers representing approximately 3.9 million people. This program is designed to reach out to everyone; the general public, students, teachers, community organizations, businesses, trade groups, etc.

Staffing Plan The OEA Program staff is comprised of employees from the Water Conservation Policy Group, the Water Conservation Group and the Public Affairs Office. The Water Conservation Policy Group provides direction and content for the program with support from the Water Conservation Group and the Public Affairs Office manages the marketing, advertising and outreach services for the program.

Program Description

One of LADWP's most effective conservation tools is the sustained conservation ethic of its customers. LADWP has developed an extensive outreach, education, and advertising program to increase customer awareness of water conservation and efficiency, in general, and to increase participation in LADWP's water conservation programs. The OEA Program is a multi-channel public education campaign to heighten and maintain customer awareness of the need and importance of efficient water use. The program includes outreach through education, advertising, informational materials, events, and social media. LADWP's OEA Program is designed to offer and promote water conservation within all market sectors.

Outreach

LADWP sponsors, hosts and participates in numerous events to promote water efficiency and to support conservation efforts. These include hosting CUWCC Board and Plenary meetings, holding training classes for vendors and others, and sponsoring professional, business and community events. LADWP personnel also attend numerous community and business events to reach out to residents and businesses, answer questions, promote LADWP's water and energy conservation programs and distribute informational materials and free water conservation items. The Water Conservation Policy Group manages the preparation of informational materials to promote LADWP's water conservation incentive programs, inform the public about LADWP's water supplies and provide water conservation tips for businesses and residents. These materials are utilized by LADWP staff in administering their programs, distributed to the public at community events and at Customer Service Centers and are used in educational programs.

Education

In 2008, LADWP entered into an MOU with the Los Angeles Unified School District to further improve its water conservation outreach program by providing funding for educational programs in area schools. The school education program consists of in-classroom curriculum, materials and supplies made available to middle school and high school students and comprehensive instruction on water and energy conservation, renewable energy and other environmental issues. Funded programs include:

- Los Angeles Times in Education newspapers, water supply/conservation lesson packages and poster contest
- "Thirsty City" Live Performances introducing students to water supply and conservation
- Renewable Energy and Conservation curriculum development and funding for a science teacher position for the Renewable Energy and Conservation Center
- Outdoor Education Multi-Day Environmental Experiences program including lessons on water and energy
- Teacher Training and Fellowships for math and science teachers
- Infrastructure Academy teaching students to conduct water conservation audits at schools

Advertising

The LADWP Public Affairs Office manages a media campaign that includes advertising on radio, television, and in movie theatres, newspaper advertising, public transit signage, fleet vehicle signage, and outreach to Neighborhood Councils to promote LADWP rebates for water efficiency and educate the public regarding conservation practices. The Water Conservation Policy Group provides the direction, content and messaging for this campaign highlighting selected topics and incentive programs. The Public Affairs Office maintains LADWP's presence on the internet through the LADWP website, Facebook, and Twitter. Content and support is provided to these groups through the OEA Program.

Although water savings associated with this program are not quantifiable, LADWP has seen water demand reductions resulting from customer behavioral changes.

Program Objectives & Expected Outcome

LADWP's OEA Program is designed to generate water conservation benefits by increasing participation in LADWP water conservation programs, changing behavior through increased awareness, and enhancing public interest. LADWP, as a part of the UWMP, has set ambitious water conservation goals, including reducing potable water use by 64,000 AFY by 2035 and meeting SB x7-7 mandates. The OEA Program is essential in enabling achievement of these goals.

The program's objectives include:

- Communicate launch of new programs and encourage participation in existing programs
- Engage the public in making behavioral changes
- Educate the public regarding the water supply system and water supply conditions
- Educate students, who also carry the message to parents, encouraging them to make water conservation part of their life style today and into the future
- Introduce teachers and students to careers in water conservation and infrastructure
- Provide a simple, cost-effective method for customers in all market sectors to conserve water
- Introduce customers to LADWP water conservation and efficiency programs and provide supplemental materials to increase their understanding of these programs.
- Cultivate, promote and sustain lasting water-efficient behaviors by customers
- Enhance the customer experience with LADWP and its water conservation programs
- Educate and encourage LADWP customers to purchase and install advanced water efficient products in their homes and businesses.

The expected outcome of the OEA Program is to reduce water usage by making water conservation an integral component of customer behavior and product choices.

Program Strategy and Implementation

The strategy for the OEA Program is to overcome information and knowledge barriers and encourage people to make lasting lifestyle changes that result in long-term water savings. LADWP's OEA Program is an integral component of the water conservation portfolio. The OEA program promotes and introduces the public to LADWP's water conservation programs broadening participation in these programs. It educates children and the general public on the importance of water efficiency, encouraging adoption of water conservation practices and measures. It also provides a means of communicating water supply information and alerts in challenging water supply situations.

The OEA Program is designed to reach out to all customers including homeowners, renters, children, adults, small, medium and large businesses. It also provides focused outreach to industry specific customers such as retail, restaurants, groceries, hospitals, and other audiences. Some outreach efforts are general in nature with the intent of reaching out to the broader public. Other efforts are targeted to specific audiences to increase the effectiveness of the outreach and facilitate their participation. School programs are designed to be fun,

interesting and interactive to gain students attention. Advertising campaigns are designed to catch the attention of the general public and deliver focused action oriented messaging.

The messaging of the OEA Program is constantly changing to address the needs of the time. The effectiveness of the program can be enhanced by expanding its use as a tool in reaching out to specific audiences and conveying targeted information. Targeted CII customer materials could be expanded to include more industry categories to better enable businesses to participate in LADWP's programs and to implement energy efficiency and water conservation measures on their own. General informational materials can be translated into more languages and can incorporate cultural-specific approaches to encourage energy efficiency and water conservation on a broad scale.

This Program is essential to continuing to position LADWP as a leader in energy efficiency and water conservation and in conveying important messages to customers and the general public. The Program is on going in FY 2014/15.

Program Barriers

Program barriers vary with outreach method and audience and include:

- Language and culture – Los Angeles is one of the top 10 culturally diverse cities in the world with over 92 languages and cultures represented.
- Information and advertising overload
- Inertia - Habits are hard to change
- Time – Customers are faced with many competing priorities

Integration and Transformation Opportunities

The OEA Program currently focuses primarily on water conservation and efficiency but is increasingly being expanded to address energy efficiency as well. This program complements all of LADWP's other energy efficiency and water conservation programs by connecting these programs with the general public and targeted audiences. Where most of LADWP's other energy efficiency and water conservation programs focus on hardware and structural measures that customers can implement, this program focuses on behavioral changes. It encourages people to take advantage of what they can do themselves to make a difference both in their own water and energy consumption and in the larger energy and water conservation needs of the region and the state.

Long-Term Vision/Goals

The long-term vision of this Program is to continue with current efforts of reaching out to all sectors of the public by a variety of channels. As communication and advertising practices evolve, new approaches such as increased use of social media or internet advertising will be evaluated and incorporated into the program as appropriate. The OEA Program currently focuses on water conservation. Expansion of the program into energy efficiency also will be examined, especially with regard to influencing individual customer behavior.

LADWP

Program Outreach & Community Partnerships Program Business Plan

FYs 2014/15 – 2020/21

Program Overview

The Program Outreach & Community Partnerships Program (Program) is an advocacy program that strives to improve customer awareness among LADWP's "hard-to-reach" customers on electric and natural gas efficiency and water conservation programs through the activities of community-based organizations. In FY 2014/15, this Program offers grants to local non-profit organizations that are awarded through a competitive selection process to work in one of the fifteen Los Angeles City Council Districts or on an at-large/citywide basis to improve community and customer awareness of LADWP's core energy efficiency and water conservation programs and free steps they can take to reduce energy and water use.

Fiscal Year	FY 13-14 Actual	FY 14-15	FY 15-16	FY 16-17	FY 17-18	FY 18-19	FY 19-20
Projected Program Budget* (x$1,000)							
Energy	$810	$851	$719	$774	$832	$891	$954
Projected Program Impact							
Non-Resource							

* Program Budget numbers for FY 2015/16 and later are estimates only and have not been approved by either the Board of Commissioners or the City Council.

Program Cost-Effectiveness

Energy Efficiency		Water Efficiency	
• **TRC**	**N/A**	• **$/AFY**	**N/A**
• **PAC**	**N/A**		
• **$/KWh**	**N/A**		

As this Program is focused on promoting energy efficiency and water conservation in the LADWP community, specifically working with non-profit organizations to provide energy efficiency and water conservation education and communication to engage the city's diverse residential and small business segments, TRCs, etc., are not applicable. However, the non-profit grantees provide customers with information on behavior changes that can reduce energy and water consumption, and may also distribute efficient devices, such as low-flow aerators and showerheads or compact fluorescent or LED light bulbs. As tracking and reporting methods improve over time, future grant-funded projects may be able to report energy and/or water savings. In addition, the non-profit community plays a vital role in continuing to position LADWP as a national leader in energy efficiency and water conservation. Non-profits' experience with outreach, grassroots communication networks, and their commitment to their client base provide them a unique ability to reach communities that may not otherwise be exposed to energy efficiency and water conservation programs. This LADWP program, first funded in fiscal years

2010-11 and 2011-12 by the American Recovery and Reinvestment Act (ARRA) Energy Efficiency & Conservation Block Grant, assists non-profits in building capacity to lead as well as affect positive behavior change in their communities. Leveraging the Program Outreach and Community Partnership grants assists the valuable community organizations within the LADWP service territory, and results in increased community awareness of LADWP programs and increased energy and water savings.

Program Descriptors

Market Sector Non-Resource Community Outreach

Program Status Existing – Initially launched in November 2010, utilizing ARRA Grant funding. The program has continued in FY 2013/14 and beyond with ratepayer funding. Currently in third round of grants, with projects due to complete in June 2015.

Launch Date Ongoing; next solicitation to be released in late spring 2015

Measures Targeted All measures, as appropriate, targeting diverse residential and small business customers who are more difficult to reach.
This Program does not target specific measures, but rather targets non-profit organizations that communicate information on incentive programs and water, electricity and natural gas efficiency measures, as appropriate, to customers that can benefit from them. The Program seeks to drive participation by these customers in LADWP's standard resource programs, through the outreach provided by the non-profit grantees, and to implement behavior changes that can reduce consumption.

Engagement Channels Non-Profit organizations (501c3), including:
Community Based Organizations
Community Outreach Organizations
Environmental Organizations
Faith Based Organizations
Social Service Organizations
Council District Offices

Qualification Guidelines

For a non-profit organization to participate in this Program, it must meet the following qualifications and guidelines:

- Must have maintained 501(c)3 status continuously for the past three (3) years while located in the City of Los Angeles
- Must have established a track record of providing services to the community – especially relating to education, energy, water or economic related issues
- Must demonstrate a commitment toward encouraging energy efficiency and water conservation through its current and/or future programs and structure

- Have the capacity to track numbers of constituents reached & referred, labor costs & other expenditures, and maintain records acceptable for a City financial audit
- Additional qualifications and requirements may also apply.

Target Customers Residential and Small Business LADWP Customers

Staffing Plan The staff is comprised of employees, working partial workload on this Program, from the Community Partnerships Group of Efficiency Solutions.

Program Description

The LADWP Program Outreach & Community Partnerships Program was established in 2010 in response to the City of Los Angeles Green LA Plan, utilizing formula-based Energy Efficiency and Conservation Block Grant (ARRA) funding from US Department of Energy. The program was considered successful and has been extended utilizing ratepayer funding. This program is a partnership between LADWP and selected non-profit community organizations that serve customers within the LADWP service territory. The program strives to improve awareness of electric and natural gas energy efficiency and water conservation programs among LADWP customers who are more difficult to reach through traditional outreach methods by using community based organizations.

The LADWP Program Outreach & Community Partnerships Program is designed to leverage existing non-profits and their community presence to reach out to residential and small business customers by providing grant funds to these organizations to conduct agreed-upon customer engagement activities. The rationale for this Program is that these non-profit organizations are already established in the communities, well known through their grassroots networks, and trusted by this customer segment. They are better suited to reach out to these customers, in-language and in environments where these customers are most comfortable. As a non-resource program, the energy and water savings accrued in this Program are not direct, but rather indirectly accrued and measured through the LADWP resource programs such as So Cal Water Smart, Free Water Conservation Items, Consumer Rebate Program, Home Energy Improvement Program, Refrigerator Exchange, Small Business Direct Install, Commercial Lighting Incentive Program, etc.

Leveraging their established community relationships, the non-profit organizations are able to communicate and inform customers of the full suite of programs and services available to them from LADWP and SoCalGas, allowing the customers to participate in programs that they might not otherwise be aware of. Additionally, the non-profits inform and educate their communities about simple behavioral changes that they can make in their homes, yards, or businesses that are completely free and will help them reduce their energy or water consumption, which may reduce the expenses to the household or business and correspondingly increase their profit or disposable income. This may also infuse additional revenue into the economy of the greater Los Angeles area, as these customers may have additional dollars to spend on household items or entertainment that they might not otherwise be able to afford, or in the case of small businesses, to hire additional employees that they might not otherwise be able to include in their budgets. In some cases, the non-profit organizations themselves will hire project staff to assist with project development and delivery. As tracking and reporting

methods continue to improve, the Program will collect data on customer behavior changes prompted through the outreach (i.e., turning off lights and appliances, using less water, installing efficiency devices) and analyze these savings as well.

Implementation of this Program involves sending a grant announcement to non-profit and community based organizations that may be interested in the opportunity.
These organizations submit applications to LADWP that outline the services that they propose to provide, the diverse and "Hard-to-Reach" customers that they will target and the channel(s) that they will utilize to reach these customers. Grants are offered for work within each City Council district, in addition to a small number of at-large/citywide grants, including funding for a Peer Facilitator. Proposals are evaluated on a number of criteria and reviewers incorporate input from the Mayor's Office and Los Angeles City Council District offices who review and rank the submissions for work in their districts.

LADWP selects the non-profit organizations with the highest scores and greatest potential for successfully performing the proposed services in the targeted area. LADWP staff then notifies the selected non-profit organizations and executes a Memorandum of Understanding (MOU) with each successful organization that contains a scope of work, milestone schedule, budget and payment schedule that correspond with the agreed upon milestones. Once the MOUs are fully executed, the organizations are advised to begin their projects, which need to be completed within 12 months. During the course of the program period, the peer facilitator grantee provides support services to the other non-profits, assisting them by providing relevant information, holding quarterly meetings where outreach methods are presented and where participants can exchange ideas and best practices, maintaining a group website posting LADWP outreach materials, and assisting organizations with project impact, tracking and evaluation methods.

The current round of 21 grant projects awarded in June 2014 includes 15 council district grants at $45,000 each, one peer facilitator at $45,000 and five citywide grantees with awards of $90,000 each. While grantees are typically required to include both energy efficiency and water conservation in their outreach and education, the 2014 round of grants was expanded to include three citywide grants to focus solely on water conservation topics, in recognition of the statewide drought. These water conservation grants are funded through the Water Resources Division of LADWP.

Program Objectives and Expected Outcome

As the nation's largest municipal utility, the LADWP believes in investing in the future success of Los Angeles and taking prudent steps to assist its customers, contribute to the economic vitality of Los Angeles and enhance the customer experience. This Program offers grants to local non-profit organizations that are selected to work in each Los Angeles City Council District or on a citywide basis to provide community/customer awareness of LADWP and SoCalGas energy efficiency and water conservation programs. Through this Program, nonprofit organizations are able to use and expand their existing relationships with local communities and offer additional services and benefits to community members. The diverse projects are intended to result in energy and water-saving behavior changes and/or increased uptake on existing LADWP incentive programs, and it is expected that the non-profit organizations will incorporate energy efficiency and water conservation into their ongoing

outreach and education efforts. The resulting behavior changes and expanded knowledge of LADWP and SoCalGas's incentive programs and other energy and water saving measures will ultimately result in reduced energy and water bills for LADWP customers and protection against potential future rate increases.

The objectives of this Program include:

- Leverage non-profit organization communication channels to increase awareness of LADWP electric and water programs, as well as SoCalGas natural gas efficiency programs
- Increase participation in LADWP programs, targeting energy and water efficiency solutions that will reduce consumption by participating residential and small business customers
- Foster behavior change in customers' water and energy use practices
- Reduce utility costs to participating customers
- Provide program services to residential and small business customers in all Council Districts
- Enhance customer experience with LADWP
- Increase presence with diverse "Hard-to-Reach" Customers
- Add capacity and expertise to local non-profit organizations in the area of water and energy efficiency to expand the resources they can provide their constituents and help them continue to be ambassadors

Program Strategy and Implementation

This program is designed to leverage the services of participating non-profit organizations to reach out and inform diverse residential and small business customers and to provide community/customer awareness of LADWP and SoCalGas energy efficiency and water conservation programs. Through this program, non-profit organizations are able to use and expand their existing relationships within local communities and offer additional services, information and benefits to community members. The strategy of this program is to provide information to these customers that otherwise might not be informed of applicable LADWP programs or free behavioral changes that they can make in their homes or businesses. This program leverages local non-profit organizations that are already active in their communities, acting as trusted advisors to these customers who may be more difficult to reach through traditional outreach methods. Each non-profit organization develops its own methods and activities to reach and engage communities. By leveraging these cost-effective resources, LADWP is able to reach customers to assist them in managing their energy or water expenses.

The LADWP Program Outreach and Community Partnerships Program was established in 2010 in response to the City of Los Angeles Green LA Plan, utilizing Energy Efficiency and Conservation Block Grant (ARRA) funding. The Program was considered successful and has been extended, utilizing LADWP energy efficiency funding. In developing the original program, LADWP partnered with the Mayor's office, Council District Office representatives and selected non-profit organizations to learn about the energy efficiency and water conservation needs of local non-profit organizations and how LADWP could work with them to expand outreach and education around energy efficiency and water conservation. In this development phase, it was determined that one effective way to realize LADWP's aggressive energy efficiency goals is through community partnerships to creatively reach customers that may not be addressed through more traditional communication strategies.

The messaging would include best practices, LADWP incentive programs, the greenhouse gas/climate benefits of conservation and efficiency, and other relevant topics.

In the first round of the Program, LADWP was able to fund a group of diverse projects ranging from introducing the topic of energy efficiency to communities to more detailed and extensive meetings and workshops. Projects included youth oriented activities, training of ambassadors, door-to-door canvassing, creative messaging, and curriculum development. Projects focused on single- and multi-family residences and featured neighborhood forums and community events where electric and water efficiency devices were sometimes provided and low water use landscaping was discussed. Other projects focused on businesses, including small business outreach with brief energy and water assessments and more targeted sector-based workshops for larger businesses such as hospitals and banks. Outreach was delivered in multiple languages through newly developed collateral materials, focusing on those languages that are most common in Los Angeles communities.

The second round of the program was offered in 2013, and again featured a wide range of project types and served communities across the city. Social media activities were incorporated into some of the projects, and many focused on youth and/or schools. Residents of transitional housing learned the importance of conserving energy and water, and foster youth developed public speaking skills through their outreach activities. Volunteers were trained to assist the non-profit organizations, again gaining skills and knowledge to assist in meeting the programs' objectives.

This program is intended to continue to position LADWP as a leader in energy efficiency and water conservation, by providing actionable information to an important section of its residential and non-residential customers. The program is on going in FY 2014/15.

Program Barriers

The barriers to effective program implementation, while not extraordinary, are real, and may result in LADWP being unable to provide this program to customers that could benefit from it. Where feasible, efforts may be taken to mitigate these barriers, utilizing the selected non-profit organizations. These potential barriers include, but may not be limited to:

- **Trust with "Hard-to-Reach" Customers** – A small portion of customers may not believe that energy efficiency and water conservation can really reduce energy and water bills, or that LADWP would pay customers to undertake certain measures. By communicating and informing these customers in places where they gather (church, community hall, etc.), in-language, it helps to break down potential barriers to reaching these customers.

- **Language** – Many customers in California and Los Angeles speak in a language other than English, including Spanish, Farsi, Korean, Mandarin, etc., making it difficult to understand more traditional outreach materials. Grantee organizations may develop appropriate materials to facilitate these discussions.

- **Limited Budget and Resources** – Many of the diverse customers don't have the financial ability, the time or other needed resources to research and ultimately purchase more efficient equipment and appliances, which potentially puts them at a disadvantage relative to other LADWP customers in terms of the ability to reduce their utility bill.

- **Lack of Information** – Many of the targeted customers may not realize that simple behavioral changes can help to reduce energy and water use, and may result in no-cost savings on their bills.

- **Tenant/Landlord Split Incentive –** Many of the targeted customers are renters and therefore limited in their ability to make meaningful changes in the appliances and equipment in their residence or small business. The landlord, on the other hand, may not pay the electric or water bill and therefore has little incentive to invest in energy or water efficiency improvements.

Integration and Transformation Opportunities

This program integrates LADWP's energy and water conservation programs into civic, faith-based, educational, social and recreational activities across the City of Los Angeles. The program leverages selected non-profit organizations to educate and inform customers of relevant services and programs available to them, as well as tips on free behavioral changes that might lead to reduced energy and water consumption and corresponding utility bill savings.

This program awarded 21 grants of $45,000 or $90,000 each in late FY 2013/14, utilizing a 12-month project performance period. The program is intended to be continued in FY 2014/15 and subsequent years, as funds are appropriated and available.

The transformational opportunities that exist with this program are not with measures necessarily, but rather with the increased communication, engagement and awareness that result from the program. Through participating non-profit organizations LADWP has the opportunity to reach much more of the City's diverse population and engage them in action to reduce energy and water use and corresponding costs. The non-profit organizations have the potential to transform their activities and relationships with community members by gaining experience in the area of energy efficiency and water conversation measures. These new skills may lead some groups to expand this portion of their work, and become experts in the field. The transformational opportunities also include those that are behavior based, as diverse customers gain knowledge of the behavioral changes that they can make in the home or business that will give them greater control over their energy and water usage and bills, as well as LADWP resources that exist to help them adopt permanent, technology-based measures to increase their energy efficiency and water conservation.

Long-Term Vision/Goals

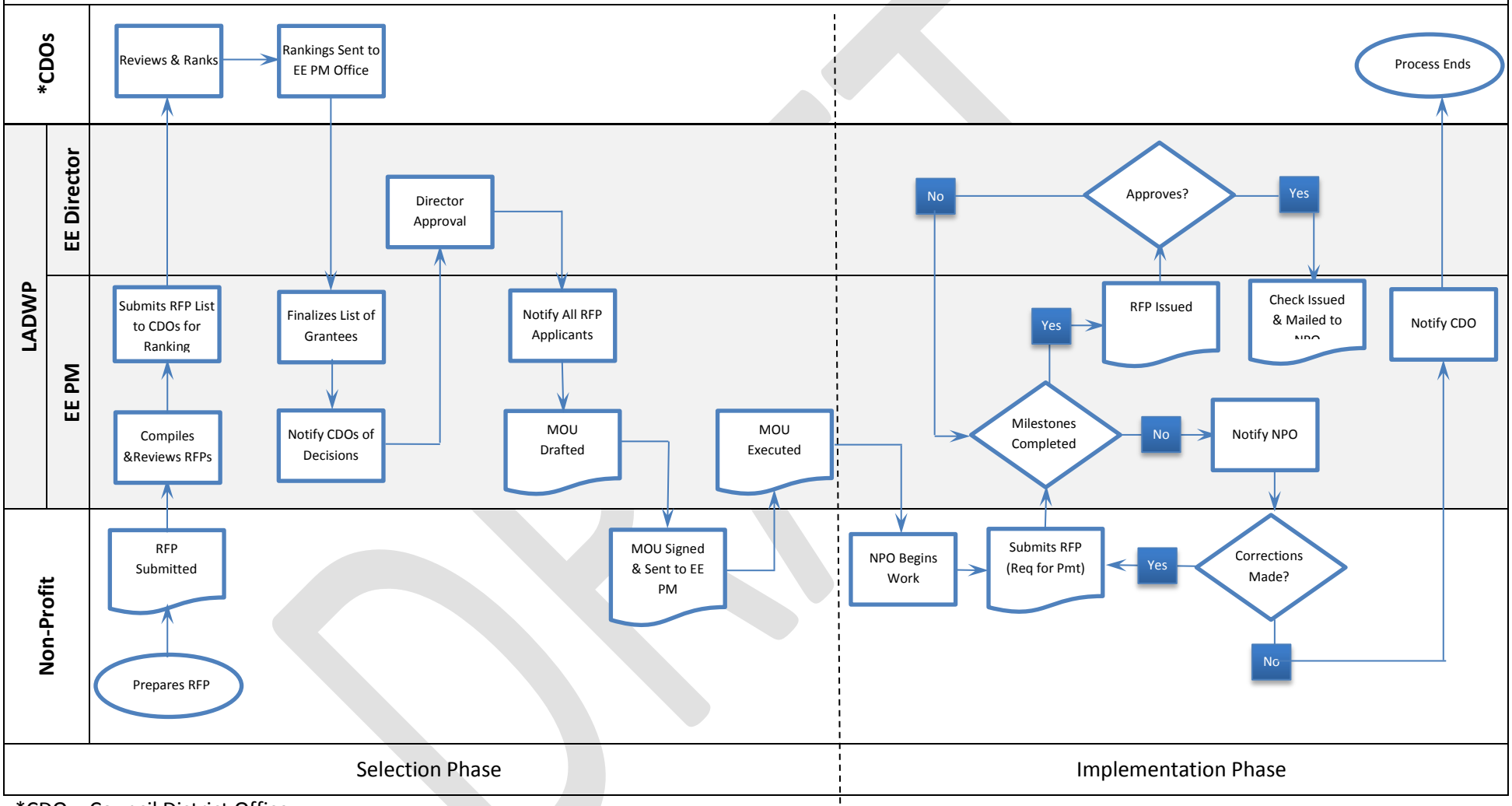
The goal of this program is to ensure that energy efficiency and water conservation programs are available to all LADWP customers, to inform customers of the water, electric and natural gas incentive programs available to them, as well as educate these customers about the behavioral changes they can make in their homes and

businesses, absolutely free, to reduce their energy or water consumption and, potentially, the corresponding utility bills.

With sufficient resources, LADWP staff proposes to expand this program to include more formal partnerships with other entities, including city departments, universities and others with comparable goals to improve resource efficiency. For example, Efficiency Solutions staff has been coordinating with the Housing, Community and Economic Development Department (HCID) on the launch of the Gateway2Green program that directs inspectors in the Systematic Code Enforcement Program (SCEP) to include an energy and water efficiency opportunity survey in the inspection of each multi-family residential unit in the City. The SCEP program inspects each unit – over 720,000 – once every four years, and the information gleaned from the surveys will assist LADWP in developing a better sense of the remaining efficiency opportunities in these buildings and help us target specific incentive programs to those who need them the most. Additional opportunities to leverage the efforts of other entities will be sought and developed as resources permit.

2014/15 Los Angeles Department of Water and Power

Program Outreach & Community Partnerships Program Process Flow



*CDO = Council District Office

LADWP

Emerging Technologies Program (ETP) Business Plan

FYs 2014/15 – 2019/20

Program Overview

The LADWP Emerging Technologies Program (ETP) is designed to accelerate the introduction of innovative energy and water efficient technologies, applications, and analytical tools that are not yet widely adopted in California. By reducing both the performance uncertainties associated with new products, as well as institutional barriers, the ultimate goal of this Program is to increase the probability that promising energy and water efficiency technologies will be commercialized and adopted throughout Los Angeles. Activities include supporting the development of the energy and water efficiency technology demonstration features of the Le Kretz Innovation Center and partnering with Southern California Gas Company (SoCalGas) and the Emerging Tech Coordinating Council to assess and introduce new technologies.

Fiscal Year	**FY 13-14 Actual**	**FY 14-15**	**FY 15-16**	**FY 16-17**	**FY 17-18**	**FY 18-19**	**FY 19-20**
Projected Program Budget* (x$1,000)							
Energy	$129	$988	$2,000	$2,000	$2,000	$2,000	$2,298
Projected Program Impact							

* Program Budget numbers for FY 2015/16 and later are estimates only and have not been approved by either the Board of Commissioners or the City Council.

Program Cost-Effectiveness

Energy Efficiency

- **TRC** **N/A**
- **PAC** **N/A**
- **$/KWh** **N/A**

Water Efficiency

- **$/AF** **N/A**

As ETP is a non-resource program for LADWP, focused on promoting development and implementation of new technologies in the LADWP community, ETP provides energy and water savings that are ultimately captured in LADWP's resource programs. In this way, ETP plays a vital role in continuing to position LADWP as a state and national leader in energy and water efficiency and helping Los Angeles to become the greenest big city in America.

Program Descriptors

Market Sector All - Residential, Multi-family, Small Business, Commercial, Industrial

Program Status Continuing

Launch Date Continuing

Measures Targeted All technologies are open to consideration, with emphasis placed on those with the greatest savings and cost-effectiveness.

Engagement Channels Engineering Team
Research Organizations
Universities
Industry Associations

Target Customers Residential and Non-Residential

Qualifications Not applicable.

Staffing Plan The staff is comprised of employees from the Efficiency Solutions Engineering Group and the Efficiency Solutions Engineering Group.

Program Description

ETP was introduced to LADWP's portfolio to support increased energy and water efficiency, market demand and technology supply by contributing to development and deployment of new and under-utilized energy and water efficiency technologies, practices, and tools, and by facilitating their adoption as measures supporting LADWP's aggressive energy and water savings goals.

The LADWP Emerging Technologies Program accelerates the introduction of innovative energy and water efficient technologies, applications, and analytical tools that are not yet widely adopted in California. By reducing both the performance uncertainties associated with new products and technologies as well as institutional barriers, the ultimate goal of this program is to increase the probability that promising energy and water efficiency technologies will be commercialized.

The ETP was initiated to keep LADWP up-to-date on the newest technologies related to energy and water efficiency. This provides critical intelligence required to update existing rebate programs, forecast upcoming trends, and anticipate customer requests.

LADWP Efficiency Solutions Engineers attend industry seminars and meetings to become aware of and to gain a better understanding of current technology trends in energy and water efficiency. LADWP communicates with federal, state, and local organizations involved in energy and water efficiency, as well as contractors and peer utilities to share ideas and gain a better understanding of the benefits and weaknesses of emerging technologies. In addition, LADWP coordinates the evaluation, measurement and verification (EM&V) process of selected technologies to close the evaluation feedback loop and keep institutional knowledge current.

LADWP assesses new academic partnership opportunities and is involved with a number of academic institutions that are doing research on emerging technologies in energy and water efficiency. More specifically, LADWP is working with the following institutions:

- UC Davis Energy Efficiency Center
- USC School of Architecture w/DOE Solar Decathlon
- UCLA – Behavioral Research

LADWP has also become an active member in the newly established California Technical Forum (CalTF). The CalTF has been modeled after the North West Regional Technical Forum where emerging technology R&D work papers are assessed, vetted and ultimately approved as a resource that defines calculation methodologies or deemed savings values in energy efficiency programs. Through the CalTF, LADWP looks to include more measures that have been rigorously vetted into their fold of current offerings.

Measures are constantly evolving, being introduced, and evaluated. Current technologies under consideration include:

Plug Load Portfolio Program - A rapidly changing midstream type program that aims to change the market in plug loads and appliances by offering incentives to retailers for stocking the most efficient products in the market.

Commercial Variable Speed Pool Pumps

Emergency Generator Block Heater Recirculating Pumps

Magnetic Bearing Chillers - Chillers that use magnetic bearings in compressors to reduce electric load and motor size and eliminate the need for oil to mitigate friction in compressing systems. These chillers allow chiller plants to reach efficiency levels (~0.2 kW/ton) beyond that of typical efficient chiller plants (~0.5 kW/ton).

Variable Refrigerant Volume - Direct expansion heat pumps, capable of providing individualized space air conditioning with varying loads and multi-modes (simultaneous heating and cooling). Systems consist of multiple compressors and fan coils, operating on variable frequency drives.

Variable Frequency Drive (VFD) Motors – A type of variable speed motor that utilizes an electronic controller to generate modulated direct current pulses to drive the motor. The controller varies the pulse width, frequency, and amplitude to precisely control the motor speed and torque output. This allows the motors to operate at reduced energy levels and meet varying loads of systems. VFD motors are used in fan systems, compressing systems, and pump systems.

LED Lighting - Lighting systems that use light-emitting diodes (LED) to generate illumination. LED lighting is much more efficient than both fluorescent and incandescent lighting. LED lighting also saves energy by reducing heat load in indoor use.

Control Strategies - In more complicated plants, the right control strategies can generate savings through proper timing and capacity loading and potential unloading of equipment. When fans, pumps, compressors, dampers, and valves are working together correctly and in unison, the system can meet heating and cooling loads of buildings in an efficient manner.

Building Analysis Tools – LADWP uses different analytical tools in assessing energy efficiency of buildings and systems, including EnergyPro, eQuest, Trace, and System Analyzer. This allows LADWP to also assess newer tools available on the market, such as Simergy, Energyplus, CBECC, BeOpt, and IES, which can help streamline the energy efficiency implementation process.

Alternate Water Source Systems – These are systems designed to collect and in some cases treat wastewater for beneficial reuse. Sources of water for these systems include graywater, rainwater and other sources deemed safe in the California Plumbing Code and by the applicable regulating agencies. LADWP is closely following the California Plumbing Code and standards developed by NSF International and the International Association of Plumbing and Mechanical Officials for the safe installation and operation of these systems to protect public health and safety.

High Performance Hot Water Systems – LADWP is investigating various technologies and design methods for hot water plumbing systems that will reduce the wait time for hot water for the purpose of reducing the volume of water that runs down the drain while waiting for the hot water to get hot. Such technologies and design methods include hot water recirculation pumps, heat trace, structured plumbing systems and point of use water heaters.

Program Objectives and Expected Outcome

California consumers report they are eager for solutions to climate change and other environmental issues, and LADWP has implemented and will continue to implement programs to incentivize the installation and use of energy and water efficiency measures. Many of these programs have seen tremendous success, yielding energy and water savings that have reduced the need for new generation, transmission and distribution facilities, reduced purchases of MWD water, lowered ratepayer energy and water bills, and avoided tons of greenhouse gas emissions.

New energy and water efficiency measures must be added to ensure portfolio success in meeting California's ambitious AB 2021 goals for energy and SBx7-7 goals for water. ETP aggressively pursues all appropriate technologies that have potential to enhance the energy and water efficiency offerings and savings by LADWP and its customers, across all programs and customer segments.

The LADWP Emerging Technologies Program's primary objective is to accelerate the adoption of innovative energy and water efficiency technologies, applications, and analytical tools that are not yet widely used in California. This program educates staff regarding new and innovative technologies that are beneficial in the creation of new rebates and incentive programs. By reducing both the performance uncertainties associated with new products, as well as institutional barriers, the ultimate goal of these programs is to increase the use of products that reduce water and energy consumption. The increased commercialization of these products increases the cost-effective energy and water efficiency that is captured by LADWP, in compliance with AB 2021 and UWMP goals.

Program Strategy and Implementation

The strategy for ETP is to find and evaluate emerging technologies that support the goals, strategies and near-term plans of LADWP long-term portfolio goals, which also results in achieving the LADWP's energy and water efficiency and demand reduction goals set in AB 2021 and SB x7-7. ETP efforts result in increased market demand for energy and water efficiency measures and spur market pull for yet-to-be-developed measures. Generally, market-pull product development usually takes place when some specific need is discovered in the marketplace that currently is either being ignored, not well served, or just not recognized. As technology developers become aware of unmet consumer needs for energy and water efficiency measures, development is undertaken to fulfill those needs in the future. Market pull created by increased market demand results in longer-term increases in product supply.

Emerging technologies is an effort that most utilities participate in, whether through a targeted, coordinated effort or not. LADWP has sought new technologies for years as a part of its energy and water efficiency portfolio. The formally designated ETP formalizes and documents the process and builds on past successes. As this is a program that is not customer facing, there is not an intense effort to develop the program, but rather the effort is in implementation, as there are numerous competing technologies that can sometimes take years to analyze. LADWP will continue to actively investigate, test, and conduct pilot projects involving emerging technologies (ETs) that have the potential to reduce energy and water demand and consumption. The main goals of the Program are to:

- Analyze new energy and water efficiency technologies on the market
- Provide technical support to customers involved in qualifying energy and water efficiency retrofits utilizing emerging technologies, and who apply for LADWP energy and water efficiency incentives
- Affect market transformation and adoption of emerging energy and water efficiency technologies through education and knowledge transfer, including customer-side support and internal retrofit support

ETP continues to evolve to meet the needs of the LADWP portfolio. The Efficiency Solutions Engineering Group is currently actively pursuing several promising technologies, as outlined in this Program Business Plan. As these technologies are proven effective, they will be incorporated into the LADWP portfolio.

Program Barriers

The current known barriers include:

- **Information or search costs -** The value of time spent identifying, locating, and understanding the operation and benefits of emerging technologies.
- **Performance uncertainties –** The difficulties and costs of acquiring the information needed to evaluate performance claims for energy and water efficiency measures.
- **Organizational practices or customs –** Behavior by companies, departments, professional groups, and government entities that has been institutionalized and may discourage forward thinking and proactive implementation of emerging technologies.
- **Extra effort of early implementation** – Early implementers of new technologies often have to expend additional effort to troubleshoot and solve issues that arise with new practices and products. Once solved, these early implementers pave the way for easier implementation in the general market.
- **Product or service unavailability –** Limited supply and/or distribution of emerging technology in the marketplace.

Integration and Transformation Opportunities

ETP is comprehensive in nature and potentially impacts all measures and practices that relate to energy and water efficiency. The Efficiency Solutions Engineering Group will continue to assess appropriate technologies, striving to integrate them into appropriate programs.

ETP, as a part of its core strategy, seeks out and aspires for transformational, as well as integration opportunities. For example, variable frequency drives are an accepted technology in today's market that can generate up to 50% savings in electric energy and water. Yet, VFDs were considered an emerging technology just a few years ago. The ETP gives LADWP the ability to analyze and design programs that can capture energy and water demand and consumption savings today and in the future.

Energy and Water Efficiency programs that are potential beneficiaries of the ETP include:

- Chiller Incentive Program
- Commercial Lighting Incentive Program (CLIP)
- Custom Performance Program (CPP)
- Retrocommissioning (RCx)
- New Construction Incentive Programs
- Direct Install
- Food Service Program
- Consumer Rebate Program

Long-Term Vision/Goals

The long-term vision of ETP is to continue to seek out and assess new and/or enhanced existing technologies that will provide increased energy and water savings and to incorporate new products and technologies that

prove to be effective in reducing water and electric consumption into LADWP's efficiency programs. As these products become more readily accepted and available, their affordability and adoption increases, codes evolve to mandate and/or address their installation requirements, and the incentives no longer become necessary.

LADWP

Refrigerator Exchange Program (REP) Business Plan

FYs 2014/15 – 2019/20

Program Overview

Refrigerator Exchange Program (REP) is a free refrigerator replacement program designed to target customers that qualify on either LADWP's Low-Income or its Senior Citizen/Disability Lifeline Rates. The program was expanded to include the following entities, multi-family or mobile home communities, civic, community, faith-based organizations as well as educational institutions. This program leverages a 3rd Party Contractor, ARCA (Appliance Recycling Centers of America), to administer the delivery of the program and provides energy efficient refrigerators for these customer segments to replace older, inefficient, but operational models.

Fiscal Year	**FY 13-14 Actual**	**FY 14-15**	**FY 15-16**	**FY 16-17**	**FY 17-18**	**FY 18-19**	**FY 19-20**
Projected Program Budget* (x$1,000)							
Energy	$4,522	$1,928	$7,885	$9,024	$10,782	$11,099	$9,588
Projected Program Impact							
Energy							
MW	0.7	2.5	2.2	3.6	4.4	4.7	3.4
GWh	5.0	11.8	10.3	16.7	20.7	22.0	15.9
CO_2 Avoided	2,657	6,296	5,479	7,510	9,153	9,574	6,787

* Program Budget numbers for FY 2015/16 and later are estimates only and have not been approved by either the Board of Commissioners or the City Council.

Program Cost-Effectiveness

- **TRC** 1.9
- **PAC** 1.9
- **$/kWh** $0.07

The generally accepted cost-effectiveness standard for energy efficiency in the industry is a TRC of 1.0 or above. Anything at or above that benchmark is considered to be cost-effective, as this indicates that the "benefit" gained is greater than or equal to the "cost" to capture savings in the program or measure. Reducing energy usage also results in avoided greenhouse gas emissions, reported here as metric tons of avoided carbon dioxide (CO_2) emissions. The CO_2 avoided for energy savings is based on the current and projected CO_2 emissions factors for LADWP's power portfolio.

REP has a TRC of 1.9, which is above the desired TRC threshold, but well below the TRC of RETIRE (Refrigerator Turn-In & Recycling Program). This difference in the RETIRE TRC (4.1) and REP (1.4) is attributable to the cost of the refrigerator itself, which significantly adds to the cost and lowers the cost-effectiveness. However, this is a

needed program for many LADWP customers and organizations, as they might not otherwise be able to purchase an energy efficient refrigerator, which adds to the low income customer's household as well as qualified organization's expenses, the LADWP procurement expense and to the GHGs emitted into the environment. As this program is currently designed, LADWP will continue to offer this program to meet 100% of the qualified customer demand. This will help the LADWP's low-income and qualified organizational customers lower their energy expenses, maximize cost-effective energy efficiency as mandated in AB 2021 and enhance customer experience with LADWP, by participating and non-participating customers.

Program Descriptors

Market Sector Residential, non-governmental organizations and schools

Program Status Existing

Launch Date Continuing

Measures Targeted New Energy Efficient Residential Refrigerators
Recycling of existing refrigerators

Engagement Channels ARCA (Appliance Recycling Center of America) Website
LADWP Website
Outbound Calling MF (Multi-Family) Owners (HUD List/LA County Apt Owners Assoc./Etc.)
Contact Center
Posters in Branch Offices
Community Events
On-serts on customer's bills
Flyers at Public Libraries and Council Centers
Email Blasts from Public Affairs
Bus Advertising
Direct Mailing
Social Media (Twitter, Facebook)
This is a program that brings a cost-effective service to LADWP low-income, senior and disabled customers with medical needs requiring incremental energy savings as well as qualified non-profit organizations. As such, LADWP makes extraordinary efforts to ensure that as many customers know about this service as possible and utilize, as qualified.

Target Customers Mass Market
Low Income
Senior Citizen/Disability Lifeline
Qualified Multi-Family or Mobile Home Community

Civic Organizations
Community Organizations
Faith-Based Organizations
Educational Institutions

Qualifications To participate, the customer must meet these requirements:

- Must be a LADWP customer in good standing
- Be a LADWP customer on the Low Income or Lifeline discount rate or
- Be a qualifying multi-family unit in which the property owner owns the refrigerator unit or a mobile home community
- Be a qualified:
  - Civic Organization
  - Community Organization
  - Faith-Based Organization
  - Educational Institution

 # Customers It is estimated that approximately 350,000 LADWP customers are low-income and/or qualify for this program.

Staffing Plan The staff is comprised of employees from the Efficiency Solutions Program Management Group, which manage the Intake portion of the program. The long-term staffing implications of this program will increase as the outreach and marketing efforts take hold in the future. Although REP is a mature and stable program, additional staffing growth will be needed as additional marketing efforts will be forthcoming.

Program Description

REP is designed to target LADWP residential customers that qualify on either LADWP's Low-Income or Senior Citizen/Disability Lifeline Rates. The program was expanded to include the following entities, multi-family or mobile home communities, civic, community, faith-based organizations as well as educational institutions. This program provides refrigerators for these customer segments, as many have older, less efficient refrigerators that are more expensive to operate, require additional LADWP energy procurement resources and add unnecessary greenhouse gases into the environment.

REP is an existing program that provides free new and efficient refrigerators, as well as pick-up and recycling of existing refrigerators. This is a service that the vast majority of the targeted customers would not otherwise be able to afford. Even in the event of a mechanical failure, it is most likely the low-income customer would replace an inoperable refrigerator with another used and inefficient refrigerator, due to household budgetary constraints.

This program leverages a 3rd Party Contractor, ARCA, to administer the delivery of the program, while LADWP oversees and manages ARCA and the program. In addition to providing a new, energy-efficient refrigerator, the

REP Program also retrieves and disposes of the existing refrigerator in an environmentally responsible manner, ensuring that these older refrigerators are taken off the grid forever. The ARCA team cuts the cord on the old refrigerator immediately upon replacement, transports the old refrigerator back to ARCA's local recycling facility and recycles virtually all of the refrigerator components, including potentially hazardous materials.

This program also offers up to four CFLs per household, for qualifying customers, at the time of delivery of the new refrigerator, which further increases the customer's awareness and adoption of energy efficient lighting. Additional benefits to LADWP customers that participate in REP include not only a free refrigerator and 4 CFLs, but also up to $192 per year in energy savings. The benefits to the environment are the permanent reduction of GHGs from these older, inefficient refrigerators, as well as recycling of materials such as Chlorofluorocarbon (CFC) refrigerants, mercury, polyurethane foam insulation with CFC 11, glass, oil and steel that can be safely recycled at recycling centers for new uses, diverting these potential pollutants from our landfills. The benefits to LADWP are additional cost-effective energy savings, permanently removed from the grid and further complying with AB 2021, reduced energy procurement costs, and the goodwill that these types of efforts can gain from its customers, if properly communicated to the customer base.

Current turn-around time from the time of qualification until the delivery of the new refrigerator averages approximately 2-4 weeks, which is good for a free program of the size of REP. Since 2007, over 94,500 inefficient refrigerators have been removed from the LADWP grid, totaling an energy savings of 75,127,500 kWhs. While REP is a stable and mature program, LADWP continues to seek opportunities to increase customer awareness of the Program and its benefits to them, LADWP, and the environment.

Program Objectives & Expected Outcome

As a cost-effective program, with a TRC of 1.19, REP strives to remove and replace as many old/inefficient refrigerators as possible, off the LADWP grid and recycle them in an environmentally responsible manner. This is in compliance with the mandate set forth in AB 2021, reducing LADWP's energy procurement expense, reducing GHG emissions, and providing a free service to qualified LADWP customers.

The REP objectives include:

- Ensure 100% of willing customers on LADWP's Low-Income or Senior Citizens/Disability Lifeline rates are provided with qualifying refrigerators, as appropriate
- Take as many inefficient refrigerators as feasible off the LADWP grid
- Educate LADWP customers of the inefficiencies and high expense of inefficient, older refrigerators that may be in use in the household (energy and financial savings opportunities for the customer)
- Achieve cost-effective program energy savings by replacing qualifying inefficient refrigerators
- Provide REP services to residential and qualified non-profit customers in all Council Districts
- Enhance the customer experience with LADWP and its REP Program
- Provide a convenient and easy program for LADWP customers, with scheduled exchanges from ARCA

The environmental benefits from recycling refrigerators include:

- Safe management of hazardous materials

- Reduction of energy consumption
- Reduction of emissions of ozone-depleting substances and greenhouse gases
- Prevention of release of PCBs, mercury, batteries and oil
- Reduction of materials entering landfills
- Recovery of scrap metal and other recyclables

Appliance recycling programs reduce greenhouse gas emissions by reducing energy usage and by preventing the release of high global warming potential emissions from refrigerants and foam-blowing agents.

This program continues to contribute to the economic vitality and job creation in the City of Los Angeles and beyond. The delivery of this program and RETIRE, including scheduling, pickup/removal and recycling of refrigerators, created approximately 23 jobs at ARCA, with its local recycling center located in Compton, California. REP also indirectly promotes additional manufacturing jobs throughout the United States with its purchase of an average 15,000 refrigerators per year in this Program.

It is expected that LADWP will make the REP Program available to over 350,000 income qualified LADWP customers that meet the Program qualifications and are willing participants.

Program Strategy and Implementation

The REP Program seeks to leverage the services and expertise of ARCA to distribute energy efficient refrigerators to qualifying LADWP customers and collect and recycle the existing refrigerators. The rationale for utilizing ARCA is that it is an experienced vendor, with 36 years of experience in the appliance recycling industry, providing energy efficiency program services for more than 250 electric utilities. As this is a service that is very heavily regulated and requires a high degree of expertise and experience, utilizing a 3rd Party Provider such as ARCA is in LADWP's best interest.

The REP strategy moving forward is to continue to fund and administer REP to 100% of the eligible LADWP customers that would like to participate in this Program and receive a free refrigerator. LADWP will continue to expand on its outreach to customers in all Council Districts and in applicable demographic categories, utilizing multiple methods including:

- On-serts (On-line bills, etc.)
- CBOs
- Direct Mailing
- Email blasts
- Posters in the branch offices
- Recording on LADWP Call Center's Hold Line
- Neighborhood Council Newsletters
- Community events
- Social Networks (Facebook, Twitter, etc.)
- Additional marketing, as appropriate

The REP Program is a mature program, in existence since 2007. Its current structure includes the ES Program Management Group and ARCA, serving the LADWP customer, maximizing cost-effective energy savings and enhancing the customer experience.

LADWP will take advantage of additional opportunities to enhance the REP incrementally, primarily through additional emphasis on awareness campaigns, CBOs and public officials that are known and respected by LADWP constituents. For a variety of reasons, some customers may still be unaware of the program, or if they are aware, they may be unaware of the benefits or may be suspicious of the authenticity of the program for cultural or other reasons. This is how CBOs, elected officials and other public officials may be able to increase awareness and acceptance, incrementally.

As REP is a continuing program, implementation is fairly straightforward and static. As currently designed, implementation of the REP Program includes the ES Program Management Group and ARCA. Implementation in current and future years will continually include additional emphasis on marketing on buses, posters, social media campaigns, etc., as well as community outreach, including CBOs, known community figures, etc.

Program Barriers

While it might be expected that there would be no or limited barriers to a "free" program such as REP, the reality is that there are various barriers to the program. These barriers are constantly addressed by LADWP and will be mitigated, by giving the customer enough information, investigation of any complaints and/or attention to customer concerns. These barriers include:

- Lack of customer awareness of the program
- Lack of multi-family property owners awareness of the program
- Skeptical of the program (nothing comes for free….)
- Lack of knowledge on benefits vs. expense
- Inconvenience of the program
  - Trouble of setting an appointment and being home
  - Refrigerator doesn't come with an ice maker or water in the door
  - Color may not be desirable for customer

Integration and Transformation Opportunities

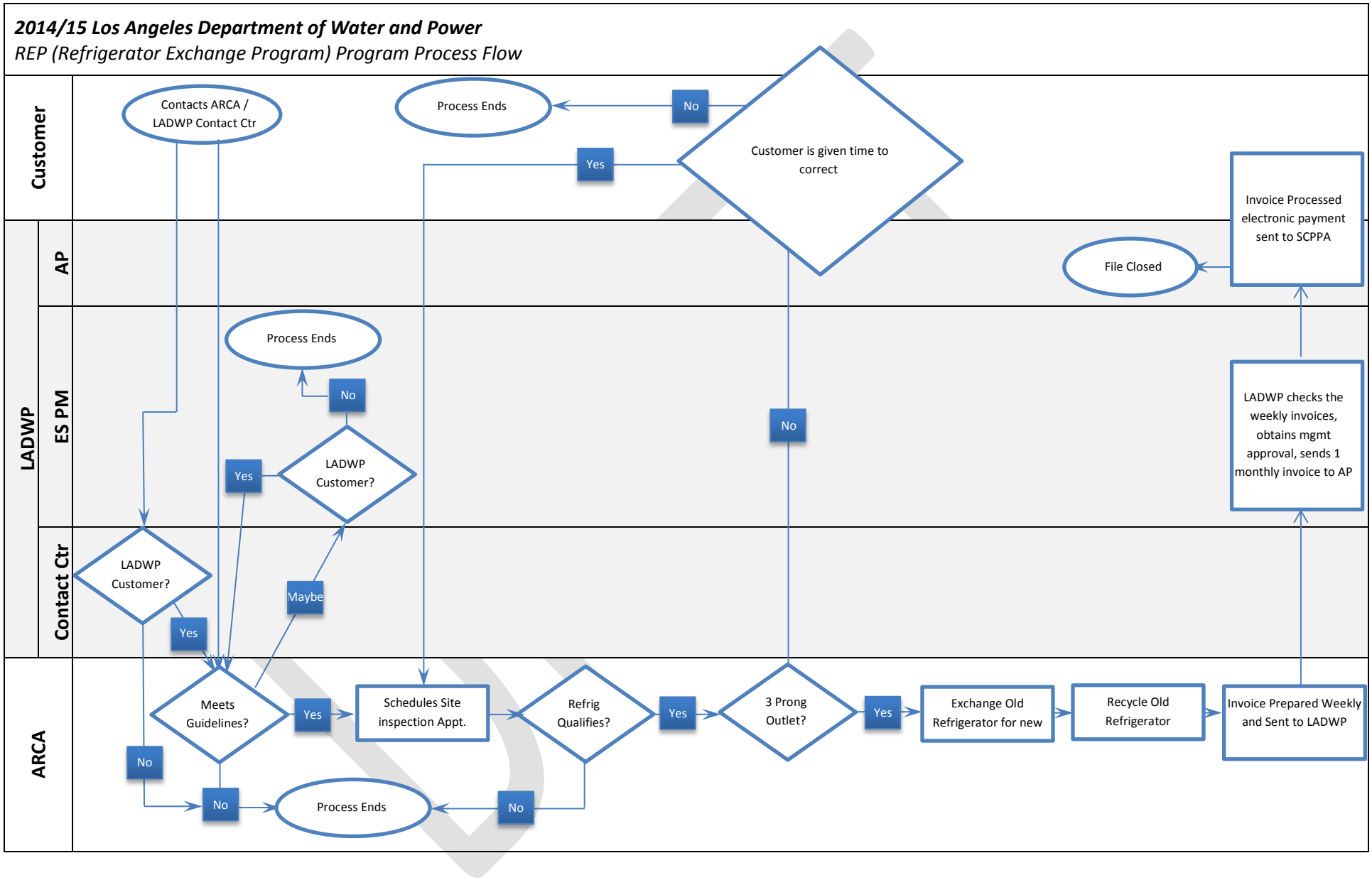
The design and intent of this program is to offer a free refrigerator, along with disposal and recycling of an existing refrigerator, to the low-income LADWP residential customer and also multi-family or mobile home communities, civic, community, faith-based organizations and educational institutions. This program is also designed to give the residential customer up to four CFLs. As such, the integration and transformation opportunities include:

- **HEIP** - As the Program is free and one branch of the program is designed to support low-income services, it will be partnering with the HEIP (Home Energy Improvement Program) which is designed to be a free weatherization program to assist customers to reduce electric, gas and water usage.

- **CFLs to LEDs** - Currently LADWP issues 4 CFLs to customers that are participating in the REP Program. LEDs are becoming more readily available and cost-effective and as such, LADWP will explore searching out manufacturers that may meet LADWP's requirements, to begin negotiating eventual inclusion into the REP Program, and possibly others. This would assist in the introduction, acceptance and commercialization of LEDs into the residential market, especially if LADWP were able to partner with additional utilities to order greater number of products and leverage those orders with potential manufacturers.

Long-Term Vision/Goals

The long-term goal of this program, as it is currently designed, is to replace and recycle existing inefficient refrigerators with newer, more efficient models to qualifying LADWP customers. Additionally, REP is designed to educate and inform customers of the expense and the environmental impacts of having additional refrigerators or freezers in the household. REP's goal is to increase awareness of the REP Program and its benefits, increase acceptance of the program by customers and convince customers to accept a new refrigerator. As currently planned, this will result in a ramp up of refrigerators distributed and increases in the annual budget.


2014/15 Los Angeles Department of Water and Power
REP (Refrigerator Exchange Program) Program Process Flow
Customer
LADWP
AP
ES PM
Contact Ctr
ARCA
Contacts ARCA / LADWP Contact Ctr
Process Ends
No
Customer is given time to correct
Yes
Invoice Processed electronic payment sent to SCPPA
File Closed
Process Ends
No
LADWP Customer?
Yes
No
LADWP checks the weekly invoices, obtains mgmt approval, sends 1 monthly invoice to AP
LADWP Customer?
Yes
Maybe
Meets Guidelines?
Yes
Schedules Site inspection Appt.
Refrig Qualifies?
Yes
3 Prong Outlet?
Yes
Exchange Old Refrigerator for new
Recycle Old Refrigerator
Invoice Prepared Weekly and Sent to LADWP
No
No
Process Ends
No

LADWP

Refrigerator Turn-In & Recycle (RETIRE) Program Business Plan

FYs 2014/15 – 2019/20

Program Overview

The Refrigerator Turn-in and Recycle (RETIRE) Program offers a $50 rebate, along with free pick-up, to residential customers to turn-in old refrigerators and freezers, for recycling. Eligible units must be fully operational and satisfy certain age and size requirements. LADWP leverages a 3rd Party Contractor, ARCA (Appliance Recycling Centers of America), to administer the delivery of the Program.

Fiscal Year	FY 13-14 Actual	FY 14-15	FY 15-16	FY 16-17	FY 17-18	FY 18-19	FY 19-20
Projected Program Budget* (x$1,000)							
Energy	$166	$742	$762	$2,142	$2,499	$1,599	$1,378
Projected Program Impact							
Energy							
MW	0.6	3.1	3.6	5.4	6.7	7.1	5.9
GWh	3.9	14.6	16.6	25.0	31.2	33.3	27.3
CO_2 Avoided	2,075	7,759	8,838	11,207	13,825	14,505	11,653

* Program Budget numbers for FY 2015/16 and later are estimates only and have not been approved by either the Board of Commissioners or the City Council.

Program Cost-Effectiveness

- **TRC** 7.1
- **PAC** 8.0
- **$/kWh** $0.01

The generally accepted cost-effectiveness standard for energy efficiency in the industry is a TRC of 1.0 or above. Anything at or above that benchmark is considered to be cost-effective, as this indicates that the "benefit" gained is greater than or equal to the "cost" to capture savings in the Program or measure. Reducing energy usage also results in avoided greenhouse gas (GHG) emissions, reported here as metric tons of avoided carbon dioxide (CO_2) emissions. The CO_2 avoided for energy savings is based on the current and projected CO_2 emissions factors for LADWP's power portfolio.

RETIRE has a TRC of 7.1, which is a very good TRC for any residential program. This is attributable to the lower administrative expense from using an outside vendor, ARCA. As this program is currently designed, LADWP will continue to offer this program to meet 100% of the qualified customer demand. This will help LADWP customers lower energy expenses, maximize cost-effective energy efficiency as mandated in AB 2021 and enhance customer experience with LADWP.

Program Descriptors

Market Sector Residential

Program Status Existing

Launch Date Continuing

Measures Targeted Residential Refrigerators/Freezers (Operational)
Replacement refrigerators when new refrigerator purchased
$2^{nd}/3^{rd}$ Household Refrigerator (in garage, etc.)

Engagement Channels Currently LADWP is expanding the outreach opportunities for this program and has plans to launch a secondary refrigerator recycling campaign. Customers will be receiving postcards, flyers, bill onserts, posters in the customer service centers and continuing outreach on social media, such as Twitter and Facebook. We will continue to provide information and contact from the ARCA (Appliance Recycling Center of America) Website and the LADWP website

Target Customers Targeted customers include those residential LADWP customers that have either made a new retail purchase of a new refrigerator and/or those that have 2, 3 or more refrigerators in the household.

Qualifications In order to qualify for the program:

- The customer must be a residential LADWP customer of record
- The unit must be fully functional

 # Customers This program is open to all LADWP residential customers.

Staffing Plan The staff is comprised of employees from the Efficiency Solutions (ES) Program Management Group and the Consumer Rebate Program (CRP) Group. The ES Program Management Group manages the Intake portion of the program and the CRP Group processes the RETIRE rebate applications.
The long-term staffing needs of this program will probably increase due to the plan to market the program to all single-family residential customers. Although RETIRE is a mature and stable program, additional growth is forecasted as there are plans for additional marketing efforts, which will include several advertising campaigns.

Program Description

RETIRE is designed to target LADWP residential customers that have either made a new retail purchase of a new refrigerator and/or those that have 2, 3 or more refrigerators in the household. This program offers a monetary

incentive ($50) to residential customers to turn-in old refrigerators and freezers. Eligible units must be fully operational, and satisfy certain age and size requirements.

This program leverages a 3rd Party Contractor, ARCA, to administer the delivery of the program, while LADWP oversees and manages the program and rebate processing to the end-use customers. The RETIRE Program picks up and safely and environmentally recycles old, energy-wasting refrigerators at no cost to the customer and rewards customers with a $50 rebate and 4 compact fluorescents light bulbs (CFLs) per household. The customer also benefits from up to $192 per year in energy savings.

The benefits to the environment are the permanent reduction of GHGs from these inefficient refrigerators, as well as recycling of materials such as refrigerants, mercury, polyurethane foam insulation, glass, oil and steel at recycling centers for new uses, diverting these materials from our landfills. The benefits to LADWP are additional cost-effective energy savings, further compliance with AB 2021, reduced energy procurement costs and the goodwill that these types of efforts can gain from customers, if properly communicated to the customer base.

Program Objectives & Expected Outcome

RETIRE has been in existence since 1993, with approximately 36,500 refrigerators and 2,200 freezers having been removed from the LADWP grid, totaling 75,000,000 kWh and $3.6 million in rebates since 2003. RETIRE is a stable and mature program and LADWP will utilize the opportunity to increase LADWP customer awareness of the program and its benefits to them, LADWP and the environment. As a highly cost-effective program, with a TRC of 3.63, RETIRE strives to remove and recycle all inefficient and/or unnecessary household refrigerators, including 2nd, 3rd, etc. from the LADWP grid. This is in compliance with the mandate set forth in AB 2021, reducing LADWP's energy procurement expense, reducing GHG emissions, and providing a free service to LADWP residential customers.

RETIRE objectives also include:

- Take as many inefficient refrigerators/freezers as feasible off the LADWP grid
- Recycle as many 2nd/3rd household refrigerators as possible and feasible
- Educate LADWP customers on the cost of a 2nd refrigerator and inefficient older refrigerators that may be in use in the household
- Achieve cost-effective program energy savings by recycling inefficient refrigerators and allocating 4 free CFLs per participating household
- Provide program services to residential customers in all Council Districts
- Enhanced customer experience with LADWP
- Convenient and easy program for LADWP customers, with scheduled pickup from ARCA
- Reduce illegal dumping of refrigerators into landfills, including harmful toxins and materials that can be recovered for future use

This program also contributes to the economic vitality and job creation in the City of Los Angeles and beyond. The delivery of this program and REP, including scheduling, pickups/removal and recycling of

refrigerators/freezers created approximately 23 jobs at ARCA, with its local recycling center located in Compton, California. Additionally, RETIRE indirectly promotes the purchase of new, more efficient refrigerators and participation in the Refrigerator Rebate Program, which also contributes to the economic vitality of the Greater Los Angeles Area and California, by increasing revenues and profits of local retail businesses and the sales personnel employed, as well as manufacturers throughout the United States.

The environmental benefits from recycling refrigerators include:

- Safe management of hazardous materials
- Reduction of energy consumption
- Reduction of emissions of ozone-depleting substances and greenhouse gases
- Prevention of release of PCBs, mercury, batteries and oil
- Reduction of materials entering landfills
- Recovery of scrap metal and other recyclables

Appliance recycling programs reduce greenhouse gas emissions by reducing energy usage and by preventing the release of high global warming potential emissions from refrigerants and foam-blowing agents.

Program Strategy and Implementation

The RETIRE strategy moving forward is to continue to fund and administer RETIRE to 100% of the eligible LADWP residential customers that request this free service. RETIRE leverages the services and expertise of ARCA to collect and recycle qualifying 2nd/3rd household refrigerators and freezers in LADWP service territory that are in working order. The rationale for utilizing ARCA is that it is an experienced vendor, with 36 years of experience in the appliance recycling industry, providing energy efficiency program services for more than 250 electric utilities. As this is a service that is very heavily regulated and requires a high degree of expertise and experience, utilizing a 3rd Party Provider such as ARCA is in LADWP's best interest.

As this is a very cost-effective residential program, with a TRC of 3.63, LADWP intends to investigate additional opportunities to increase customer awareness and participation in this program, leveraging ARCA's capacity as a 3rd Party, to maximize cost-effective energy savings and good will that can be gained from such efforts. LADWP will continue to expand on its outreach to customers in all Council Districts and in every demographic category, utilizing multiple methods including:

- On-serts (On-line bills, etc.)
- CBOs
- Email blasts
- Posters in the branch offices
- Flyers
- Recording on LADWP Call Center's Hold Line
- Neighborhood Council Newsletters
- Community events

- Social Networks (Facebook, Twitter, etc.)
- Additional marketing, as appropriate

RETIRE is a mature program, in existence since 1993. Its current structure includes the ES Program Management Group, Consumer Rebate Processing Group and ARCA, all of which are established and functioning at capacity, serving the LADWP residential customer, maximizing cost-effective energy savings and enhancing the customer experience.

Additionally, investigation and potential development of increased integration with the Consumer Rebate Program could increase participation in RETIRE and greatly enhance the customer experience. Management plans to investigate the possible coordination with selected participating retailers, that would incentivize the retailer to schedule and pick-up the existing working refrigerator, when delivering a qualifying new refrigerator to a LADWP customer. This would allow LADWP to leverage the retailer's existing presence, allow the customer to schedule only one home appointment and reduce slippage in the RETIRE Program.

The 2010 Census estimates that 46% of the Los Angeles housing is comprised of single-family dwellings. This equates to 756,000 multi-family dwellings and 644,000 single-family dwellings. The Department of Energy (DOE) estimates that 26% of all American households have a secondary refrigerator. Of that, 27% of those are over 15 years old. If the 26% DOE metric is applied to the LADWP residential, single-family customer base, LADWP has approximately 167,440 secondary refrigerators in the City of Los Angeles.

Program Barriers

While there are barriers to the RETIRE Program, the planned outreach campaign will help in mitigating most of these barriers:

- Lack of customer awareness of the program
- Lack of knowledge on benefits vs. expense
- Convenience of the program

Integration Opportunities

RETIRE, as currently designed, works with the various residential programs to make customers aware of additional programs, as applicable. This program could also investigate additional integration opportunities, including:

- **Southern California Gas Company**, (e.g. referral incentives to SoCalGas, contractors, etc.)

- **Appliance Retailer Coordination** – LADWP management will consider reaching out to interested retailers, in partnership with ARCA, to investigate the possibility of partnering with retailers to pick up RETIRE Program refrigerators when the retail partner is already in the LADWP customer's home delivering a new refrigerator that qualifies for a refrigerator rebate. LADWP could pay the retailer a fee

(e.g. $10) for each refrigerator and deduct that same amount from the ARCA fee. This would allow the customer to more easily participate in both programs, increasing energy savings and significantly enhancing the customer experience, as the customer would only need to schedule one appointment vs. the two that are now typically required.

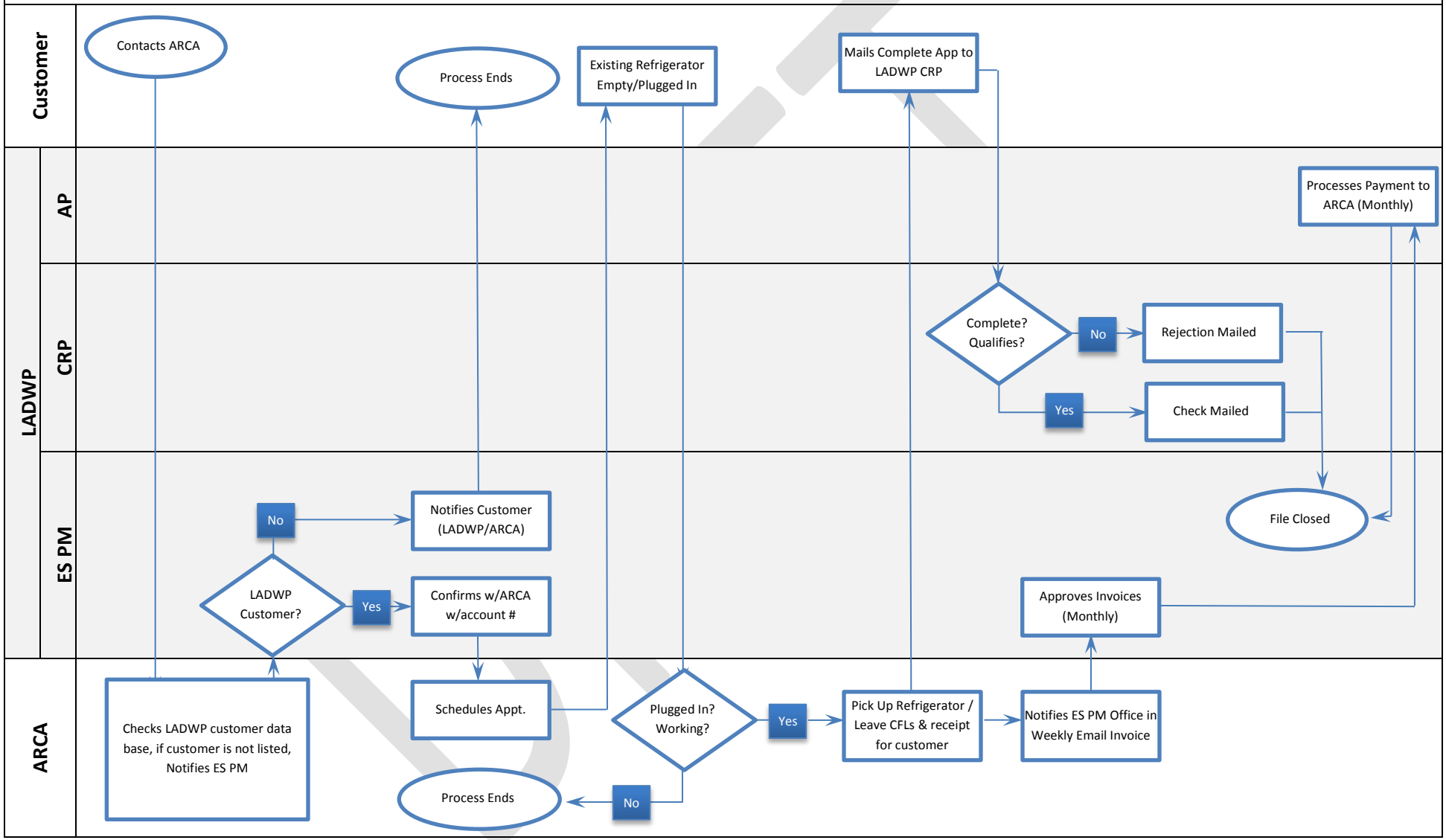
- **CFLs to LEDs –** Currently LADWP issues 4 CFLs to customers that are participating in the RETIRE Program. LEDs are becoming more readily available and cost-effective and as such, LADWP will consider them for distribution in the program. LADWP will search out manufacturers that may meet LADWP's requirements, to begin negotiating eventual inclusion into the RETIRE Program, and possibly others. This would assist in the introduction, acceptance, and commercialization of LEDs in the residential market, especially if LADWP were able to partner with additional utilities to order a greater number of products and leverage those orders with potential manufacturers.

Long-Term Vision/Goals

The long-term goal of RETIRE, as it is initially designed, is to recycle existing 2nd and or 3rd inefficient refrigerators and to recycle old refrigerators as they are replaced with newer, more efficient models. Additionally, RETIRE is designed to educate and inform customers of the expense and the environmental impacts of having additional refrigerators or freezers in the household. RETIRE's goal is to have LADWP residential customers voluntarily remove as many additional refrigerators and freezers from the grid as possible, benefitting the LADWP customer, LADWP, and the environment.

2014/15 Los Angeles Department of Water and Power

RETIRE (Refrigerator Turn-In & Replacement) Program Process Flow



LADWP

Consumer Rebates Program (CRP) Business Plan

FYs 2012/13 – 2019/20

Program Overview

The Consumer Rebate Program (CRP) offers incentives of up to $500 or more, to its residential customers to promote and advance comprehensive energy efficiency measures, including whole house solutions, plug load efficiency, performance standards and opportunities for integration. CRP is designed to offer and promote specific and comprehensive energy solutions within the residential market sector.

Fiscal Year	FY 13-14 Actual	FY 14-15	FY 15-16	FY 16-17	FY 17-18	FY 18-19	FY 19-20
Projected Program Budget* (x$1,000)							
Energy	$2,887	$1,186	$6,500	$7,541	$8,021	$7,229	$8,503
Projected Program Impact							
Energy							
MW	0.6	1.7	1.9	2.8	3.5	3.8	3.8
GWh	2.1	7.4	9.3	13.6	17.0	18.5	18.8
CO_2 Avoided	1,100	3,954	4,918	6,116	7,523	8,047	8,015

* Program Budget numbers for FY 2015/16 and later are estimates only and have not been approved by either the Board of Commissioners or the City Council.

Program Cost-Effectiveness

- **TRC** 0.8
- **PAC** 1.7
- **$/kWh** $0.09

The generally accepted cost-effectiveness standard for energy efficiency in the industry is a TRC of 1.0 or above. Anything at or above that benchmark is considered to be cost-effective, as this indicates that the "benefit" gained is greater than or equal to the "cost" to capture savings in the program or measure. Reducing energy usage also results in avoided greenhouse gas (GHG) emissions, reported here as metric tons of avoided carbon dioxide (CO_2) emissions. The CO_2 avoided for energy savings is based on the current and projected CO_2 emissions factors for LADWP's power portfolio.

CRP has a TRC of 0.8, which is typical for many residential measures and programs, due to codes and standards, transformation of market measures, energy savings per installation and various other factors occurring in the residential segment. However, this program is designed to ensure all customer segments are offered energy efficiency opportunities, to enhance the customer experience and to deliver cost-effective energy efficiency measures, in compliance with AB 2021.

While this program is not cost-effective by traditional economic metrics on its own, it directly supports one or more of LADWP's Guiding Principles for its Energy Efficiency (EE) Portfolio, which is cost-effective overall, in compliance with California statutory requirements. (Please see the Executive Summary for more information on the Guiding Principles and the overall cost-effectiveness of LADWP's EE Portfolio, as well as the table identifying which Guiding Principles this program specifically supports.)

Program Descriptors

Market Sector	Residential
Program Status	Continuing
Launch Date	Continuing
Measures Targeted	ENERGY STAR® Rated Refrigerator ENERGY STAR® Rated Air Conditioner Energy Efficient Central Split-System Air Conditioner or Heat Pump Whole House Fans Cool Roofs ENERGY STAR® Qualified Residential Window Products Variable Speed or Variable Flow Pool Pumps
Engagement Channels	Contractors Retailers LADWP Website
Target Customers	Residential
Qualifications	Applicant must be a LADWP customer of record Product must meet energy efficiency standards identified in the program Application must be postmarked within 12 months of purchase.
# Customers	LADWP serves 1.26 million residential electric customers and 4 million people. Targeted customers include those LADWP customers that are considering the purchase of a new appliance, windows, roofing, etc., to incentivize them to upgrade the efficiency of such purchases.
Staffing Plan	The staff is comprised of employees in the Consumer Rebate Processing Group. The Consumer Rebate Processing Group manages the Intake portion of the program. The long-term staffing plan for this program is to remain static, over the near-term future. This is a current risk to the customer experience, as the turnaround time for rebates is averaging around 8 weeks, which

negatively impacts the customer experience and customer perception of CRP and LADWP. CRP could benefit from an incremental effort to add staffing to this critical role.

Program Description

CRP is designed to offer and promote specific energy efficiency solutions within the residential market sector. By encouraging adoption of economically viable energy efficiency measures, the residential portfolio strives to overcome market barriers and to deliver programs and services aligned to support LADWP's energy efficiency objectives. The program's ultimate focus is:

- To facilitate, sustain, and transform the long-term delivery and adoption of energy-efficient products and services for single and multi-family dwellings
- To cultivate, promote and sustain lasting energy-efficient behaviors by residential customers
- To meet consumers' energy efficiency adoption preferences through a range of offerings including single-measure incentives

LADWP offers CRP, with incentives up to $500, or more, to its residential customers to promote the use of energy-efficient products. This program is designed to both educate and encourage LADWP residential customers to purchase and install qualifying products in their home. CRP advances specific energy efficiency measures, including whole house solutions, plug load efficiency, performance standards and opportunities for integration.

CRP meets the need of consumers who need either a single measure or multiple devices by encouraging the adoption of energy-efficient choices when purchasing and installing household appliances and equipment. In order to obtain a rebate under this program, the customer purchases and installs the product, completes a rebate application and submits the application, original proof of purchase and other supporting documentation to the LADWP Rebate Processing Center. The Consumer Rebate Processing Group reviews the application and documentation and a check is issued upon approval. An inspection may be conducted by LADWP to verify the installed items.

Program Objectives & Expected Outcome

Additionally, this program continues to contribute to the economic vitality and job creation in the City of Los Angeles and beyond, by incentivizing residential customers to take actions that benefit the economy and create jobs, such as buying appliances or having measures installed in their homes.

LADWP, as a part of the California Strategic Plan, has set ambitious energy efficiency goals, including reaching all of its residential customers/homes with comprehensive energy efficiency improvements by 2020. CRP facilitates this effort, focusing on offerings that leverage the naturally occurring market channels (e.g. retailers, contractors, etc.), and that are more integrated, coordinated and scalable.

LADWP's Consumer Rebate Program is designed to offer and promote specific and comprehensive energy solutions within the residential market sector. By encouraging adoption of economically viable energy efficiency measures, the residential portfolio strives to overcome market barriers and to deliver programs and services aligned to support LADWP's energy efficiency objectives.

CRP's ultimate objectives are:

- To facilitate, sustain and transform the long-term delivery and adoption of energy-efficient products and services for single and multi-family dwellings
- To cultivate, promote and sustain lasting energy-efficient behaviors by residential customers
- To both educate and encourage LADWP residential customers to purchase and install qualifying products in their home
- To advance comprehensive energy efficiency measures, including whole house solutions, plug load efficiency, performance standards and opportunities for integration
- To offer customers educational materials about energy efficiency options, rebates and other incentive offerings
- To meet the needs of consumers who need either a single measure or multiple devices by encouraging the adoption of energy-efficient choices when purchasing and installing household appliances and equipment

Program Strategy and Implementation

CRP is a mature program, in existence since 2001. As an ongoing program, the strategy for CRP is to meet the needs of consumers who need either a single measure or multiple devices, by encouraging the adoption of energy-efficient choices when purchasing and installing household appliances and equipment. This is accomplished by leveraging the naturally occurring market place (retailers, contractors, etc.) to market energy efficient products and LADWP's rebates.

This program is typically intended for products that have stabilized and are in the mature stage of the life-cycle process. Changes continue to be made to the qualifying list as codes and standards change or as new qualifying emerging technologies enter the market and are commercially available. In addition to further diversification of the menu offerings, changes to rebate levels and the addition of tiered rebates for increased levels of product efficiency are planned.

CRP continues to position LADWP as a leader in energy efficiency, offering another suite of products to complete its residential portfolio, which assists LADWP in complying with the AB 2021 mandate of capturing all cost-effective energy efficiency, as well as ensuring that all LADWP customer segments, including the residential customer, have access to real and meaningful energy efficiency.

Program Barriers

While there are several apparent barriers to CRP, they are barriers that can be mitigated, given enough information, investigation and/or attention. These barriers include:

- Lack of customer awareness of the program
- Lack of knowledge on benefits vs. expense
- Convenience of the program
- Sporadic participation of market channels (e.g. retailers, contractors, etc.)

Integration and Transformation Opportunities

CRP, as currently designed, is intended to be an additional offering in LADWP's residential energy efficiency portfolio, which compliments the extensive suite of energy efficiency offerings. As such, CRP continues to position LADWP as a leader in energy efficiency and encourages extensive integrations of energy efficiency, including water, electric and natural gas efficiency.

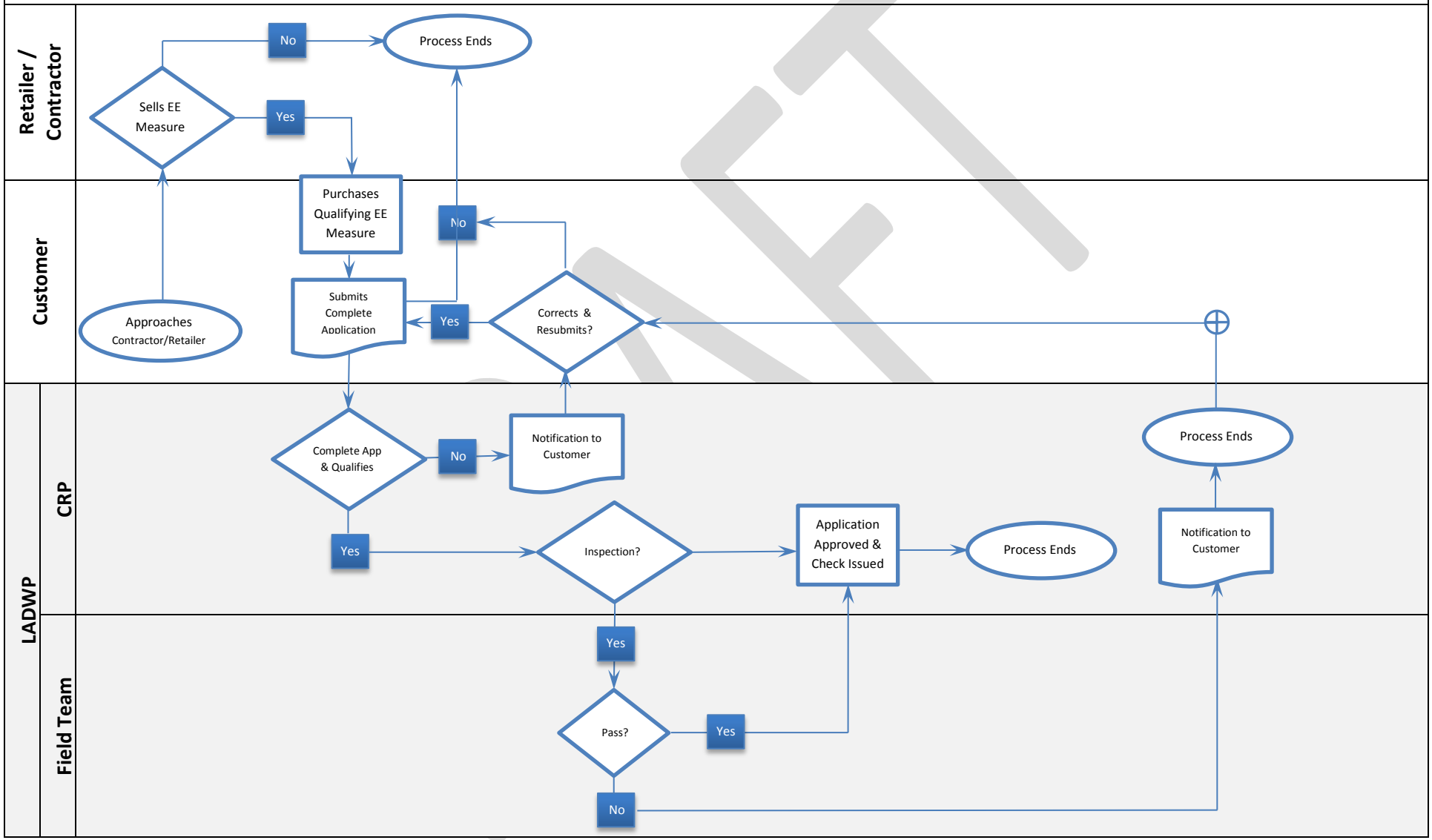
Long-Term Vision/Goals

The long-term vision of this program is to continue to enable LADWP residential customers to achieve energy efficiency. CRP will continue to offer down-stream rebates for energy efficiency measures to LADWP's residential customers. CRP is an effective tool for promoting measures that enter the final and the mature stage of the product life cycle. Specific measure offerings will continue to be added as emerging technologies become commercialized in the marketplace and removed as codes and standards, etc. enter the market that remove the need and/or cost-effectiveness of such impacted measures.

The goal of CRP, as with all LADWP energy efficiency measures and programs, is to make all cost-effective energy efficiency available to the market, including the residential segment. The ultimate goal of CRP, along with the entire LADWP portfolio, is to educate customers on energy efficiency, make energy efficiency a common first option when considering new appliances, household improvements, etc. and ultimately lead to market transformation of the residential sector.

2014/15 Los Angeles Department of Water and Power

Consumer Rebate Program (CRP) Process Flow



LADWP

Consumer Electronics (CE) Program

FYs 2014/15 – 2019/20

Program Overview

The Consumer Electronics (CE) Program is a new incentive program that will offer rebates for high efficiency consumer electronics such as televisions, computers, and monitors. This program is currently under development; the anticipated implementation date is June 2015.

Fiscal Year	FY 13-14 Actual	FY 14-15	FY 15-16	FY 16-17	FY 17-18	FY 18-19	FY 19-20
Projected Program Budget* (x$1,000)							
Energy	$0	$2,970	$3,000	$3,000	$3,000	$3,000	$1,300
Projected Program Impact							
Energy							
MW	0.0	0.7	1.5	2.5	2.9	3.2	2.4
GWh	0.0	7.3	10.0	8.3	8.6	8.9	8.9
CO_2 Avoided	0	3,868	5,312	3,732	3,807	3,871	3,799

* Program Budget numbers for FY 2015/16 and later are estimates only and have not been approved by either the Board of Commissioners or the City Council.

LADWP

Residential Lighting Efficiency Program (RLEP)

FYs 2014/15 – 2019/20

Program Overview

The Residential Lighting Efficiency Program (RLEP) will provide light-emitting diode (LED) lamps to customers to assist in reducing their home electrical use. Distribution of the LED lamps will be via two channels: Point-of-Sale (POS) transactions at home improvement stores within LADWP's service territory and through targeted regional distribution, where the lamps will be dispersed door-to-door. The lamps will be dispersed over several years in order to reach the entire targeted audience. This program is currently under development; the anticipated implementation date is June 2015.

Fiscal Year	FY 13-14 Actual	FY 14-15	FY 15-16	FY 16-17	FY 17-18	FY 18-19	FY 19-20
Projected Program Budget* (x$1,000)							
Energy	$0	$3,375	$9,404	$9,304	$9,813	$9,813	$6,053
Projected Program Impact							
Energy							
MW	0.0	1.0	7.2	9.6	9.6	9.6	9.6
GWh	0.0	8.3	60.0	80.0	80.0	80.0	80.0
CO_2 Avoided	0	4,447	31,870	35,925	35,453	34,873	34,147

* Program Budget numbers for FY 2015/16 and later are estimates only and have not been approved by either the Board of Commissioners or the City Council.

LADWP

Behavior-Based Efficiency Program (BEP)

FYs 2014/15 – 2019/20

Program Overview

The Behavior-Based Efficiency Program (BEP) focuses upon influencing customers to reduce residential electricity usage through changes in behavior. Customers who elect to participate in this program are provided with a Home Energy Saver (HES) report at regular intervals, which is customized for the customer's usage profile. The report also provides energy consumption comparisons to other customers, tips for reducing electric use and referrals to other LADWP energy-saving programs. This program is currently under development; the anticipated implementation date is June 2015.

Fiscal Year	**FY 13-14 Actual**	**FY 14-15**	**FY 15-16**	**FY 16-17**	**FY 17-18**	**FY 18-19**	**FY 19-20**
Projected Program Budget* (x$1,000)							
Energy	$3	$635	$1,896	$5,253	$4,649	$4,573	$4,762
Projected Program Impact							
Energy							
MW	0.0	0.0	0.0	0.0	0.0	0.0	0.0
GWh	0.0	7.3	14.5	14.5	14.5	14.5	14.5
CO_2 Avoided	0	3,864	7,702	6,511	6,426	6,321	6,189

* Program Budget numbers for FY 2015/16 and later are estimates only and have not been approved by either the Board of Commissioners or the City Council.

LADWP

Energy Savings Assistance Program (ESAP)

FYs 2014/15 – 2019/20

Program Overview

The Energy Savings Assistance Program (ESAP) is a collaborative program with the Southern California Gas Company (SoCal) that offers, free of charge, energy efficient electric, water, and natural gas upgrades to income-qualified multi-family residential customers. In addition to the individual residential units, the ESAP offers energy efficient upgrades for many designated common areas throughout the property. The energy efficiency measures include lighting upgrades, installation of high-efficiency water equipment, and several natural gas related measures. This program is currently under development; the anticipated implementation date is June 2015.

Fiscal Year	FY 13-14 Actual	FY 14-15	FY 15-16	FY 16-17	FY 17-18	FY 18-19	FY 19-20
Projected Program Budget* (x$1,000)							
Energy	$0	$5,000	$5,000	$10,000	$10,000	$5,000	$4,000
Projected Program Impact							
Energy							
MW	0.0	2.5	5.1	5.1	5.1	5.1	5.1
GWh	0.0	5.7	11.4	11.4	11.4	11.4	11.4
CO_2 Avoided	0	3,038	6,055	5,119	5,052	4,969	4,866

* Program Budget numbers for FY 2015/16 and later are estimates only and have not been approved by either the Board of Commissioners or the City Council.

LADWP

Home Upgrade Energy Upgrade California® (HU EUC) Program Business Plan

FYs 2014/15 – 2019/20

Program Overview

The Home Upgrade Energy Upgrade California® (HU EUC) Program is a collaborative effort among California counties, cities, non-profit organizations, the state's investor-owned utilities, and publicly owned utilities to deliver a California statewide "whole house" residential retrofit energy efficiency program, in which LADWP partners with Southern California Gas Company (SoCalGas). HU EUC offers incentives to homeowners who complete selected energy-saving home improvements on single-family residences. Several changes have been made in the program beginning in FY 2014/15, including changing the name of the program from Energy Upgrade California® to Home Upgrade – Energy Upgrade California®.

Fiscal Year	FY 13-14 Actual	FY 14-15	FY 15-16	FY 16-17	FY 17-18	FY 18-19	FY 19-20
Projected Program Budget* (x$1,000)							
Energy	$153	$652	$653	$871	$1,045	$1,110	$1,110
Projected Program Impact							
Energy							
MW	1.0	1.6	1.8	2.7	3.4	3.6	3.6
GWh	0.7	1.0	1.0	1.4	1.8	1.9	1.9
CO_2 Avoided	352	507	506	642	792	830	813

* Program Budget numbers for FY 2015/16 and later are estimates only and have not been approved by either the Board of Commissioners or the City Council.

Program Cost-Effectiveness

- **TRC** 0.3
- **PAC** 0.8
- **$/kWh** $0.52

The generally accepted cost-effectiveness standard for energy efficiency in the industry is a TRC of 1.0 or above. Anything at or above that benchmark is considered to be cost-effective, as this indicates that the "benefit" gained is greater than or equal to the "cost" to capture savings in the program or measure. Reducing energy usage also results in avoided greenhouse gas emissions, reported here as metric tons of avoided carbon dioxide (CO_2) emissions. The CO2 avoided for energy savings is based on the current and projected CO2 emissions factors for LADWP's power portfolio.

HU EUC has a TRC of 0.3, which is typical for residential programs of this design that are intended to deliver customer benefits beyond the cost-effectiveness standards. This is also common for many residential measures

and programs, due to codes and standards, transformation of market measures, energy savings per installation and various other factors occurring in the residential segment. However, this Program is designed to be a part of the statewide HU EUC, striving for energy efficiency of up to 40% in the near term and ultimately efforts that will lead to a ZNE residential market place for the California residential market.

While HU EUC is not cost-effective by traditional economic metrics on its own, it directly supports one or more of LADWP's Guiding Principles for its EE Portfolio, which is cost-effective overall, in compliance with California statutory requirements. Please see the Executive Summary for more information on the Guiding Principles and the overall cost-effectiveness of LADWP's EE Portfolio.

Program Descriptors

Market Sector Residential

Program Status Continuing

Launch Date FY 2012/13

Measures Targeted

Base Measures

- Whole building air sealing
- Attic insulation and attic plane sealing
- Duct test and sealing (duct leakage)

Flex Measures

- Wall (R-13) and floor insulation (R-19)
- Duct insulation (R-8)
- Low-flow showerhead with thermostatic-activated valve or thermostatic-activated valve device
- High-efficiency natural gas furnace
- Split or packaged central air conditioner
- Split or packaged central heat pump
- Gas storage water heater
- Tankless water heater
- Domestic hot water pipe wrap
- Variable speed pool pump
- Energy-efficient windows
- Cool roof (Advanced Home Upgrade only)
- Radiant barrier (Advanced Home Upgrade only)
- Other custom energy-saving measures

Carbon monoxide detector and combustion safety test required on all projects

Engagement Channels Vendors/Contractors
Southern California Gas Company

Target Customers Residential retrofit customers

Qualifications To participate in either the Home Upgrade or Advanced Home Upgrade Option, the customer must meet these requirements:

- Must be a LADWP residential electric customer in good standing
- Own a single-family detached home
- Use a participating program contractor

 # Customers Targeted customers include those residential customers that are considering energy efficiency or retrofitting for any of a variety of reasons. HU EUC's model is to identify those customers that are considering remodeling and/or retrofitting an appliance, installing insulation, windows, etc., inform them of HU EUC and its benefits, including lower bills and customer rebates. Rebates are up to $2,500 for Home Upgrade and up to $6,500 for Advanced Home Upgrade. For Advanced Home Upgrade, customers also may be eligible for incentives exceeding $6,500 based on their calculated energy savings.

Staffing The staff is comprised of a Program Manager and Supervisory Manager from the Efficiency Solutions Program Management Group. Staffing requirements are minimal at this time and focus on verifying customer accounts and participating in program development. As HU EUC becomes better known and more popular in the LADWP territory, this program may demand additional employee resources.

Program Changes Several changes were made to the HU EUC program beginning in FY 2014/15. The name of the program changed and the method of applying the measures changed. The upgrade options were renamed from Basic Upgrade to Home Upgrade and from Advanced Upgrade to Advanced Home Upgrade and the rebate amounts for each increased from $1,000 to $2,500 and from $4,000 to $6,500. The program is expected to be expanded in the future to include multi-family units.

Program Description

HU EUC is a collaborative effort among California counties, cities, nonprofit organizations, the state's investor-owned utilities and publicly owned utilities to deliver a California "whole house" residential retrofit energy efficiency program. Participating utilities include:

- Los Angeles Department of Water & Power (LADWP)
- Pacific Gas and Electric (PG&E)
- Sacramento Municipal Utility District (SMUD)
- San Diego Gas And Electric (SDG&E)

- Southern California Edison (SCE)
- Southern California Gas Company (SoCalGas)

HU EUC offers incentives to homeowners who complete selected energy-saving home improvements on a single-family residence. These incentive packages encourage customers to take a "whole house" approach by combining several related improvements at once to increase a home's overall energy efficiency and achieve greater savings.

By working with participating contractors or raters, homeowners can choose from two incentive options, the Home Upgrade Package or Advanced Home Upgrade Package, depending on their improvement needs and budget. California's utilities (IOUs/POUs) market both the home and advanced home program options under one single brand, Home Upgrade - Energy Upgrade California®. The California Energy Commission and the CPUC jointly manage this brand. This program seeks to enroll customers through a targeted marketing approach that focuses on high energy use homes built pre-1978 (the year that Title 24, California's building code on energy efficiency, was instituted), previous energy efficiency adopters, and new homeowners at the time of transition.

The Home Upgrade Option is an easy entry point for customers on the road to deeper energy efficiency retrofits. It offers a rebate of up to $2,500 for homeowners who work with a participating contractor to install specific energy-saving measures in their home. Each measure earns points toward incentives; a minimum of 100 points and three (3) measures are required. Participating contractors are required to have a Building Performance Institute (BPI) certification. The package of measures required to qualify for the HU EUC Home Upgrade Option Rebate must include at least one of the Base Measures. If a heating and/or cooling system upgrade is needed, then an additional shell measure is required. Additional measures may be implemented from either the Base Measures or the Flex Measures.

Home Upgrade Option:

- Minimum of 3 measures totaling 100 points
- Must include at least one of the Base Measures
- If a heating and/or cooling system upgrade is needed, then an additional shell measure is required
- Rebate of up to $2,500

The Advanced Home Upgrade Option includes all of the measures in the Home Upgrade Option and continues to seek even deeper energy savings in the residential building. It offers rebates of up to $6,500 for homeowners who work with a participating contractor to install a minimum of three (3) measures total, and other energy efficient upgrades to meet a minimum modeled savings of 10 percent. To participate, a customer must first schedule an energy assessment with a certified and participating contractor. Based on the recommendations in the assessment from the contractor, the residential customer can select from a variety of measures beyond the Home Upgrade Option, realizing at least 10% energy savings and earning a rebate up to $6,500, depending on the achieved energy savings. Customers also may be eligible for incentives exceeding $6,500 based on their calculated energy savings.

Advanced Home Upgrade Option:

- Minimum of 3 measures and minimum modeled savings of 10%
- Must include at least one of the Base Measures
- Rebate of up to $6,500 or higher based on calculated energy savings

Program Objectives & Expected Outcome

LADWP is partnering with SoCalGas to utilize HU EUC to contribute to achieving the AB 2021 mandate of offering all cost-effective energy efficiency measures in California by 2020 and begin transformation of the market towards the goal of ZNE by 2020. HU EUC strives to encourage performance at or better than Title 24 code, depending on the existing efficiency of the residence and the corresponding opportunities to achieve energy efficiency and green building practices in existing residential buildings, focusing on the "whole house" as a system, utilizing a comprehensive and integrated approach to maximize energy savings captured.

Additional Program objectives include:

- Seek out and install integrated, cost-effective water, electric and natural gas "whole house" solutions that will improve the energy performance in the buildings of participating residential customers
- Achieve program electric and natural gas savings via bundled "whole house" solutions and other improvement strategies to residential customers in all Council Districts
- Enhance the customer experience with LADWP and its energy efficiency program
- Assist residential customers to reduce their energy costs, resulting in enhanced customer experience, as well as additional disposable income
- Increase the skilled labor workforce, additional business opportunities for energy efficiency related contractors and greater economic vitality for the Greater Los Angeles Area
- Economic growth and investment back into the community (jobs, capital investments, expansion, etc.)

HU EUC strives to utilize the statewide HU EUC Program and the services of its partner utility, SoCalGas, to incentivize cost-effective energy efficiency upgrades in residential dwellings. By participating in the statewide HU EUC Program, LADWP seeks to break down as many barriers as possible, increase awareness and acceptance, and move the market closer to Zero Net Energy in the residential marketplace. By utilizing its utility partner, SoCalGas, LADWP seeks to improve cost-effectiveness and strive for deeper integration opportunities, including electric, natural gas and water measures and practices.

Program Strategy and Implementation

The strategy of the HU EUC Program is to leverage the market participants (vendors, etc.) that choose to participate in the program offering to educate LADWP residential customers on HU EUC's "whole house" integrated approach to energy efficiency. This helps participating customers lower their utility bills, increase comfort in the home and reduce emissions into the environment associated with the generation of electricity.

LADWP is leveraging the resources of its partner in this Program, SoCalGas, to incentivize and promote a "Whole Building Approach" and encourage transformation of this market to ZNE building practices.

HU EUC is an existing statewide program offered by the California IOUs and some municipal utilities. LADWP launched HU EUC in FY 2012/13. The partnership with SoCalGas is resulting in increased integration, seeking out deep, integrated electric, natural gas and water efficiency measures. It also increases the cost-effectiveness of the program, as it leverages the administration cost of one utility, rather than having two utilities administering HU EUC to the same customer, which could otherwise result in confusion and non-participation by customers. (Prior to this joint effort, LADWP provided a "Whole House Bonus" incentive to residential customers that installed two or more qualifying home energy efficiency measures as evidenced by their incentive application. This Bonus incentive was designed to be consistent with the EUCA Program being offered by the IOUs in the City of Los Angeles and surrounding areas, at that time.)

LADWP will continue to remain engaged in future statewide discussions and developments regarding HU EUC. As incremental changes are discussed or new models are considered, LADWP will participate, represent the best interests of its customers and make changes as appropriate to remain consistent with the statewide program and maximize energy efficiency results. In addition, LADWP will work with SoCalGas to encourage participation through limited time, seasonal promotions with added incentive bonuses that will boost energy savings.

Initial, as well as on-going implementation, targets residential owners that are interested in energy efficiency and/or considering replacing or upgrading an energy efficiency measure. Qualified and participating contractors inform the prospective residential customer of the HU EUC Program and the benefits of the HU EUC Program, including the Home Upgrade Option and the Advanced Home Upgrade Option, to sell the customer on a more comprehensive, integrated, whole house approach. Ultimately, this will result in increased awareness, and increased buy-in and participation from all stakeholders.

Program Barriers

As this is still a relatively new program to LADWP and its customers, multiple barriers exist. LADWP intends to work with SoCalGas to proactively break down these barriers and rapidly increase traction in this space. These barriers include:

- Customer knowledge and awareness of the program
- Recruitment and certification of qualified contractors
- Customer understanding

Integration and Transformation Opportunities

LADWP launched EUCA, now HU EUC, in the 2nd quarter of FY 2012/13, in partnership with SoCalGas. This partnership is expected to result in increased integration of electric, natural gas and water efficiency measures from a "whole house" approach.

HU EUC, as a statewide Program, gives California a real opportunity to begin to transform the residential retrofit market, as it is a program that informs and incentivizes various stakeholders and is a consistent message throughout most of California. This approach helps LADWP and other California IOUs/POUs to facilitate the adoption of integrated, whole house design practices. This type of program could ultimately speed the acceptance and adoption of additional and incremental Title 24 standards, further moving the California residential market that much closer to the transformational goal of ZNE.

HU EUC contributes to transforming the residential energy improvement market by:

- Offering both a Home Upgrade and Advanced Home Upgrade Option level for customers
- Educating customers on the house-as-a-system (or whole house) concept to encourage behavior changes that increase residential energy efficiency
- Educating contractors on the benefits of learning how to properly sell and install whole house measures
- Offering incentives that influence customers and contractors to undertake comprehensive residential retrofits
- Promoting coordination with relevant external funding, financing and workforce education and training efforts at the county, state, and federal levels

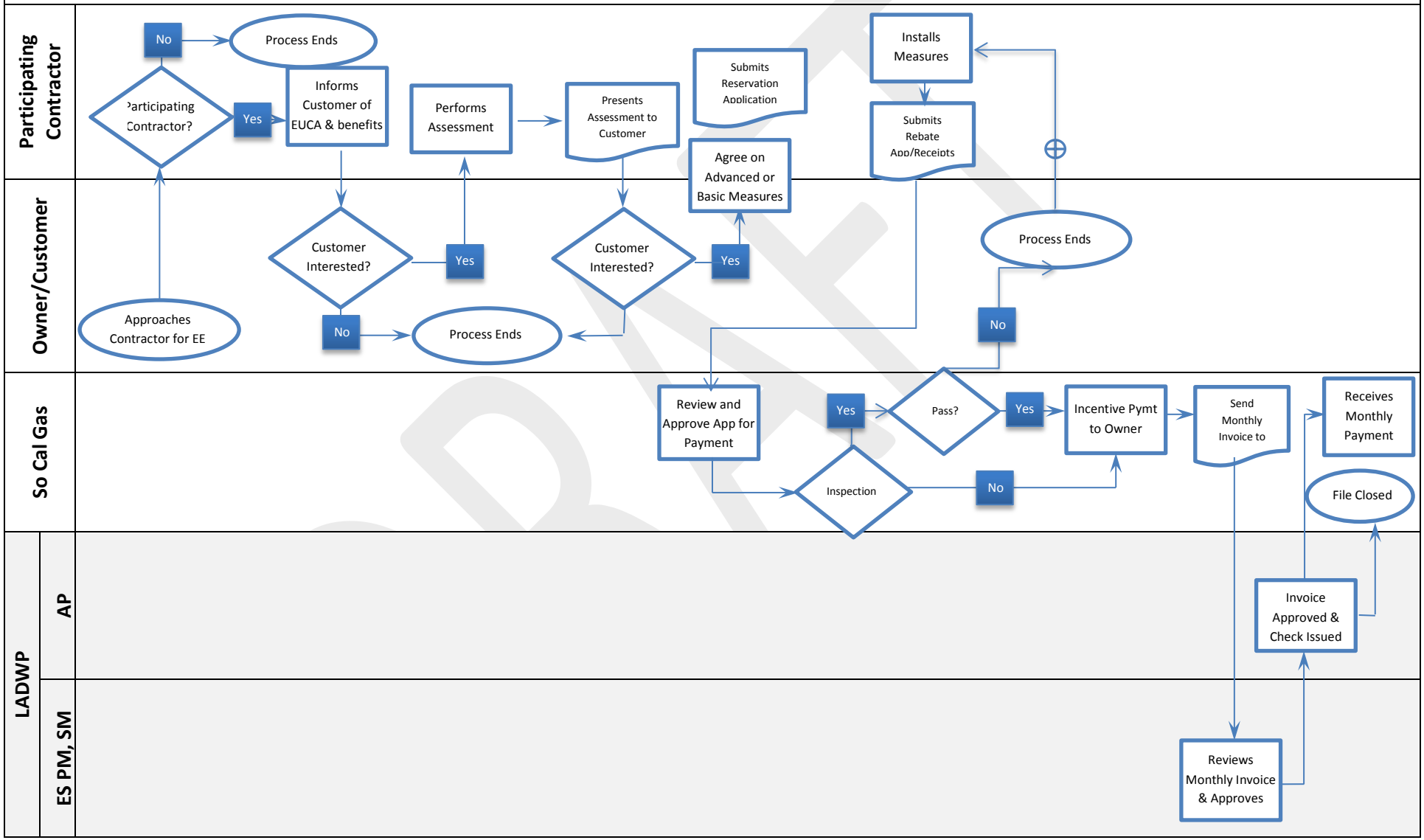
Long-Term Vision/Goals

The long-term goal of the HU EUC Program is to ensure that LADWP residential customers that are considering installation of energy efficiency measures are informed of HU EUC and the benefits of installing a more comprehensive suite of measures from a whole house approach, and ultimately convince them to participate. This vision utilizes naturally occurring market channels (participating & qualified vendors) to market HU EUC and gain acceptance in the residential marketplace.

Maximizing penetration of HU EUC in the LADWP service territory will result in increased energy efficiency savings, early adoption of new technologies and introduction of future codes.

2014/15 Los Angeles Department of Water and Power

Home Upgrade Energy Upgrade California (HU EUC) Program Process Flow



LADWP

City Plants (CP) Program Business Plan

FYs 2014/15 – 2019/20

Program Overview

The City Plants (CP) Program (formerly known as the Million Trees LA Initiative or MTLA) provides free shade trees for residents and property owners in Los Angeles to promote the planting of trees to improve the city's tree canopy, air quality, stormwater retention and importantly, building energy efficiency. This program is operated by the City Plants team in the city's Department of Public Works and supported by LADWP. Through this partnership, City Plants is able to provide free shade trees for residents and property owners along with information on where to plant the trees for maximum energy efficiency benefits. City Plants currently focuses on providing trees for residential customers but also provides trees to commercial customers and plants a smaller number of trees on residential parkways, commercial parkways, and other city property.

Fiscal Year	**FY 13-14 Actual**	**FY 14-15**	**FY 15-16**	**FY 16-17**	**FY 17-18**	**FY 18-19**	**FY 19-20**
Projected Program Budget* (x$1,000)							
Energy	$2,251	$2,251	$2,251	$2,251	$2,251	$2,251	$2,251
Projected Program Impact							
Energy							
MW	0.0	0.0	0.0	0.0	0.0	0.0	0.0
GWh	1.7	1.7	1.7	1.7	1.7	1.7	1.7
CO_2 Avoided	911	906	903	763	753	741	726

* Program Budget numbers for FY 2015/16 and later are estimates only and have not been approved by either the Board of Commissioners or the City Council.

Program Cost-Effectiveness

- TRC TBD
- PAC TBD
- $/kWh $0.43

The cost per kWh of the City Plants Program is calculated at $0.43 in 2014-15, but this amount will continue to decrease to $0.34 by 2020. As additional trees are planted in future years, the cost effectiveness of this program will continue to improve, and these calculations will be revisited during the current FY and may be included in future Program Business Plans. Tree planting also results in CO2 savings from indirect ambient temperature reductions (reduced need for air conditioning) and through sequestration of CO2 by the trees themselves.

Program Descriptors

Market Sector	Primarily residential with limited service to commercial, industrial and institutional (CII)
Program Status	Existing
Launch Date	City Plants (formerly MTLA) launched in 2006. Trees for a Green LA, LADWP's tree planting program, began in 2001/02 and merged with the city's MTLA (now City Plants) program in 2010/11
Measures Targeted	Planting of shade trees by residential customers Planting of shade trees by CII customers Planting of parkway trees by City Plants and community organizations
Engagement Channels	City Plants website Social media/advertisements City Plants Tree Planting Partners Empower LA and Neighborhood Councils Department of Public Works Bureau of Street Services, Urban Forestry Division LADWP Community Partnership Grantees EnvironmentLA.org LADWP website and programs
Target Customers	Residential CII
Qualifications	To qualify, an applicant must meet the following conditions: • Live or own property in Los Angeles • For parkway trees, commit to watering the tree for 3 years
# Customers	Potentially all customers Although the program primarily targets residential customers, it will provide trees to existing CII customers, including schools, as well.
Staffing Plan	The program is largely managed by City Plants with guidance from LADWP's Community Partnerships Group. The City Plants tree planting partners provide support by holding tree planting events, delivering trees and materials to customers, maintaining trees awaiting delivery, tracking and recording all tree deliveries and planting activities and calculating the resulting energy and greenhouse gas benefits. Tree planting partners include Los Angeles Conservation Corps (LACC) (lead partner), Fuego Tech Rangers, Hollywood/Los Angeles Beautification Team, Koreatown Youth and Community Center, Northeast Trees, and Tree

People. The program also provides employment and job training opportunities for City youth through these partners.

Program Description

LADWP and City Plants are working in partnership to promote and advance the planting of shade trees in the City of Los Angeles. Through this partnership, City Plants is able to provide free shade trees for residents and property owners in the City of Los Angeles, along with important information on where to plant those trees to maximize energy efficiency in their home or business. The program encourages the planting of California Friendly trees that are adapted to the region's semi-arid climate and use less water; native trees and drought tolerant trees that maximize sustainability are recommended.

City Plants is a cooperative effort between the City of Los Angeles, community groups, residents and businesses working together to plant and provide long-term stewardship of the city's tree canopy, with a focus on planting trees where they are needed most. City Plants is a hybrid organization under the Board of Public Works with a non-profit 501(c)3 foundation through Community Partners. City Plants is supported by donations and sponsorships with LADWP as the largest sponsor of tree-planting activities.

LADWP provides funding for City Plants and provides guidance on managing the program, enhancing its effectiveness and recommending modifications to maximize energy and water efficiency. Funding is provided through an MOU with the Board of Public Works, which includes a workplan and budget for tree planting activities. In December 2014, LADWP renewed its support of City Plants for a period of 24 months. Further support for the program will be considered as the term nears completion.

Through City Plants, City residents and property owners are eligible to request and receive up to seven shade trees to plant on their property. Property owners may also request trees to be planted in the parkway in front of their house or business with a commitment to water and care for the tree for three years until the root system is well established. Concrete cuts and/or a City permit may be required for parkway trees to be approved on a case-by-case basis by LADWP. Fruit trees are occasionally offered through Tree Adoption Events held at large retailers where residents learn about the planting and care of the tree. Fruit trees, in addition to some shading, canopy, and food benefits, also drive interest in the California-friendly shade trees, through their high visibility at Tree Adoption Events. City Plants also sponsors tree plantings for schools, parks and along busy streets, to be approved on a case-by-case basis. Trees must be maintained by the property owner.

The process for ordering and obtaining trees follows:

- The resident or property owner fills out an application form in person or online at the City Plants website (www.cityplants.org).
- City Plants verifies that the address is within the City of Los Angeles and sends the applicant a confirmation email with a list of available tree species and instructions for planting trees to maximize home cooling and energy savings.

- The applicant selects up to seven (7) trees from the list of available tree species. The applicant also responds to a survey about the property (age of building, existence of air conditioning, etc.), which assists in calculating the program's energy and environmental benefits.
- The applicant receives their trees along with stakes, ties, and fertilizer pellets in 4 to 6 weeks, delivered by LACC or another planting partner.
- The resident or property owner is responsible for planting the trees, except for parkway trees which may be eligible for concrete cuts and planting by City Plants or their planting partner.
- The process for commercial properties is similar, and property owners provide a simple planting plan with their tree request.

Recipients are instructed to plant the trees on the south or west side of the home or building where the trees provide shade during the hottest parts of the day, cooling the building and lessening the need for air conditioning. Less air conditioning use saves energy and money on the customer's electricity bill. Using less energy also helps reduce the need to generate energy, which helps combat climate change. Trees help mitigate the urban heat island effect and its detrimental energy and greenhouse gas emission consequences. Trees provide additional benefits in that they remove particulate matter and other air pollutants, help reduce greenhouse gases by CO2 sequestration and energy use reduction, and reduce storm water runoff through interception of rain by their crowns and roots. Trees also add beauty to the City's neighborhoods, which increases the sense of community pride, raises property values and makes business corridors more attractive to shoppers.

In addition, City Plants and its lead planting partner, LACC, record all trees distributed and planted in a program database. Incorporating the data collected, City Plants utilizes a tool developed by the US Forest Service to calculate energy savings and climate benefits from the trees planted. This carbon calculator estimates kWh saved from shading (and decreased use of air conditioning) on an annual basis over the expected life of the tree. The tool also calculates more general climate benefits from these trees, and presents them in kWh saved. LADWP is reporting the kWh savings based on shading in its monthly internal reporting, and annually in reports to the California Energy Commission. These calculations use the best available data on the age of housing, percentage of homes with air conditioning, and other relevant factors. In-person sampling of trees that have been planted through the LADWP and City Plants programs determines a tree mortality rate, which is applied to the forecasts of energy savings. Recent improvements to the data collected from residents and businesses requesting trees will allow for more accurate calculations of energy savings.

Program Objectives & Expected Outcome

The City Plants Program leverages external resources to provide shade trees for customers and educates them on how to plant the trees to reduce energy usage. The goal of City Plants is to improve Los Angeles' urban forest and to:

- Encourage customers to plant shade trees to reduce the energy used for air conditioning
- Improve the urban environment
- Reduce greenhouse gas emissions
- Beautify the city

- Raise awareness of the benefits of trees for energy efficiency
- Create green jobs and job training opportunities for City youth
- Reduce the urban heat island effect
- Improve air quality
- Decrease illness and deaths associated with extreme heat events
- Increase habitat for beneficial birds and insects.
- Increase satisfaction for all customer bases

City Plants proposes the distribution and planting of approximately 40,000 trees in the 2014/15 – 2015/16 work plan, with many of those targeted in low-canopy areas of the city. Annual calculations of energy savings and a sampling survey of existing trees planted through the program will also be required.

Program Strategy and Implementation

LADWP combined its tree planting program with the City Plants program to make one unified tree planting program for the City, reducing confusion and leveraging costs. The program is implemented by City Plants, housed in the Board of Public Works, with leadership and funding support from LADWP. City Plants partners with community groups that support job training and opportunities for City youth, including at-risk youth, to deliver trees and planting materials. The program also utilizes teams of volunteers to support large tree planting events. The goal is to plant trees in a strategic manner to improve the tree canopy, and provide shading and reduced energy use for cooling.

Program Barriers

The barriers to City Plants include:

- Commitment of the resident or property owner to plant and care for the trees
- Lack of understanding regarding the benefits of planting trees in appropriate locations.
- Difficulty in assuring appropriate planting of trees on private property, as city staff and planting partners may not plant on private property.

Integration and Transformation Opportunities

The City Plants Program provides a number of opportunities for integration with water conservation and stormwater management objectives. In addition to energy savings, planting trees can enhance and encourage California Friendly landscaping, and planting native trees along with other appropriate elements can further reduce irrigation water usage. Trees also enhance stormwater retention and infiltration, reducing stormwater runoff. Tree planting has the potential to transform barren neighborhoods and commercial districts into beautiful, friendly places to live and shop. Combined with efforts relating to cool roofs and cool pavements, planting trees can mitigate the significant urban heat island effect found in the City and help residents adapt to the impacts of climate change. City Plants provides educational opportunities on the value of tree planting, which leverage LADWP's energy efficiency retrofit and curriculum programs with LAUSD.

Long-Term Vision/Goals

The long-term vision of City Plants is to provide and plant trees across the city to increase the tree canopy cover of Los Angeles to 27% and reduce energy use through shading. It is anticipated that this program will continue to be supported by LADWP for many years to come. There are many opportunities to better cross-market the City Plants program and other LADWP core incentive programs, including the CA-Friendly Landscaping rebates, Home Energy Improvement Program and Small Business Direct Install Program. Staff is working toward exposing participants in these LADWP programs to the availability of shade trees and in turn, to introduce City Plants tree recipients to the many other LADWP incentive programs that can help customers reduce energy and water use. City Plants and LADWP staff are also working to reduce other barriers to residential and commercial tree planting, including by improving program materials and website information to more clearly explain the program and the energy-savings benefits of trees and by requiring tree recipients to provide access to the trees they receive and plant in future years, to allow the collection of data.

In the short term, improvements will be made to tree data management methods, and the new MOU provides for the implementation of pilot projects that may inform future tree planting activities.

LADWP

California Advanced Home Program (CAHP) Business Plan

FYs 2014/15 – 2019/20

Program Overview

The California Advanced Home Program (CAHP) is an incentive program that utilizes the statewide CAHP through its partner utility, Southern California Gas Company (SoCalGas), to incentivize cost-effective energy efficiency upgrades in residential new construction. CAHP targets high density residential new construction, including single and multi-family high rise buildings, as this is the area with the greatest new construction energy savings potential in LADWP's service territory.

Fiscal Year	**FY 13-14 Actual**	**FY 14-15**	**FY 15-16**	**FY 16-17**	**FY 17-18**	**FY 18-19**	**FY 19-20**
Projected Program Budget* (x$1,000)							
Energy	$240	$594	$817	$1,360	$1,710	$2,520	$3,104
Projected Program Impact							
Energy							
MW	0.0	0.4	0.4	0.8	1.1	1.5	2.0
GWh	0.0	1.4	2.0	3.3	4.1	6.1	7.5
CO_2 Avoided	0	766	1,049	1,476	1,831	2,654	3,202

* Program Budget numbers for FY 2015/16 and later are estimates only and have not been approved by either the Board of Commissioners or the City Council.

Program Cost-Effectiveness

- **TRC** 0.3
- **PAC** 0.3
- **$/kWh** $0.81

The generally accepted cost-effectiveness standard for energy efficiency in the industry is a TRC of 1.0 or above. Anything at or above that benchmark is considered to be cost-effective, as this indicates that the "benefit" gained is greater than or equal to the "cost" to capture savings in the program or measure. Reducing energy usage also results in avoided greenhouse gas emissions, reported here as metric tons of avoided carbon dioxide (CO_2) emissions. The CO2 avoided for energy savings is based on the current and projected CO2 emissions factors for LADWP's power portfolio.

California Advanced Home Program (CAHP) has a TRC of 0.3, which is typical for programs of this design that are intended to deliver customer benefits beyond the cost-effectiveness standards. This is also common for many residential measures and programs, due to codes and standards, transformation of market measures, energy savings per installation and various other factors occurring in the residential segment.

While CAHP is not cost-effective by traditional economic metrics on its own, it directly supports one or more of LADWP's Guiding Principles for its Energy Efficiency (EE) Portfolio, which is cost-effective overall, in compliance with California statutory requirements. (Please see the Executive Summary for more information on the Guiding Principles and the overall cost-effectiveness of LADWP's EE Portfolio, as well as the table identifying which Guiding Principles this Program specifically supports.)

CAHP is designed and intended to move the residential new-construction market closer to market transformation, with LADWP placing a particular emphasis on mid to high-rise single and multi-family buildings. This strategy allows LADWP to leverage a consistent California statewide program and the participation of large residential construction developers/owners to increase the efficiency of new homes, lowering LADWP customers' utility bills, reducing LADWP's energy procurement expense and moving California closer to transformation of the market and the statewide vision for ZNE.

Program Descriptors

Market Sector Residential New Construction

Program Status Existing

Launch Date FY 2012/13

Measures Targeted CAHP is intended to consider all residential new construction measures and products utilizing a Performance-Based Approach:

- ENERGY STAR® appliances
- High efficiency electric, natural gas and water products
- Sustainable design and construction
- Green building practices
- Solar PV and solar water heaters

Engagement Channels

- Architects & Engineers
- Associations (e.g. BOMA, California Building Collaborative)
- Home Builders / Developers / Owners
- Southern California Gas Company (Partnering with LADWP on CAHP)

Target Customers Residential New Construction Customers

- Low-Rise, Single or Multi-Family, including custom homes
- Mid-Rise, Single or Multi-Family
- High-Rise, Single or Multi-Family

CAHP targets the primary decision-makers in residential new construction and projects (large custom homes, mid to high-rise single or multi-family homes), including building owners, developers, architects, engineers, designers, contractors, builders, and energy consultants, to implement this program in the LADWP service territory.

Qualifications To qualify, an applicant must meet the following conditions:

- Must be a new construction project/home receiving electric distribution from LADWP
- Must be submitted prior to drywall being installed in the enrolled units
- Single-family detached dwelling or two dwelling building of any number of stories, or
- Mid-rise multi-family dwelling of 1-3 stories, or
- High-rise residential multi-family building, Occupancy Group R, division 1 with four or more habitable stories.
- Built to exceed Title 24 standards by a minimum of 15% for the applicable CEC specified climate zone.
- Incentive payments are available only to owners, builders or developers named on the Agreement.

Ineligible projects include remodels, additions, mobile homes, residential care facilities, hotels, motels and dormitories.

 # Customers Census housing starts

Staffing Plan The staff is comprised of the Efficiency Solutions Program Management Group. This group is utilized for the tracking of CAHP, its savings and budget/payments to LADWP's partner, SoCalGas, as well as participating in statewide program meetings. SoCalGas takes the lead to administer CAHP, in partnership and with oversight from LADWP. As LADWP is partnering and leveraging SoCalGas to deliver this statewide program, staffing requirements are forecasted to remain minimal at this time and into the foreseeable future.

Program Description

CAHP is California's residential new construction energy efficiency program, administered statewide and funded by investor owned utility (IOU) customers through the Public Purpose Programs surcharge applied to gas and electric services. This statewide approach offers the residential building industry a uniform, multi-faceted program designed to consistently serve the needs of the building community throughout California. CAHP encourages energy-efficient building design and construction practices, promoting the efficient use of energy by offering up-front design assistance supported by financial incentives based on project performance. LADWP is partnering with SoCalGas to offer this program within the LADWP service territory.

CAHP is a comprehensive residential new construction concept with a crosscutting focus on sustainable design and construction, green building practices, energy efficiency, and emerging technologies. Through a combination of education, design assistance and financial support, CAHP works with building and related industries to exceed compliance with the California Code of Regulations, Title 24, Part 6, 2013 Building Energy

Efficiency Standards for residential and non-residential Buildings (Standards), to prepare builders for changes to the Standards and to create future pathways beyond compliance and traditional energy savings objectives. California has directed the Investor Owned Utilities (IOUs) to encourage residential new construction to achieve a goal of ZNE in all new homes by 2020. Such an aggressive target requires deep, comprehensive energy savings in residential new construction. CAHP continues the transformation process of California's residential new construction markets consistent with the vision of the California Long Term Energy Efficiency Strategic Plan (Strategic Plan) and toward a more sustainable energy-efficient future. The CAHP:

- Encourages home builders of all production volumes in California to construct homes that exceed California's Title 24 energy-efficiency standards by at least 15%
- Contributes toward the state goal of reaching ZNE performance for all new single and multi-family homes by 2020
- Facilitates plug-load decline through technological innovation spurred by market transformation and customer demand for energy-efficient products

The CAHP is designed for the performance-based approach for compliance. Compliance with the 2013 Title 24 Standards must be demonstrated through the performance method utilizing approved California Energy Commission (CEC) compliance software. Compliance must be demonstrated for each building as a whole and may not group unrelated or detached buildings together. In addition, several non-incentive customer services are offered, including technical support to energy analysts and design teams, economic modeling, measure-selection support, marketing support, and integrated demand-side management (DSM) to maximize residential energy reductions.

The incentive payment is based on the final 2013 Title 24 reports created and signed by a Certified Energy Plans Examiner (CEPE) and verified by a third-party HERS Rater.

Program Objectives & Expected Outcome

LADWP's CAHP utilizes the statewide CAHP Program and the services of its partner utility, SoCalGas, to incentivize cost-effective energy efficiency upgrades in residential new construction. By participating in the statewide CAHP Program, LADWP breaks down barriers, increases awareness and acceptance, and moves the new housing market to higher efficiency. By partnering with SoCalGas, LADWP improves cost-effectiveness and offers deeper integration opportunities, including electric, water and natural gas measures and practices. LADWP's CAHP targets high-density residential new construction, including single and multi-family high-rise buildings, as this is the area with the greatest new construction energy savings potential in LADWP's service territory.

Additional Program objectives begin with creating a greater awareness of sustainable design, the latest technologies and design practices, and green building practices. With this increased awareness by the engineering and architect designers and participants, CAHP adds incentives for architects and designers to ensure that they are encouraged to take any incremental steps necessary that might otherwise go

uncompensated, which might otherwise discourage them from educating customers and promoting CAHP and its benefits. Ultimately, the objective of CAHP is to transform the residential new construction market.
In summary, these goals include, but are not necessarily limited to:

Performance-based approach
Transformations towards higher efficiency
Technologies and design practices – Greater awareness
Sustainable design
Green Building Practices

Program Strategy and Implementation

CAHP targets the primary decision-makers in residential new construction projects, including production homebuilders, developers, architects, engineers, designers, contractors, and energy consultants. The strategy for CAHP is to reach out to these key stakeholders to increase awareness of the Program, its benefits (energy savings, cost savings, environment, etc.), its incentives (financial, technical assistance, etc.) to the customer and key stakeholders, educate and ultimately incentivize these customers to increase the efficiency of future projects, facilitating the adoption of integrated design practices in these new construction projects.
LADWP launched CAHP in FY 2012/13, in partnership with SoCalGas. This results in increased integration of electric, natural gas and water efficiency measures. This also increases the cost-effectiveness of the program, by leveraging the administration of the program by one utility, which would otherwise be two utilities administering CAHP to the same customer.

LADWP will continue to remain engaged in future statewide discussions and developments regarding CAHP. As incremental changes are discussed or new models are considered, LADWP will participate, represent the best interests of its customers and make changes as appropriate to remain consistent with the statewide Program and maximize energy efficiency results.
Implementation targets residential owners, developers, design teams and other stakeholders to identify projects, and reach out to applicable residential new construction projects to assist with design in the early stages to facilitate the adoption of integrated design practices. Ultimately, this results in increased awareness, increased buy-in and participation from all stakeholders.
CAHP has been in existence since 2010 and became a part of the LADWP energy efficiency portfolio in FY 2012/13.

Program Barriers

Although multiple barriers exist, LADWP intends to work with SoCalGas to proactively break down these barriers and rapidly increase traction in this space. These barriers include:

- Participant knowledge
- Need for early project involvement by the utility
- Design Team Buy-In

- Architects, Engineers, Developer/Home Builder skepticism and lack of focus on efficiency
- Customer confusion

Integration and Transformation Opportunities

CAHP, as a statewide program, gives California a real opportunity to transform the residential new construction market, as it is a program that informs and incentivizes various stakeholders and is a consistent message throughout most of California. This approach assists LADWP and other California IOUs/POUs to facilitate the adoption of integrated design practices. This is made possible with a collaborative, iterative up-front design process where envelope and systems can be optimized, partnering with the building owners, developers, architects, engineers, designers, contractors, builders, energy consultants and other key stakeholders.

This combination of education, design assistance and incentives assists the California utilities in further introducing and normalizing integrated design practices, which speeds the introduction of additional and incremental Title 24 standards, further moving the California residential new construction market that much closer to the transformational goal of ZNE.

Long-Term Vision/Goals

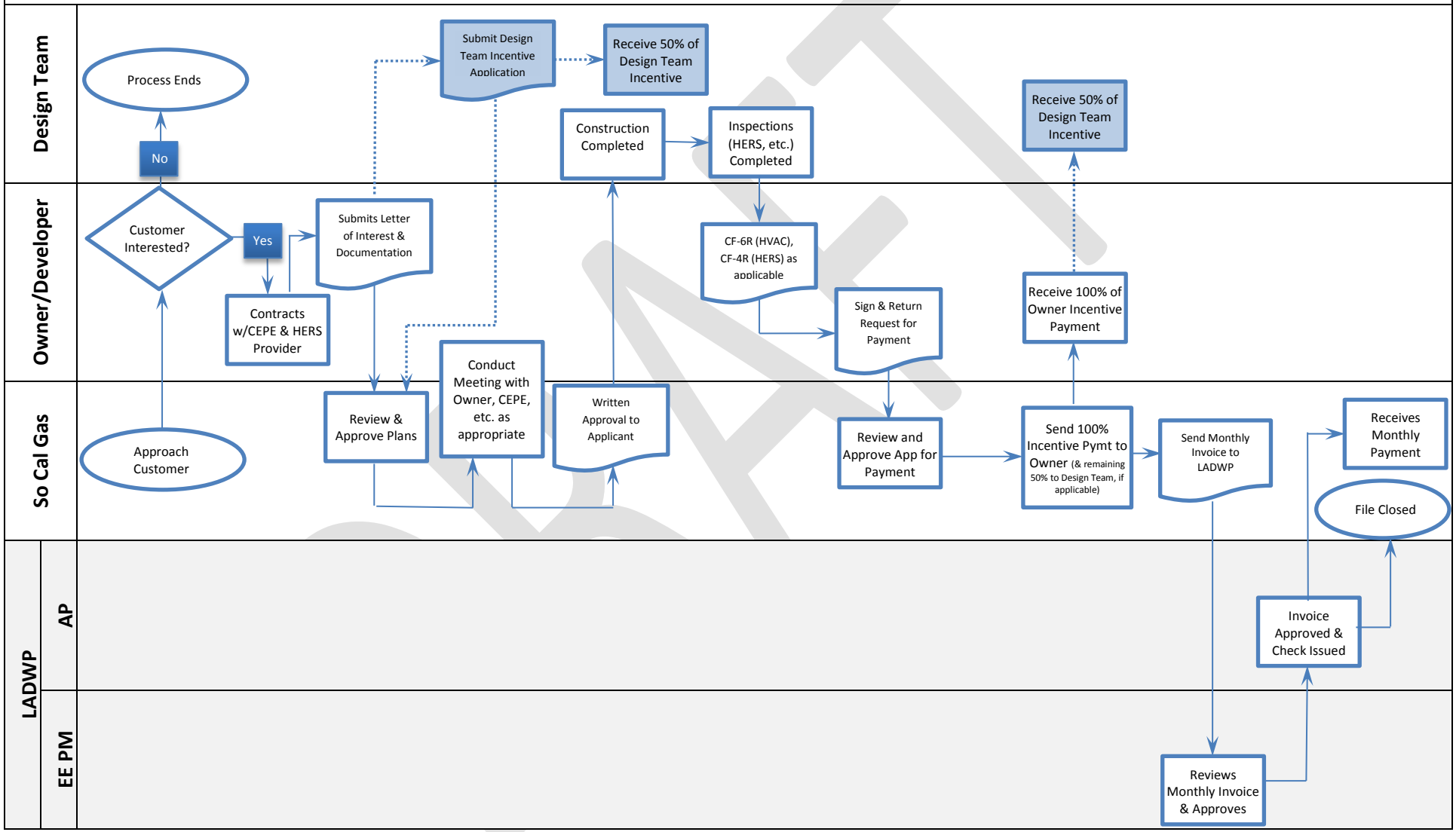
The CAHP vision includes encouraging single and multi-family builders of all production volumes to construct homes that exceed California's Title 24 energy efficiency standards by a minimum of 15%. This goal will be achieved through a combination of incentives, technical education, design assistance and verification. CAHP targets interim goals of:

- 50 percent of residential new construction to be 15% better than the 2013 Title 24 Standards; and
- 10 percent of residential new construction to be 29.9% better than the 2013 Title 24 Standards

Maximizing penetration of CAHP in the LADWP service territory will result in "beyond code" new construction performance, early adoption and introduction of future codes and achieving the ultimate goal of 100 percent of residential new construction to ZNE by 2020, per the California Long Term Energy Efficiency Strategic Plan.

FY 2014/15 Los Angeles Department of Water and Power

California Advanced Home Program (CAHP) Process Flow



LADWP

Commercial Lighting Incentive Program (CLIP) Business Plan

FYs 2014/15 – 2019/20

Program Overview

The Commercial Lighting Incentive Program (CLIP) offers incentives to help make a wide variety of high-performance lamps and lighting fixtures cost-effective, and targets any size business that still utilizes standard fixtures. CLIP is designed to be consistent with California's statewide lighting programs, leveraging established contractor networks to offer non-residential customers a full suite of lighting products and services to improve the energy efficiency in their businesses by upgrading/retrofitting core lighting systems. This newly designed commercial lighting program replaces the Commercial Lighting Efficiency Offering (CLEO) Program.

Fiscal Year	FY 13-14 Actual	FY 14-15	FY 15-16	FY 16-17	FY 17-18	FY 18-19	FY 19-20
Projected Program Budget* (x$1,000)							
Energy	$8,752	$7,011	$11,436	$14,122	$20,338	$17,624	$18,021
Projected Program Impact							
Energy							
MW	7.9	6.6	8.5	11.7	14.7	11.7	11.8
GWh	38.0	33.6	42.8	59.1	74.2	59.2	59.8
CO_2 Avoided	20,358	17,931	22,747	26,530	32,877	25,827	25,525

* Program Budget numbers for FY 2015/16 and later are estimates only and have not been approved by either the Board of Commissioners or the City Council.

Program Cost-Effectiveness

- **TRC** 2.8
- **PAC** 3.4
- **$/kWh** $0.04

The generally accepted cost-effectiveness standard for energy efficiency in the industry is a TRC of 1.0 or above. Anything at or above that benchmark is considered to be cost-effective, as this indicates that the "benefit" gained is greater than or equal to the "cost" to capture savings in the program or measure. Reducing energy usage also results in avoided greenhouse gas emissions, reported here as metric tons of avoided carbon dioxide (CO_2) emissions. The CO_2 avoided for energy savings is based on the current and projected CO_2 emissions factors for LADWP's power portfolio.

With a TRC of 2.8, commercial lighting programs are among the most cost-effective offerings in the LADWP energy efficiency portfolio, as well as one of the most popular offerings among contractors and customers. As such, the newly designed CLIP is intended to touch as many LADWP customers as practical, maximizing the cost-effective energy savings accruing to LADWP.

Program Descriptors

Market Sector Commercial, Industrial, and Institutional

Program Status New – Replaces the CLEO Program

Launch Date FY 2014/15

Measures Targeted Lighting

- LED Lamps and Fixtures
- High Output/High Wattage Compact Fluorescent (CFL)
- Interior Linear Fluorescent Re-lamping
- Linear Fluorescent T12 to high performance/reduced wattage T8
- High Bay Fixtures
- New Interior or Exterior Induction Lamps and Fixtures
- Ceramic Metal Halide (CMH)
- Light Emitting Diode (LED) Exit Signs New Fixtures
- Bi-Level Stairwell/Hall/Garage Fixtures

Controls

- Occupancy Sensors
- Daylight Controls

Engagement Channels Lighting contractors
Lighting manufacturers
Account Management Unit
Website

As designed, CLIP has several effective channels to deliver this Program and its benefits, and is primarily contractor driven. These benefits include energy savings, additional control of energy expenditures and enhanced customer experience. As commercial lighting programs have been so successful historically, additional channels are unnecessary at this time.

Target Customers **Non- Residential**

- Commercial
- Industrial
- Institutional
- Multi-family common areas

Other non-residential customers that desire to upgrade to qualifying lighting measures.

Qualifications Qualification guidelines for CLIP include:

- Must be a LADWP non-residential electric customer in good standing
- Qualifying equipment must have received LADWP approval prior to purchase, installation, and operation
- Rebates are reserved on a first-come, first served basis until funds are exhausted
- Projects not completed within 120 days of LADWP pre-approval may be cancelled and reserved rebates returned to the program fund

 # Customers Approximately 220,000

Staffing Plan The staff is comprised of employees from the Efficiency Solutions Commercial, Industrial and Institutional (CI&I) Group and the Field Support Group. The CI&I Group manages the application processing, payments, and the program tracking and administration.

The Field Support Group conducts field verification of equipment installed at customer sites, including pre-installation inspections and post-installation inspections.

LADWP's Board of Commissioners has approved very aggressive energy savings targets for fiscal year 2019/20, an increase of 50 percent over prior goals. The Efficiency Solutions section will modify existing programs and develop new programs to achieve these higher savings levels. Efficiency Solutions will continue to monitor staffing levels to ensure they do not become a barrier to program success.

Program Description

While the CLEO program was very successful for many years, it was a menu-based program, and therefore, offered incentives for only a limited selection of lighting measures. CLIP uses a calculated savings approach, similar to "custom" programs, allowing customers to replace their lighting with a wider variety of more efficient systems. This not only gives customers greater flexibility in lighting design, but also offers the potential for greater energy savings. CLIP also offers customers an innovative approach to finding qualified light-emitting diode (LED) products that qualify for incentives. Customers may now search the Department of Energy's Lighting Facts database for products that match their lighting needs and meet CLIP requirements.

CLIP is designed to be consistent with California's statewide lighting programs, offering non-residential customers a full suite of lighting products and services to improve the energy efficiency in their businesses by upgrading/retrofitting core lighting systems. By having program parameters that are consistent and similar, it enhances the level of participation and enhances the customer experience for those larger customers that participate across utility service territories.

Additionally, CLIP is designed to help commercial customers reduce electricity bills and the cost of new lighting equipment when retrofitting existing fixtures (or adding additional lighting) with state-of-the-art, energy-efficient lighting technologies. This program and its rebates help make a wide variety of the latest energy saving measures extremely cost-effective to install.

Lighting programs have historically been among the most popular, robust commercial rebate programs in the LADWP portfolio. LADWP's incentives paid through the earlier CLEO program averaged $8 million per year. In the last 5 years, CLEO paid out approximately $40 million in rebates, which helps strengthen the economy in the Greater Los Angeles Area, as well as California.

CLIP offers rebates for a wide variety of high-performance lamps and lighting fixtures and is great for any size business that utilizes standard fixtures. Additionally, it is a great investment for these businesses, with short payback periods of 24 months or less.

Program Objectives & Expected Outcome

LADWP plans to utilize CLIP to contribute to the mandate set forth in AB 2021 to achieve all cost-effective energy efficiency in California by 2020. As this is one of the most cost-effective programs in the LADWP portfolio and so popular with its customers, incentivizing as many lighting retrofits as practical in the CLIP Program will continue to strengthen LADWP's compliance with AB 2021 and as a leading POU in energy efficiency.

CLIP objectives include:

- Seek out and install comprehensive lighting solutions that improve the energy performance in the buildings of participating non-residential customers
- Achieve program energy savings via bundled lighting measure installations
- Make program services available to small business customers in all Council Districts
- Enhance the customer experience with LADWP
- Assist non-residential customers to reduce their energy costs, resulting in reduced operating costs to the end-use customer
- Market transformation

CLIP is among the most cost-effective offerings in the LADWP energy efficiency portfolio. LADWP, its customers and the environment will benefit from the additional qualifying projects likely to receive incentives through CLIP, including, but not limited to expansion of LED technologies, as they improve in quality and become cheaper and more cost-effective.

The expected outcome is to increase the efficiency of lighting in non-residential buildings to the "next" level of lighting technology and reach every willing LADWP customer, over time, to ensure that the customer has the best quality light available (as appropriate), has additional control over energy consumption and corresponding payments for such consumption and that the demand on the LADWP system is minimized, which will also minimize the GHG emissions into the environment. As non-residential customers often utilize lights during the day and lighting can account for 30% of a building's energy use, these efforts will also assist LADWP in reducing its peak demand as well.

Program Strategy and Implementation

CLIP is a new program, launched October 1, 2014, designed to leverage the previous lighting program successes while offering greater flexibility to lighting projects. This new design is intended to make CLIP as user friendly as possible, streamlining the application and administration process, leveraging participating contractors and the Trade Ally Program, to the degree possible and to capture the maximum energy savings and enhance the customer experience.

The Trade Ally concept continues to be an integral piece of the CLIP strategy, as it is designed to encourage contractors to have a much greater stake in the process, which assists the contractors in receiving the incentive funds much sooner, reduce the number of pre and post inspections required, and enhance the customer experience.

As designed, the Trade Ally Program makes a distinction between contractors giving accurate information and building a relationship of trust with LADWP, and contractors who employ substandard practices. Trade Ally contractors, in good standing, will have a lower percentage of rebate applications that will require a random inspection, which will result in fewer audits by LADWP, faster turn-around time and enhanced customer experience, as well as enhanced contractor experience.

Additional benefits or incentive to the contractors to participate in the Trade Ally program include:

- Participants in the CLIP Trade Ally program appear on LADWP's on-line Trade Ally list, offering contractors increased program marketing potential.
- LADWP only accepts customer assignment of incentive payments to Trade Ally contractors, giving these contractors an opportunity to offer customers reduced out-of-pocket project costs.

This strategy includes qualifying as many contractors for Trade Ally status as possible. However, those Trade Ally contractors that have 2 or more failed inspections in 6 consecutive months lose Trade Ally status and/or have the percentage of audits increased to an appropriate level to ensure that all completed projects are safe and that the rebate application accurately reflects the type and number of measures installed.

As a result of the newly designed CLIP Program, development of the Trade Ally partnership and the popularity of the program by contractors and customers, LADWP hopes to encourage additional transformation of the market, increased codes and standards and additional research and development by manufacturers into new lighting technologies.

Implementation of CLIP was launched in the 2nd quarter of the 2014/15 fiscal year. The success of the launch and design of the program depend on leveraging the successful components and participants of the previous program, including:

- **Customer** – Customer adoption of the previous CLEO program was tremendous, so much so that LADWP's efforts could not keep up with the demand at times. LADWP is confident that the current

design and rebate levels will be sufficient to continue a strong relationship with the LADWP customers, as it relates to the CLIP Program.

- **Trade Ally** –The trade ally program concept has been well received by key stakeholders and market actors. As such, LADWP has retained this concept to set the foundation to continue building an ever increasingly successful and popular program.
- **LADWP CI&I Group**– In the previous CLEO program, this was one of the areas where the application process hit a "bottle neck". This was due to a variety of issues which LADWP has taken steps to mitigate. These steps include the incremental addition of staff, an enhanced application process, development of the Trade Ally Program and updated lighting measures. LADWP continues to be committed to remedying these issues and believes the changes to CLIP will mitigate this issue. In the event that it does not, LADWP is prepared to authorize additional full-time employees (FTEs) here to capitalize on the customer experience and cost-effective energy savings potential this program has to offer.

Program Barriers

The two primary barriers to CLIP participation and success have been around processing time and/or staffing, and compliance with ever-tightening building code requirements.

LADWP has proactively taken steps to mitigate the longer processing times, including development of the Trade Ally Program and authorizing additional staffing to manage the Program. The Trade Ally Program is designed and intended to incentivize the participating contractors to submit accurate rebate applications, which significantly reduces the manual steps that LADWP staff need to be involved in. Additionally, LADWP has authorized the addition of several FTEs to assist with the CLIP Program. At this time, LADWP is confident that these steps will be sufficient to ensure a well-received and successful Program. In the event that these efforts remain insufficient, additional analysis will be completed and recommendations will be made.

New building codes, while beneficial in achieving greater energy savings in new construction projects, have had the unintended consequence of slowing the rate of energy saving projects in existing buildings. Utility programs typically provide incentives for savings that exceed code requirements, but as these requirements have become more stringent, customers receive reduced payments. Unlike other utilities in California, LADWP has taken an innovative approach with CLIP to incentivize customers to meet or exceed code, with savings calculated from the existing conditions. This program helps customers to install energy efficient equipment in existing buildings, which will help to achieve California's energy savings goals and move the market toward compliance with building codes.

Integration and Transformation Opportunities

Non-residential integration opportunities are very common, including water, natural gas and additional electric energy efficiency measures. Where opportunities exist, contractors may be able to leverage other LADWP programs and incentives such as CPP, EETAP, and Food Service Program. This area is an opportunity that LADWP is focused on and will continue to refine options.

As a result of the newly designed CLIP Program, the Trade Ally partnership, and the popularity of the program by contractors and customers, LADWP hopes to encourage additional transformation of the lighting market, increased codes and standards, and additional research and development by manufacturers into new lighting technologies. CLIP's new focus on LED technology is expected to accelerate the market penetration of this highly energy efficient light source.

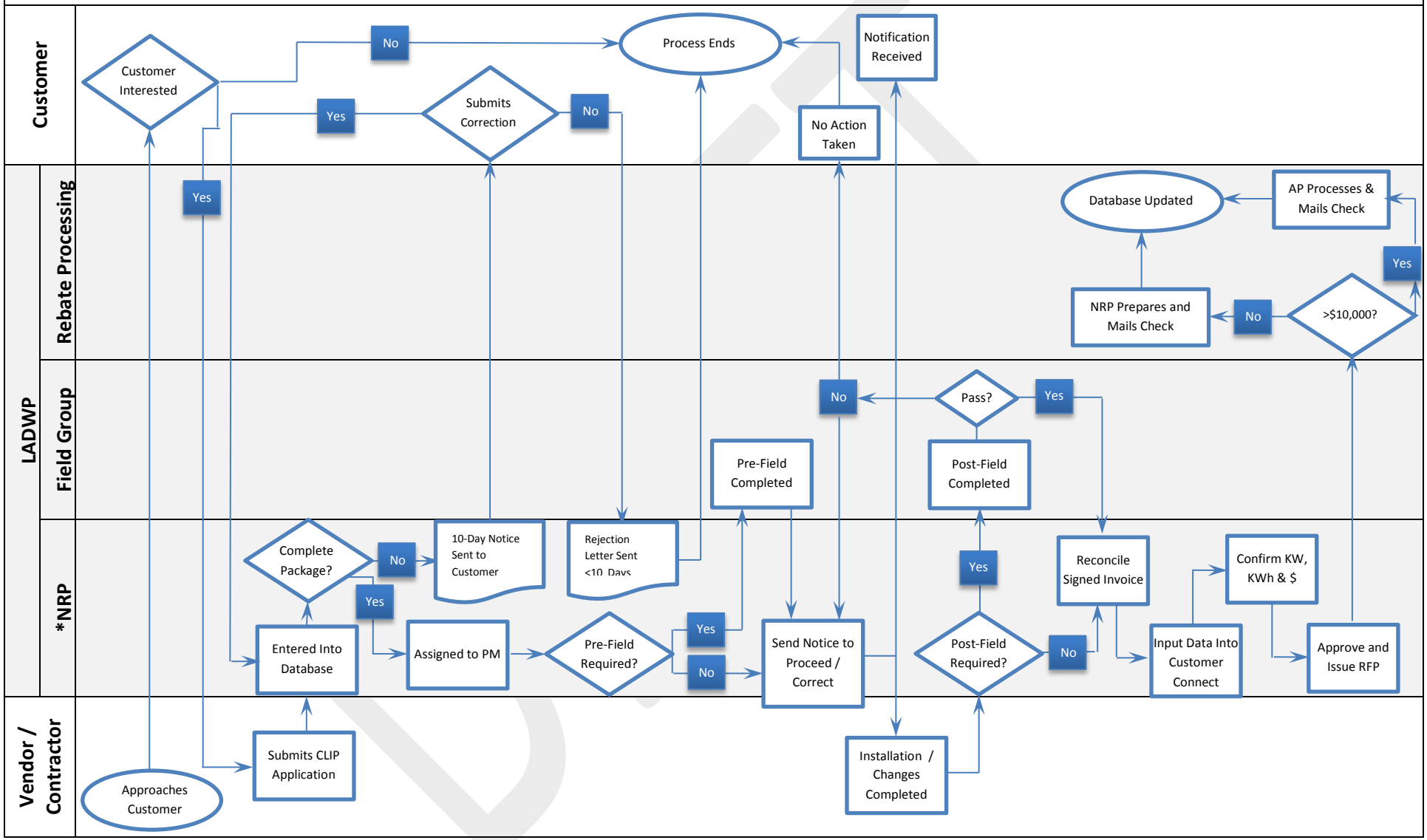
Long-Term Vision/Goals

CLIP is intended to reach every non-residential LADWP customer that has outdated lighting and/or has not been served by another LADWP program with similar measures. As this is the most cost-effective program of similar lighting programs, it is in LADWP's and its customers' interest to make CLIP the preferred lighting option. Where that is not practical, other programs are capable of ensuring that every segment of the LADWP non-residential customer base is served, over time.

The expected outcome is to reach every willing LADWP customer, over time, to ensure that the customer has the best quality light available (as appropriate), has additional control over energy consumption and corresponding payments for such consumption and that the demand on the LADWP system is minimized, which will also minimize the GHG emissions into the environment. As non-residential customers often utilize lights during the day, these efforts will also assist LADWP in reducing its peak demand as well.

2014/15 Los Angeles Department of Water and Power

Commercial Lighting Incentive Program (CLIP) Process Flow



LADWP

Food Service Program Business Plan

FYs 2014/15 – 2019/20

Program Overview

The LADWP is currently modifying its long-running Commercial Refrigeration program to align with the food service incentive programs operated statewide by the investor-owned utilities. The program has been renamed "Food Service" to reflect the addition of food preparation appliances to the menu of incentivized products, beyond the existing refrigeration equipment rebates. The Food Service Program offers incentives to encourage retrofit measures and technologies to reduce energy consumption in supermarkets, liquor stores, convenience stores, restaurants, hospitals, schools, and other businesses with food preparation or refrigeration equipment. Rebates are offered for commercial food appliances such as refrigerated cases, ice machines, reach-in freezers/refrigerators, commercial ovens, electric steamers and other refrigeration and cooking equipment.

Fiscal Year	**FY 13-14 Actual**	**FY 14-15**	**FY 15-16**	**FY 16-17**	**FY 17-18**	**FY 18-19**	**FY 19-20**
Projected Program Budget* (x$1,000)							
Energy	$139	$3,433	$2,136	$3,139	$3,819	$3,463	$3,518
Projected Program Impact							
Energy							
MW	0.1	1.4	1.7	2.5	3.1	3.4	3.4
GWh	1.0	10.3	11.8	17.8	22.3	23.9	23.9
CO_2 Avoided	557	5,466	6,271	8,003	9,894	10,399	10,194

* Program Budget numbers for FY 2015/16 and later are estimates only and have not been approved by either the Board of Commissioners or the City Council.

Program Cost-Effectiveness

- **TRC** 1.0
- **PAC** 1.5
- **$/kWh** $0.06

The generally accepted cost-effectiveness standard for energy efficiency in the industry is a TRC of 1.0 or above. Anything at or above that benchmark is considered to be cost-effective, as this indicates that the "benefit" gained is greater than or equal to the "cost" to capture savings in the program or measure. Reducing energy usage also results in avoided greenhouse gas emissions, reported here as metric tons of avoided carbon dioxide (CO_2) emissions. The CO_2 avoided for energy savings is based on the current and projected CO_2 emissions factors for LADWP's power portfolio.

With a TRC of 1.0, the Food Service Program is considered a cost-effective program in the LADWP energy efficiency portfolio. LADWP, its customers and the environment could benefit from additional marketing and finding additional qualifying projects to incentivize in future years.

Program Descriptors

Market Sector	Commercial
Program Status	Existing expanded
Launch Date	Continuing
Measures	Commercial ice machines Night covers Strip curtains Reach-in refrigeration display case Auto-closer for main cooler or freezer doors Anti-sweat heat (ASH) controls Insulation for bare suction lines Vending machine controller Efficient evaporator fan motors and controls Commercial ovens Food steamers Holding Cabinets
Engagement Channels	Account Managers (for Premier Accounts) Contractors Vendors Distributors Manufacturers

As this is an expanded version of an existing program and has industry awareness, with most California utilities offering the same or similar programs, there is not a great need for seeking out additional channels to market and/or deliver this program. The naturally occurring channels in this segment are the contractors and the manufacturers. Their existence in this space and motivation to sell their product, allows LADWP to leverage these channels to deliver the program measures. Most of the larger customers (e.g. Kroger, Safeway, etc.) are aware of such programs, as LADWP makes qualified personnel (Account Managers) available, as needed, to consult with these larger, end-use customers on the details and specifications of the program.

Additional future opportunities to enhance energy savings in this program could potentially be achieved with additional emphasis on the smaller grocery stores, liquor stores, restaurants and other smaller type retailers, leveraging the contractors that are already working in this space. However, this is a difficult

segment of the market to gain traction with, unless the energy savings measures are delivered at no or low-cost, as these smaller customers are typically struggling just to survive. LADWP is investigating opportunities for cooperative programs with the Southern California Gas Company (SoCalGas).

Target Customers

Commercial Customers

Grocery Stores
Convenience Stores
Liquor Stores
Restaurants

Institutional Customers

Hospitals
Schools

Qualifications

To qualify, an applicant must meet the following conditions:

- Must be a LADWP non-residential electric customer in good standing
- Qualifying equipment must be purchased, installed, and operational on or after July 1, 2011
- Rebates will be reserved on a first-come, first served basis until funds are exhausted
- Must be completed within 120 days of LADWP pre-approval

 # Customers

The Food Service Program is available to LADWP customers, as appropriate, that have existing refrigeration systems and food service equipment or are installing refrigeration systems or food service equipment as a part of their facilities/business.

Staffing Plan

The Efficiency Solutions Program Management Group manages the intake portion of the program and the program tracking and administration. The Field Support Group conducts field verification of equipment installed at customer sites.

Program Description

The Food Service Program encourages retrofit measures and technologies to reduce energy in supermarkets, convenience stores, restaurants, etc. This is accomplished by providing financial incentives for commercial food preparation appliances and refrigeration equipment, as well as other equipment.

The Food Service Program is a program designed to assist grocery stores (small to large), liquor stores, convenience stores, restaurants, and other commercial customer with refrigeration and food service equipment. This program offers rebates for ice machines, reach in freezers/refrigerators, display cases, commercial ovens, etc. The Food Service Program is designed to be utilized by major vendors and manufacturers to promote the highest efficiency refrigeration and food service equipment for retrofit projects.

Program Objectives & Expected Outcome

The Food Service Program allows LADWP to add to its diverse program offerings reaching out to all customer segments. The objectives of this program include:

- Upgrade the energy efficiency of refrigeration and food service equipment throughout the LADWP service territory
- Reduce energy consumption for LADWP customers, increasing their profit margins and reducing greenhouse gas emissions
- Contribute to full compliance with AB 2021
- Provide program offerings to all customer classes and segments

Program Strategy and Implementation

The LADWP has several cooperative programs with the Southern California Gas Company (SCG), and is investigating the coordination of food service programs. Leveraging a relationship with SCE, along with aligning LADWP's food service program offerings and incentive levels with the statewide programs operated by the investor-owned utilities, will likely increase customer participation in the program.

The strategy in the Food Service Program is to leverage the market participants (vendors, manufacturers, etc.) to promote the program to the qualifying LADWP customer base. This is a very strategic and cost-effective delivery channel that is employed by other LADWP efficiency programs.

The current strategy is to ensure that customers are aware of the available capital, rebates and immediate payback periods for incremental expenditures and utilize this message to capitalize on the market conditions and integrate other programs that these customers might benefit from. These types of activities could include additional targeted marketing, promotions at trade shows to market products and to gain education of latest technologies. Additionally, LADWP could increase its presence with manufacturers, leverage relationships and seek out additional opportunities that benefit LADWP, its customers and the manufacturers.

LADWP's Food Service Program is an on-going, existing program. However, as technology improves, there will be opportunities to evolve the program further. LADWP will continue to participate in codes and standards discussions, and evaluate new measure opportunities for the Food Service Program.

The refrigeration component of the Food Service Program is in a stable and mature phase with a consistent flow of approximately 100 applications per year. While many of the larger customers (e.g. Kroger, Safeway, etc.) are aware of such programs, other potential market participants are much less sophisticated and need program details from vendors, etc. to take advantage of applicable rebates.

Program Barriers

The barriers to the Food Service Program include:

- Initial capital expense

- Small businesses often lack needed cash flow/profitability
- Limited customer understanding of refrigeration and food service equipment energy use

Integration and Transformation Opportunities

Commercial customers that are participating in the Food Service Program typically have opportunities for integration, including additional electric, natural gas and water efficiency opportunities. These integration opportunities could be marketed to the customer during pre or post-inspections, especially the easy to install and highly cost-effective measures, such as lighting, etc.
Transformational opportunities will continue to be explored by benchmarking other measures and other programs that are offered by other utilities and by integrating the products, services and programs that are currently offered to LADWP customers. Although this is a mature program, opportunities for transformation may include expansion of LEDs in refrigeration cases and other similar measures in the near term future.

Long-Term Vision/Goals

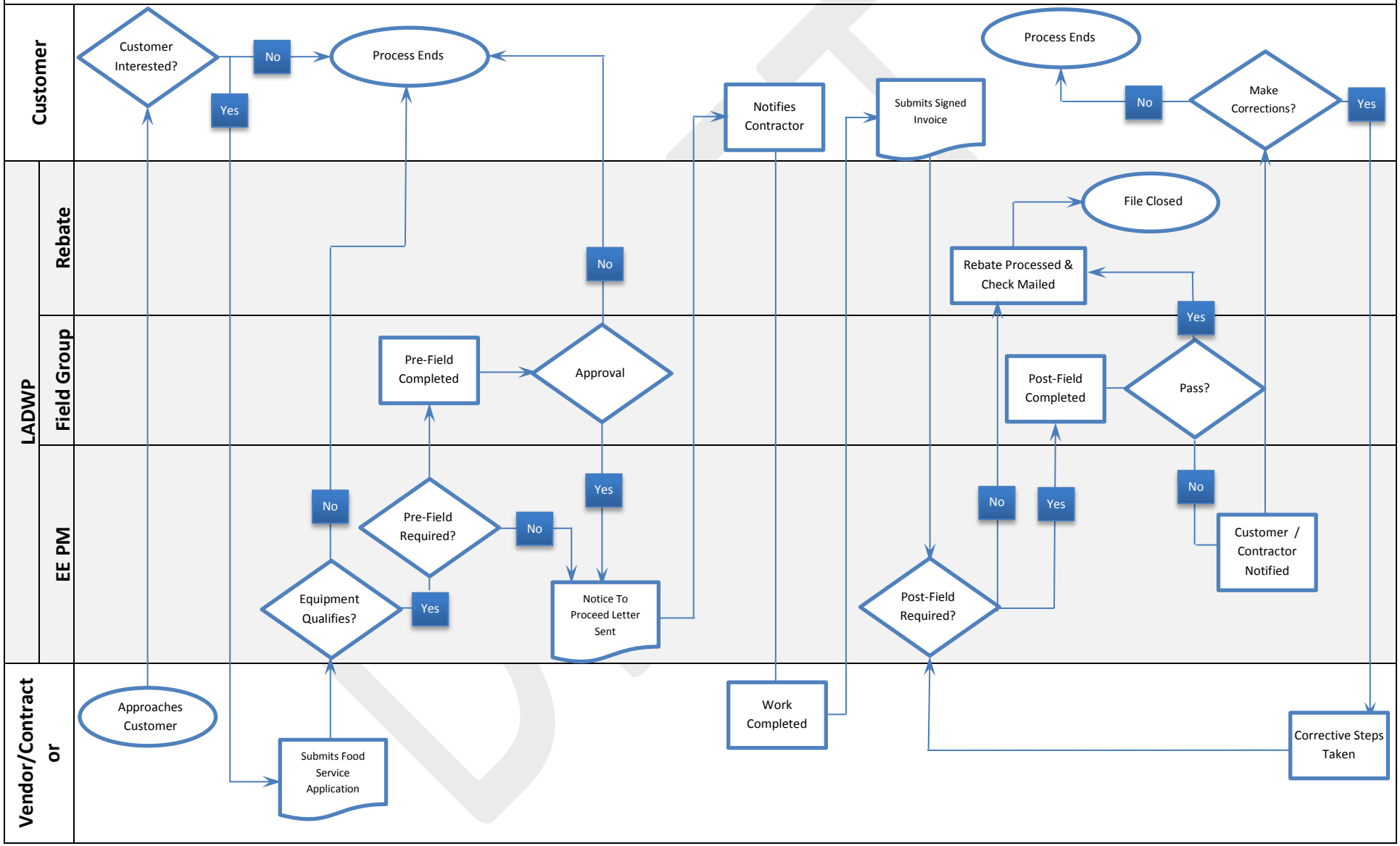
The long-term vision of the Food Service Program is to continue to incentivize refrigeration and food service equipment retrofit projects that meet the requirements of the program, which will give customers additional control of their energy consumption and lower utility expenses. As program is in the mature stage of its life cycle, LADWP will continue Food Service Program in its current state, but look for opportunities to retire measures as the market is transformed, new codes and standards are implemented or as newer technologies are introduced.

Additional long-term vision and goals include:

- Continue to implement process improvements
- Add LED refrigerator and freezer case lighting to menu
- Continue Food Service Program to provide financial assistance to small and medium size food service business owners

2014/15 Los Angeles Department of Water and Power

Food Service Program Process Flow



LADWP

Custom Performance Program (CPP) Business Plan

FYs 2014/15 – 2019/20

Program Overview

The Custom Performance Program (CPP) offers cash incentives for general energy saving measures, such as equipment controls, industrial processes, retrocommissioning, chiller efficiency and innovative energy saving strategies meeting or exceeding Title 24 or Industry Standards that are not included in other LADWP non-residential energy efficiency programs. The program can also apply to projects with multiple measures being implemented simultaneously. Program offerings include but are not limited to incentives for equipment controls, CO monitoring systems, hotel guest room controls, variable frequency drives, cutting edge high-efficiency lighting technologies, and other innovative strategies. As of October 2014 LADWP has shifted the California standard strategy of using a hypothetical Title 24 baseline to favor the existing baseline and provide greater benefits to its customers for undertaking energy efficiency projects. This strategy is primarily a result of LADWP's treatment and accounting of the codes and standards savings claim (see Codes, Standards & Ordinance Program for more details).

Fiscal Year	**FY 13-14 Actual**	**FY 14-15**	**FY 15-16**	**FY 16-17**	**FY 17-18**	**FY 18-19**	**FY 19-20**
Projected Program Budget* (x$1,000)							
Energy	$12,682	$24,022	$30,452	$33,538	$35,626	$33,701	$28,613
Projected Program Impact							
Energy							
MW	11.2	20.6	24.2	26.7	28.4	26.9	22.9
GWh	64.8	69.4	87.5	96.4	102.4	97.0	82.4
CO_2 Avoided	34,718	36,980	46,459	43,274	45,399	42,269	35,177

* Program Budget numbers for FY 2015/16 and later are estimates only and have not been approved by either the Board of Commissioners or the City Council.

Program Cost-Effectiveness

- **TRC** 3.4
- **PAC** 4.9
- **$/kWh** **$**0.03

The generally accepted cost-effectiveness standard for energy efficiency in the industry is a TRC of 1.0 or above. Anything at or above that benchmark is considered to be cost-effective, as this indicates that the "benefit" gained is greater than or equal to the "cost" to capture savings in the program or measure. Reducing energy usage also results in avoided greenhouse gas emissions, reported here as metric tons of avoided carbon dioxide (CO_2) emissions. The CO_2 avoided for energy savings is based on the current and projected CO_2 emissions factors for LADWP's power portfolio.

With a TRC of 3.4, CPP is among the most cost-effective offerings in the LADWP energy efficiency portfolio. LADWP and its customers could benefit from additional outreach and marketing to targeted customer segments to capitalize on the cost-effective measures and systems solutions that benefit from this Program.

Program Descriptors

Market Sector Non-Residential (Small Business, Commercial and Industrial)

Program Status Existing

Launch Date On-going

Measures Targeted

Air-Conditioning and Refrigeration (AC&R)

- High Efficiency Package HVAC Units
- Variable Frequency Drive on existing Centrifugal Chillers
- High Efficiency DX System
- Economizers Installed to Existing HVAC
- Demand Control Ventilation
- Innovative efficient HVAC control strategies
- Variable Refrigerant Flow Systems
- Advanced Control Strategies
- Retrocommissioning Measures
- High Efficiency Chillers

Other Equipment

- Lighting Technologies not covered by other programs or implemented along with other measures
- Lighting Retrocommissioning – reduce lighting schedule, restore occupancy sensors
- Variable Frequency Drives for Electric Motors
- CO Mitigation in Parking Structures
- Compressed Air System Upgrades
- Wet Cleaning
- Pumping Systems Upgrades
- Window Film
- Energy Management Systems
- Hotel Room Occupancy Sensors
- High Efficiency Windows
- Energy Efficient Data Centers
- Energy Efficient Refrigerated Warehouses
- High Efficiency Injection Molding
- Other calculated Projects, as reviewed and approved

Engagement Channels

LADWP Premier Account Managers
Contractors, Engineers, Consultants, Vendors
BOMA, USGBC, other professional organizations
Customers

CPP is in a mature state. The typical customer in this segment is very sophisticated, with engineers and other energy experts that are well informed and knowledgeable of energy efficiency technologies that are available. As such, CPP is a program that has primarily self-promoted to these customers, utilizing the LADWP account representatives, LADWP website, email and Program Hotline. With the introduction of the Energy Efficiency Technical Assistance Program (EETAP) in FY 2013/14, LADWP is increasing its early involvement in the decision making process allowing for more CPP measures to get implemented and produce greater savings for the customer and LADWP.

Today, LADWP leverages its contractors and manufacturers that are actively participating in the LADWP service territory. The EETAP Trade Ally program provides options for customers seeking comprehensive audits and project management services that will lead to project implementation. While that has proven successful in the past, there is still opportunity for additional leveraging of these partners, by increasing interaction and communication. Additionally, LADWP could benefit from increased and improved strategic communications with these targeted customers. In addition, LADWP could benefit even further by leveraging Trade Associations for market intelligence on new technologies on the horizon, to communicate with participants (contractors, manufacturers, customers) on the LADWP offerings (including CPP) and to gain additional market intelligence from customers in attendance on upcoming capital improvements that might qualify for CPP or other programs.

Target Customers

Commercial
Governmental
Industrial
Institutional

CPP is targeted to the larger LADWP customers that have systems that have not been upgraded in the recent past. Although many are sophisticated, some are unfamiliar with energy efficiency systems and need information, assistance budgeting and making qualifying selections, especially given that these large customers typically need to budget out for years in advance.

Qualifications

To qualify, an applicant must meet the following conditions:

- Must be a LADWP Commercial, Industrial, and Institutional (CII) electric customer in good standing

- All projects require a pre and post-inspection. A LADWP Energy Efficiency Programs Inspector must verify the existing conditions prior to any construction/demolition/installation for the energy efficiency measure.
- In most cases, the newly installed equipment must replace existing equipment
- Incentives are reserved on a first-come, first served basis until funds are exhausted
- Projects not completed within 18 months of LADWP pre-approval may be cancelled and reserved rebates returned to the program fund

The typical processing time for these types of applications averages approximately 8-12 weeks after completion and receipt of all documentation, but can vary significantly, depending on the complexity of the application and the backlog at the time of application.

 # Customers 4,000 – 5,000

Staffing Plan The staff is comprised of employees from the Efficiency Solutions (ES) Program Management Group, Efficiency Solutions Engineering Group and the Field Support Group. The ES Program Management office manages the intake portion and administration of the applications and projects.

The ES Engineering Group staff includes Mechanical Engineering Associates and Electrical Engineering Associates that are allocated to assess CPP Projects as they are submitted, evaluate calculations and confirm potential savings and recommend rebate amounts. The Field Support Group conducts pre-inspections, post-inspections and other miscellaneous field support work, as required. Additional staff may be dedicated to the program as participation levels warrant.

Program Description

LADWP's Custom Performance Program is patterned after the California Investor Owned Utilities' (IOU's) Standard Performance Contract (SPC) Program. CPP offers cash incentives for energy saving measures not covered by existing prescriptive programs, such as equipment controls, industrial processes and other innovative energy saving strategies that exceed Title 24 or Industry Standards that are not included in other LADWP non-residential Energy Efficiency Programs. Incentives for each project are paid per kilowatt-hour based on energy savings calculated or accepted by the LADWP. In addition, two previously self-standing LADWP efficiency programs, Retrocommissioning Express and the Chiller Efficiency Program, were rolled into the CPP in 2015.

Program offerings include incentives for equipment controls, CO monitoring systems, hotel guest room controls, variable frequency drives, cutting edge high efficiency technologies, HVAC and lighting retrocommissioning, high efficiency chillers and other innovative strategies. Program managers and energy efficiency engineers evaluate the benefits and merits of each of the energy saving measures using custom calculations, commercial energy modeling software, or standardized tools, or reviewing energy savings calculations provided by the customer or

project sponsor to calculate appropriate cash incentives for participating customers based on the program guidelines.

Program Objectives & Expected Outcome

Administration and implementation of CPP is fairly straightforward, with approximately 350 applications per year. The program rationale is to leverage the very high TRC and maximize energy savings, increasing LADWP's opportunity to reach the goals of AB 2021. This leverage will be realized by utilizing the contractors that are actively participating in the LADWP service territory, as well as the sophisticated customers that are aware of the program parameters and wish to proactively take advantage of offerings.

LADWP plans to utilize CPP to contribute to the mandate set forth in AB 2021 to achieve all cost-effective energy efficiency in California by 2020 as well as assist its customers to control energy expenditures now and into the future. The nature of these custom, calculated projects allows LADWP and its customers to find energy savings projects that are highly cost-effective and deliver real savings.

The objectives of CPP include:

- To seek out and upgrade out dated or inefficient large equipment with new, energy efficient technologies
- Improve the efficiency of existing equipment through retrocommissioning
- Reduce energy consumption for LADWP customers, increasing their profit margins and reducing GHGs emitted into the environment
- Full compliance with AB 2021
- Increased satisfaction by all customer bases
- Upgraded energy efficiency for every retrofit or expansion project in the LADWP service territory
- Leverage the custom/calculated nature of CPP to seek out real energy savings projects that are highly cost-effective and deliver real savings.

Program Strategy and Implementation

CPP is an on-going, existing program that is performing at or above projections. However, there may be additional opportunities, and LADWP could benefit from proactively pursuing such opportunities, given the very favorable cost-effectiveness of the program. Also, as emerging technologies are discovered and proven, there continue to be opportunities for LADWP to educate and inform its targeted customers, even though these customers tend to be informed and knowledgeable.

Additionally, there are opportunities to collaborate with and build upon the successes of the LADWP Account Management Team to approach targeted customers, inform and educate them and assist them in identifying and implementing energy efficiency improvements.

When changes are merited and considered, implementation of such proposed changes will be done gradually and incrementally. This will include incorporating changes in a few, select applications that are submitted. During this process, LADWP will be looking for customer input or reaction, if any at all. If it appears that customers were unaware or that the customers' experience was enhanced, then changes will be implemented on the LADWP web site.

Currently, marketing brochures and case studies are limited or even unavailable. This presents an opportunity for LADWP to invest in marketing and case studies for CPP specifically, as the TRC is incredibly high, establishing CPP as a hugely cost-effective program. Many building engineers could utilize LADWP marketing materials and case studies to present to their key stakeholders and/or decision-makers, potentially making the decision analysis much easier and faster.

Another opportunity for LADWP is to query a list of its largest customers. From that list, identify those customers that either have never participated or haven't participated in the recent past. This list would give LADWP a valuable tool to strategically determine which customers it might proactively approach to leverage the cost-effectiveness of this program and maximize energy efficiency savings.

Implementation could include additional outreach to customers in larger groups, potentially asking customers that have recently participated to present on their projects, the process, the rebate levels, ROI, payback periods, energy savings, etc. These workshops could be utilized as a cost-effective forum to inform vendors and customers of CPP revisions.

Turn-around for customer offer letters can range from 8-10 weeks, depending on several variables. LADWP could enhance the customer experience by investigating bottlenecks in the process and taking steps to mitigate such choke points. "Best in Class" practices would indicate that a more reasonable turn-around time frame would be 1-2 weeks for inspections and 2-4 weeks for payment, assuming that the applicant has submitted all required documentation.

The effectiveness of this, and other efforts, could be measured by utilizing a formal Customer Satisfaction Survey that could potentially be conducted and measured on an annual basis. This would allow LADWP to quantitatively measure customers' opinion of LADWP, its energy efficiency programs and the programmatic changes.

Program Barriers

There are several barriers to CPP some of which are fairly easily mitigated including:

- **Initial Capital Expense** – The initial expense to install qualifying measures can be rather large, but the payback is typically very fast. Most customers can achieve a very favorable payback on the incremental expense of the new equipment, and continue to save energy and cash flow for the life of the equipment, which increases profitability and potentially puts additional economic vitality into the Greater Los Angeles economy.

- **Economic Conditions** – Customer willingness to invest in new projects and energy efficiency projects in particular, fluctuate with economic conditions. Economic factors affecting investment include economic outlook, occupancy rates for building owners, and the availability of capital. As the economy continues to improve, participation in energy efficiency programs such as CPP, is expected to increase.

- **Processing Time** – Currently, processing time for CPP projects can take 8-12 weeks after completion of project and receipt of all required documentation. This can have a negative impact on the customer experience and negatively impact participation in this and other programs, as a number of these customers may opt either to retrofit to less efficient equipment, install qualifying measures but not apply for rebates, or simply do nothing at all. All of these options potentially reduce the success of the program.

Integration and Transformation Opportunities

Integration opportunities vary from customer to customer, but often times can be combined with offerings from lighting, water and other energy saving opportunities at LADWP, as well as gas measures offered by Southern California Gas Company (SoCalGas). LADWP has recently begun to partner with SoCalGas, which allows customers to better leverage natural gas and electric energy efficiency integration opportunities

There continues to be additional opportunities with contractors that participate in the Custom Performance Program. As this program does have additional creative opportunities, these contractors are more likely to look for and recommend integration opportunities. However, LADWP could benefit from looking for "additional" integration opportunities when on customers' premises for pre or post-field inspections.

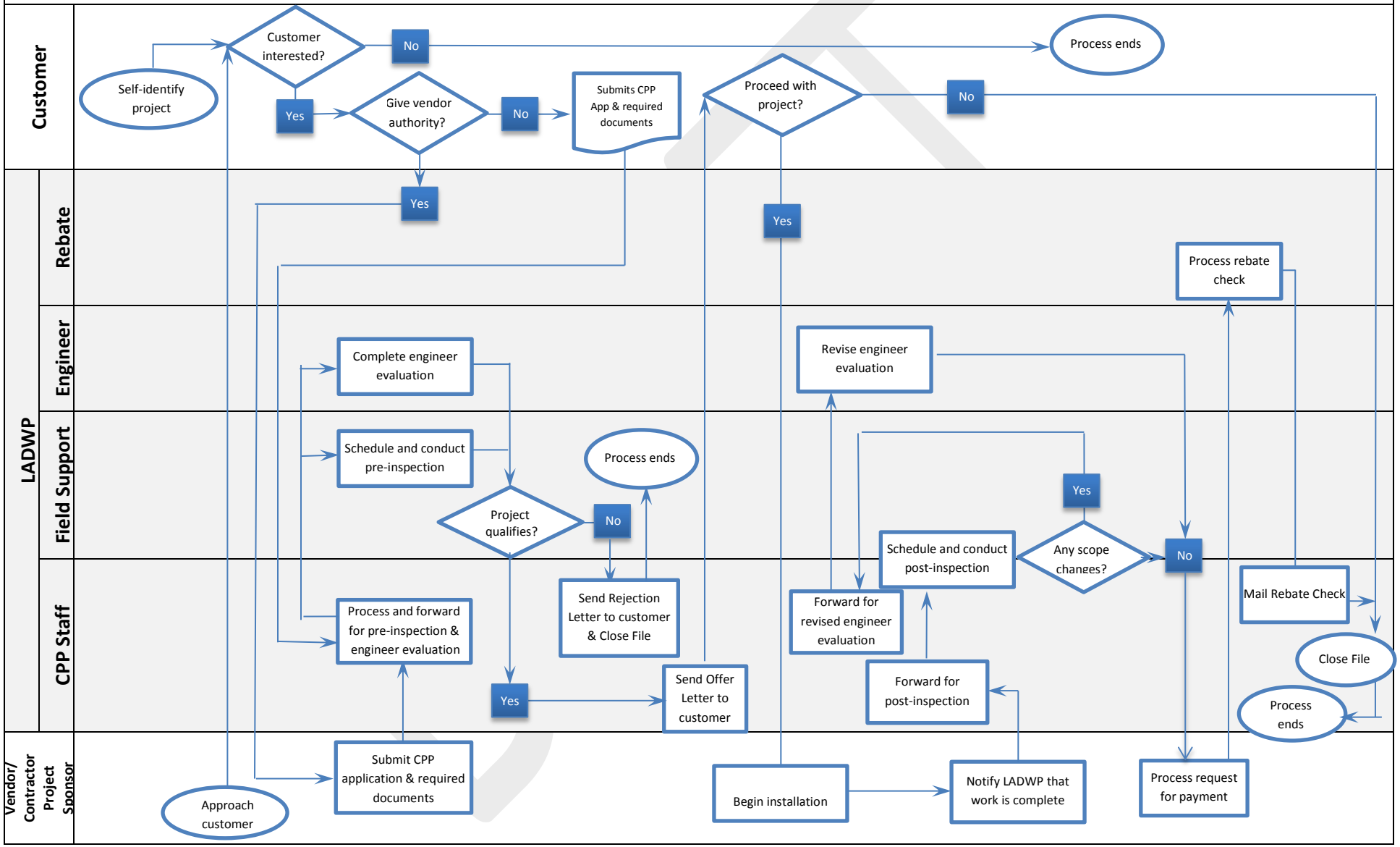
LADWP will continue to strive to be a leader in energy efficiency programs, adapting to the future systems and strategies that manufacturers develop and market to push "efficiency limits" to achieve cost-effective energy efficiency and benefit LADWP customers. Transformation will include commercializing measures, as practical, moving to deemed incentives and supporting additional codes and standards, as appropriate. It will also include utilizing CPP as a springboard for various measures to become deemed, as those measures become more commercialized or mainstream.

Long-Term Vision/Goals

The long-term vision of CPP is to continue to incentivize custom projects to install energy measures that meet the requirements of the program, giving customers additional control of their energy consumption and lowering their utility expenses. CPP will continue to explore and implement "Best in Class" practices that fit within the guidelines of the program, as well as give critical input to codes and standards to transform the market. Additionally, CPP will continue to strive to stay on top of the trends in the industry, looking for new technologies that can "move the needle" on energy efficiency for the targeted customer segment.

2014/15 Los Angeles Department of Water and Power

Custom Performance Program (CPP) Process Flow



LADWP

Savings By Design (SBD) Program Business Plan

FYs 2014/15 – 2019/20

Program Overview

The Savings By Design (SBD) Program is a California statewide non-residential new construction program, in which LADWP is partnering with Southern California Gas Company (SoCalGas) to offer a uniform, multi-faceted program designed to consistently serve the needs of the commercial building community. SBD encourages energy-efficient building design and construction practices, promoting the efficient use of energy by offering up-front design assistance, owner incentives, design team incentives, and energy design resources.

Fiscal Year	FY 13-14 Actual	FY 14-15	FY 15-16	FY 16-17	FY 17-18	FY 18-19	FY 19-20
Projected Program Budget* (x$1,000)							
Energy	$470	$153	$1,073	$2,564	$3,613	$4,207	$4,468
Projected Program Impact							
Energy							
MW	1.0	0.1	0.2	0.5	0.7	0.9	0.9
GWh	6.0	0.2	0.7	1.7	2.4	2.8	2.9
CO_2 Avoided	3,224	112	374	757	1,052	1,205	1,253

* Program Budget numbers for FY 2015/16 and later are estimates only and have not been approved by either the Board of Commissioners or the City Council.

Program Cost-Effectiveness

- **TRC** 2.2
- **PAC** 3.1
- **$/kWh** $0.04

The generally accepted cost-effectiveness standard for energy efficiency in the industry is a TRC of 1.0 or above. Anything at or above that benchmark is considered to be cost-effective, as this indicates that the "benefit" gained is greater than or equal to the "cost" to capture savings in the program or measure. Reducing energy usage also results in avoided greenhouse gas emissions, reported here as metric tons of avoided carbon dioxide (CO_2) emissions. The CO_2 avoided for energy savings is based on the current and projected CO_2 emissions factors for LADWP's power portfolio.

With a TRC of 2.2, SBD is considered very cost-effective. This is due to the focus on an integrated system approach and cost-effective measures for the non-residential new construction customer, which this program, as designed, capitalizes on. Every effort will be made to continue to keep SBD cost-effective, installing cost-effective energy efficiency measures, in compliance with AB 2021.

Program Descriptors

Market Sector Non-Residential New Construction

Program Status Existing

Launch Date FY 2012/13

Measures Targeted

Non-Residential Products

- Complete Building Systems
- Lighting
- HVAC
- Controls

Systems Approach

- Lighting/Daylighting Systems
- HVAC Systems/Refrigeration
- Envelope Measures
- Service Hot Water Systems
- Other Standard Systems and Processes

Whole Building Approach

Paid to Owner/Developer

- Owner Incentive
- Green Building Certification Incentive
- Commissioning Incentive
- End-use Monitoring Incentive

Paid to Design Team Leader

- Design Team Incentive
- Design Team Stipend

In addition to the traditional sliding scale incentives that are calibrated to energy savings exceeding standard energy performance code, SBD offers a kW reduction as well as financial support for design teams to undertake an integrated design process. Additionally, sustainability incentives are offered to building owners to achieve green building certification, perform building commissioning during design and construction, and establish and follow a building measurement and verification (M&V) plan after occupancy. These sustainability incentives are designed to encourage new buildings to be as well designed as possible, be built as well as they are designed, and be operated as well as they are built.

Engagement Channels LADWP Account Managers (Premier Accounts)
Architects/Engineers
Associations (e.g. BOMA, California Building Collaborative)
SoCalGas (Partnering with LADWP on SBD Program)

Target Customers **Non-Residential New Construction Customers**

- Office
- Retail
- Schools
- Hospitals
- High-Rise
- Institutional
- Other

SBD targets the primary decision-makers in new construction and renovation/remodel projects, including building owners, developers, architects, engineers, designers, contractors, builders, and energy consultants. SBD analyses provide detailed technical and financial assistance data that allows owners and design teams to make informed decisions regarding energy efficiency features. The program serves commercial, industrial, and institutional customers.

Qualifications To be eligible for SBD, projects must be:

- At a point where design changes are feasible, preferably in the conceptual or schematic design phase
- Located in the LADWP service territory, as an electric customer
- Project scope within the definition of new construction or major renovation

 # Customers SBD is available to all of LADWP's non-residential customers, for new construction and major renovation, as well as customers that are constructing qualifying new construction facilities as a new LADWP customer.

Staffing Plan The Efficiency Solutions Program Management Group tracks SBD, its savings and budget/payments to LADWP's partner, SoCalGas. LADWP is partnering and leveraging SoCalGas to deliver this program, therefore staff requirements are minimal at this time and are forecasted to remain so into the foreseeable future. A dedicated group within Efficiency Solutions Engineering will also be required to pick up projects that are too far along and unable to incorporate recommended changes by SoCalGas to show influence.

Program Description

SBD is California's non-residential new construction energy efficiency program, administered statewide and adopted by investor owned (IOU) and publicly owned utilities (POU). Participating utilities include:

- Los Angeles Department of Water & Power (LADWP)

- Pacific Gas and Electric (PG&E)
- Sacramento Municipal Utility District (SMUD)
- San Diego Gas And Electric (SDG&E)
- Southern California Edison (SCE)
- Southern California Gas Company (SoCalGas)

This statewide approach offers the non-residential building industry a uniform, multi-faceted program designed to consistently serve the needs of the building community throughout California. SBD encourages energy-efficient building design and construction practices, promoting the efficient use of energy by offering up-front design assistance supported by financial incentives based on project performance.

Projects participating in SBD receive services including design assistance, owner incentives, design team incentives, and energy design resources. Services begin in the project design phase and continue through construction completion. Design assistance can range from simple plan review and efficiency upgrade recommendations to complete computer simulation analysis comparing a number of alternative systems and integrated building design options. Financial incentives, to help offset increased design interaction and potential costs of construction, are available for projects that exceed thresholds established by the program. Participation in the program brings additional benefits, such as reduced long-term operating costs, greater comfort, health and productivity for occupants, and conservation of natural resources and cleaner air due to avoided power generation.

SBD utilizes the 2013 California Building Energy Efficiency Standards (Title 24, Part 6) as a reference baseline for comparison. The program encourages and moves energy savings within projects to perform better than mandated by Title 24. Other industry standards may be used where appropriate to determine reference baselines for comparisons. New Title 24 Energy Efficiency Standards became effective July 1, 2014. The SBD program is currently assessing how these new standards will be incorporated into the program. One approach that is being considered is to develop a two-tiered incentive structure by which SBD incentivizes voluntary retrofits to both meet and exceed code.

California's Title 24 requirements set some of the most stringent energy regulations in the nation. Exceeding these standard energy performance levels requires a high level of design expertise, technical knowledge and motivation. The requirements also can be complex and sometimes confusing. Because many in the design field are unaware of the potential savings from energy-efficient design or perceive budgetary constraints, they are reluctant to implement energy-efficiency strategies. As a result, energy efficiency is often a lost consideration, abandoned in favor of pursuing the "lower initial cost" or familiar option. SBD strives to avoid lost opportunities by assisting customers in moving beyond initial cost considerations and towards the realization of long-term energy cost savings.

SBD allows for two approaches for participating customers to identify and quantify energy-efficient design improvements; the Whole Building Approach and the Systems Approach. Jointly, the approaches provide the flexibility required to serve a large range of non-residential projects and, whichever approach is taken, all services are available.

The Whole Building Approach is intended for large, complex projects or for projects containing innovative energy design features. Analyzing the performance of the building as a whole improves the design team's ability to optimize interactive efficiency effects of the various building systems. Program participation requires a minimal commitment from the building owner, including that he or she is willing to consider the analysis recommendations, attend a meeting with the design team to discuss the viability of implementing various energy efficiency strategies, and sign an Owner Agreement offered by the SBD Representative. The Whole Building Approach analysis requires the use of a comprehensive energy simulation tool capable of hourly calculations of multiple thermal zones. The tool must be capable of modeling Title 24/Alternative Calculations Method (ACM) requirements as well as the requirements of the proposed design where they differ significantly from Title 24, and must be approved by LADWP. Parametric and economic analyses may also be included in the Whole Building Approach studies.

The Systems Approach encourages designers to optimize the energy efficiency of the systems within a building. The System Approach is most appropriate for less complex projects, those whose systems are designed at different times, and for projects where consideration for energy efficiency occurs late in the design phase. For common building types and system features, SBD provides this straightforward approach to identify potential energy efficiency options and impacts. For the Systems Approach, the SBD Representative utilizes a simple, performance-based modeling tool to quickly estimate typical energy savings associated with recommended measures in a typical building, and to calculate corresponding incentives.

Program Objectives & Expected Outcome

The primary objective of the SBD Program is to integrate energy efficiency into the design of buildings when more advanced measures can be implemented at a lower cost than for retrofit projects. Implementation of energy efficiency in the design process also enables taking a whole building approach in a manner that is much easier and cheaper than after the building has been constructed.

Through the integrated strategy of the whole building approach, SBD strives to encourage performance significantly better than Title 24 code. Where integrated opportunities are limited, SBD strives to encourage energy efficiency and green building practices in new commercial buildings through the systems approach. To encourage the integrated strategy, financial incentives are supplemented by a variety of other support activities, including: feasibility studies and pilot projects, training and education, conferences and workshops, scholarships, and program marketing activities. These offerings are made available to incentivize all parties to be eager to participate and seek out the most cost-effective energy efficiency measures, systems and/or strategies. Additionally, SBD is designed to provide a broad palette of technical and financial resources for designing new facilities to the highest energy- and resource-efficient standards.

Additional program objectives include:

- Incentivize cost-effective energy efficiency upgrades in non-residential new construction
- Create a greater awareness of sustainable design, the latest technologies and design practices, and green building practices
- Encourage project design engineers and architects to educate customers about SBD and its benefits

- Transform the non-residential new construction market to incorporate energy efficiency in the design phase, thus increasing the energy efficiency of new construction

Even though SBD has been in existence since the late 1990s, it is still a program with multiple barriers, including confusion, lack of buy-in from various stakeholders and hesitancy to participate. LADWP, by participating in the statewide SBD Program, seeks to break down as many of these barriers as possible, increase awareness and acceptance, and move the market closer to Zero Net Energy in the residential new construction marketplace. Ultimately, this approach further positions LADWP as a leader in energy efficiency, and increases participation in SBD as another proactive step to achieving all cost-effective energy efficiency savings, as mandated in AB 2021.

Program Strategy and Implementation

SBD targets the primary decision-makers in new construction and renovation/remodel projects, including building owners, developers, architects, engineers, designers, contractors, builders, and energy consultants. The strategy for SBD is to reach out to all of these key stakeholders to increase awareness of the Program, its benefits (energy savings, cost savings, environment, etc.), its incentives (financial, technical assistance, etc.) to the customer and key stakeholders, educate and ultimately incentivize these customers to increase the efficiency of future projects, facilitating the adoption of integrated design practices in new construction projects. SBD analyses provide detailed technical and financial assistance data that allows owners and design teams to make informed decisions regarding energy efficiency features. The program serves CII customers and utilizes the California Building Energy Efficiency Standards (Title 24, Part 6) as a reference baseline for comparison. The program encourages and moves energy savings within projects to perform better than mandated by Title 24. Other industry standards may be used where appropriate to determine reference baselines for comparisons. LADWP is pleased to partner with SoCalGas to deliver SBD to common LADWP/SoCalGas customers. SoCalGas is taking the lead to administer the SBD Program, in partnership and with oversight from LADWP. This results in increased integration of cost-effective electric, natural gas and water efficiency measures. This also increases the cost-effectiveness of program, as it leverages the administration of one utility, which would otherwise be two utilities administering SBD to the same customer, which ultimately could result in confusion and non-participation.

LADWP will continue to remain engaged in future statewide discussions and developments regarding SBD. As incremental changes are discussed or new models are considered, LADWP will participate, represent the best interests of its customers and make changes as appropriate to remain consistent with the statewide program and maximize energy efficiency results.

Program Barriers

Multiple barriers exist but LADWP works with SoCalGas to proactively break down these barriers and rapidly increase traction in this space. These barriers include:

- Participant knowledge
- Need for early involvement by Utility
- Design Team Buy In (Design Team Stipend)

Integration and Transformation Opportunities

The SBD Program, as a statewide program, gives California a real opportunity to transform the non-residential new construction market, as it is a program that informs and incentivizes various stakeholders and is a consistent message throughout most of California. This approach assists LADWP to facilitate the adoption of integrated design practices. This is made possible with a collaborative, iterative up-front design process where envelope and systems can be optimized, partnering with the building owners, developers, architects, engineers, designers, contractors, builders, energy consultants and other key stakeholders .

This type of education, design assistance and incentives assists LADWP in further introducing and normalizing integrated design practices, which speeds the introduction of additional and incremental Title 24 standards, further moving the non-residential new construction market to higher energy efficiency performance.

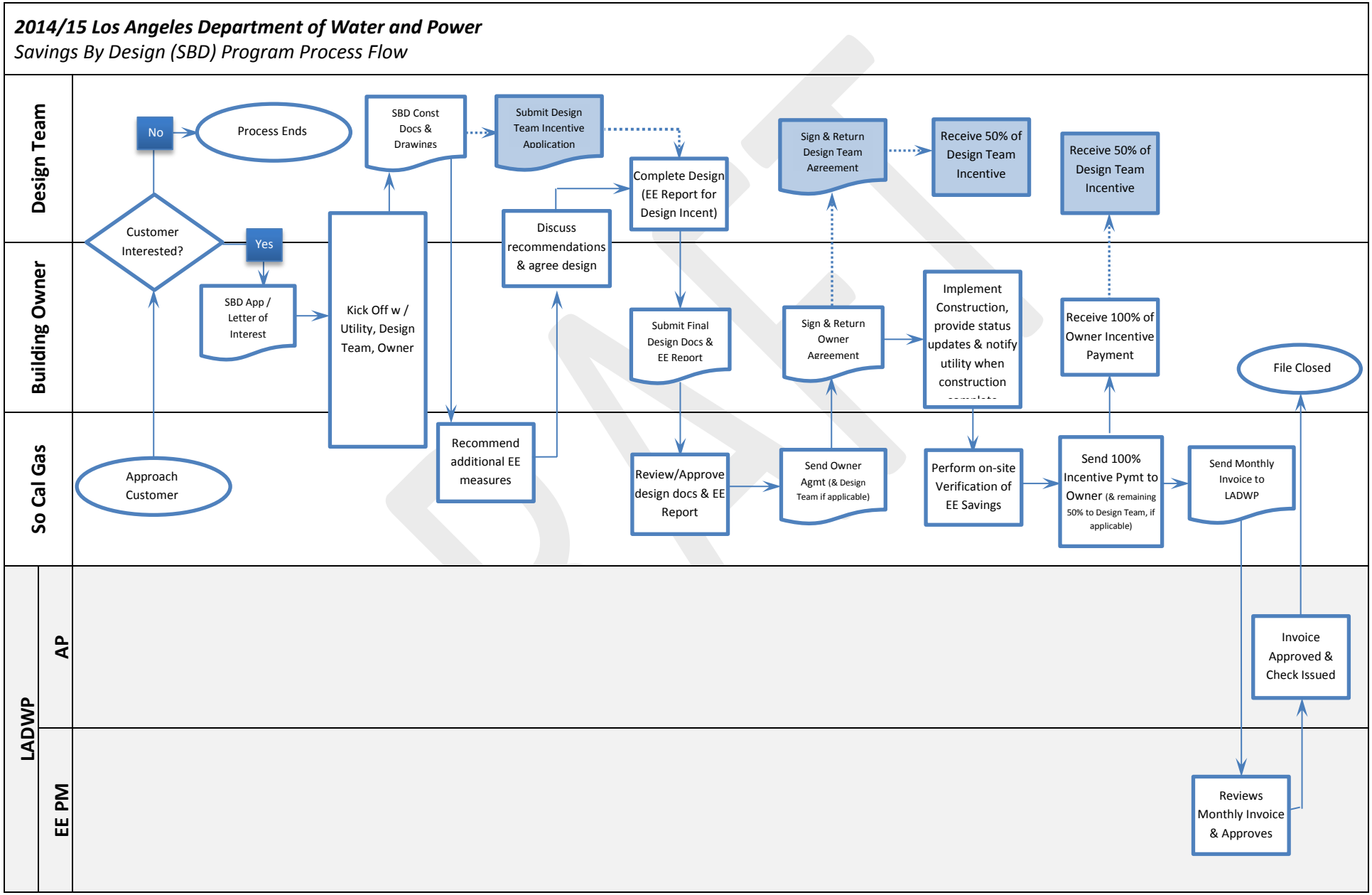
Long-Term Vision/Goals

The long-term goal of the SBD is to ensure that LADWP new non-residential construction customers and stakeholders, including building owners, developers, architects, engineers, designers, contractors, builders, energy consultants, etc., are approached early in the planning process, informed of SBD, its incentives, and its benefits, and encouraged to participate in the program. Additionally, LADWP's vision and goals include:

- Maximize penetration of comprehensive energy efficiency in non-residential new construction in Los Angeles beyond new construction code performance
- Market transformation to encourage early adoption and introduction of future codes.
- Take early advantage of construction code upgrades

2014/15 Los Angeles Department of Water and Power

Savings By Design (SBD) Program Process Flow



LADWP

Energy Efficiency Technical Assistance Program (EETAP) Business Plan

FYs 2014/15 – 2019/20

Program Overview

The Energy Efficiency Technical Assistance Program (EETAP) is a non-resource program that goes a step beyond the assistance offered by standard programs to provide technical and economic modeling and analysis services to help customers fully develop and implement comprehensive projects. EETAP was designed to assist commercial, industrial, and institutional customers in closing the gap between project development and implementation for more complex building systems. Program offerings include technical support for audits/assessments, technical analysis of various bundles of energy efficiency measures and options, economic analysis (ROI, etc.) and recommendations that ultimately lead the customer to participate in other LADWP resource programs. By providing incentives for project development services including energy auditing and project management, through this program, LADWP aims to help its customers to strategically plan, follow through and realize energy savings in the most cost-effective manner.

Fiscal Year	**FY 13-14 Actual**	**FY 14-15**	**FY 15-16**	**FY 16-17**	**FY 17-18**	**FY 18-19**	**FY 19-20**
Projected Program Budget* (x$1,000)							
Energy	$565	$1,000	$1,200	$1,500	$2,000	$2,000	$2,000
Projected Program Impact							
Energy							
MW	NA	NA	NA	NA	NA	NA	NA
GWh	NA	NA	NA	NA	NA	NA	NA
CO_2 Avoided	NA	NA	NA	NA	NA	NA	NA

* Program Budget numbers for FY 2015/16 and later are estimates only and have not been approved by either the Board of Commissioners or the City Council.

Program Cost-Effectiveness

- TRC N/A
- PAC N/A
- $/kWh N/A

As EETAP is a non-resource program focused on promoting integrated energy efficiency and delivering additional energy savings in other LADWP programs, TRCs, etc. are not applicable. However, this program plays a vital role in continuing to position LADWP as a national leader in energy efficiency, by utilizing industry best practices and assisting customers to make energy efficiency choices that will include deeper, more integrated choices.

Program Descriptors

Market Sector Non-Residential – Large Commercial, Industrial, Institutional (CII), and Governmental

Program Status Existing

Launch Date 1st Quarter of CY 2014

Measures Targeted

Professional Services receiving rebates through EETAP

Energy audits/assessments
Technical analysis of energy efficiency measures and options
Economic analysis
Recommendations, presented as scenarios
Implementation support

Measures offered through Custom Performance Program

Controls/Retro Commissioning
Plug/Process/Other
HVAC-Refrigeration (includes chillers and variable refrigerant flow systems
Building Envelope
Lighting Fixtures (Including LEDs)
Lighting Controls
Lighting (Lamp Only)
Thermal Energy Storage
Chiller Efficiency
Retrocommissioning
Any other approved measures recommended in the audit report

Engagement Channels

Trade Allies and Trade Professionals
LADWP Premier Account Managers
Engineering and energy efficiency firms
Professional organizations and trade associations
Customer building and energy managers

The typical customer in this segment is very sophisticated - with engineers and other energy experts that are well informed and knowledgeable of energy efficiency technologies that are available. EETAP is available to all qualifying customers. The technical services may also be provided by a contractor who is not a participant in the LADWP Trade Ally and Trade Professional Program but still meeting the requirement of having an electrical or mechanical engineer on staff.

Target Customers

Commercial
Governmental
Industrial
Institutional

Qualifications & Guidelines

To qualify, an applicant must meet the following conditions:

- Must be an LADWP non-residential electric customer in good standing
- Customer in good standing
- Recommended minimum 50,000 square-foot facility
- Energy efficiency measures must be implemented within 3 years of the date of the LADWP offer letter approving audit report
- Up to 10 audits per program year
- A site is eligible for incentives once every three years

 # Customers

500 – 1,000

EETAP is targeted to the larger, more complex LADWP customers that may be planning multi-year capital programs. Although many are sophisticated, they still may be unfamiliar with energy efficiency systems and need additional guidance, assistance budgeting and making qualifying selections, especially given that these large customers typically need to budget out for years in advance.

Staffing Plan

Internal and external resources are leveraged to provide the services offered through EETAP. The internal staff is comprised of employees from the Efficiency Solutions (ES) Project Management Group and Efficiency Solutions (ES) Engineering Group. The ES Program Management office manages the intake portion and administration of the projects. The ES Engineering Group assesses EETAP projects as they are submitted, evaluates calculations and confirms potential savings and rebate amounts. Contractors and engineering firms hired by the customer conduct the technical studies for the customer including energy audits/assessments, technical and economic analyses of energy efficiency opportunities, etc. and assist the customer in implementing the chosen measures through CPP. Staffing is expected to increase in EETAP as the program becomes more popular and as Los Angeles Unified School District schools begin implementing Proposition 39 funded energy efficiency programs.

Program Description

EETAP goes a step beyond LADWP's standard programs. EETAP provide incentives to customers for technical and economic modeling and analysis services to help customers fully develop and implement comprehensive projects with single or multiple phases. These types of projects are typically very unique, are not necessarily scalable to the average customer, and have savings that are a tremendous benefit to these LADWP customers. The measures implemented by the customer as a result of these studies receive incentives through LADWP's CPP Program, which enables the customer to receive incentives for a range of measures under one program.

EETAP provides funding to LADWP customers for professional energy efficiency services performed by participating engineering firms including:

- Comprehensive energy audit including analysis of lighting, HVAC, envelope and process/plug loads
- Identification of feasible energy efficiency measures (EEMs) and water conservation measures (WCMs) including life cycle cost analysis
- Financial analysis including identifying and calculating financing options, return on investment, and appropriate tax and utility credits/incentives for each measure
- Preparation of a prioritized list of applicable measures based on feasibility, life cycle cost, and financial analysis
- Preparation of a standardized energy audit report

Participating engineering firms may also offer customers other project development services including project management, design and construction services, however the design and construction services are not covered under EETAP but may be eligible for incentives under CPP.

The incentives for implementation of the actual energy efficiency measures are processed through CPP and are calculated based on the estimated kWh per measure listed in the approved EETAP audit report. This approach streamlines the process so that customers do not have to submit applications to multiple programs. The current CPP incentive rates are:

Incentive Categories	Incentive Levels
Controls/RCx	$0.15/kWh
Plug/Process/Other	$0.15/kWh
HVAC-Refrigeration (includes chillers & VRF)	$0.25/kWh
Envelope	$0.25/kWh
Lighting (Including LED Fixtures)	$0.15/kWh
Lighting Controls	$0.10/kWh
Lighting (Lamp only)	$0.05/kWh
Thermal Energy Storage	Up to $ 750/kW
Cap at 75% of project cost	

The customer or their authorized representative (applicant) is responsible for selecting the firm or firms to conduct the audit and provide project implementation and installation services. The applicant submits the required application documents and forms to LADWP. The ES Program Management Group and ES Engineering Group review the application materials and notify the applicant of approval. The applicant must obtain application approval from LADWP prior to any audit and installation of measures in order to be eligible for the EETAP incentives. Funds will be reserved only upon LADWP approval of the EETAP Application. Specific EETAP incentive commitment amounts are made through a written Offer Letter from LADWP, which specifies the EETAP incentive cap amount once the audit report is approved. Applicants may retain any contractor/engineering firm to provide audit services and/or project implementation/installation services.

EETAP incentive payments are processed after the implemented measures are verified and LADWP has received all required documentation. EETAP incentive payments are based on the rebate rates/schedules in effect at the time the completed EETAP application is approved by LADWP. LADWP may create a payment schedule for any or all of the incentive payments and may return to the project site to perform measurement and verification of the implemented measures for up to 3 years after the date of installation.

LADWP has developed a Trade Ally and Trade Professional Program to facilitate the application process for customers and to incentivize implementation of audit recommendations. In order to become a Trade Ally, a firm must:

- Participate in a LADWP-sponsored EETAP Trade Ally & Trade Professional programs training workshop or webinar
- Submit a Trade Ally Program Enrollment Form following completion of the training workshop
- Have an Electrical or Mechanical Professional Engineer (P.E.) on staff with an active license

The benefits of becoming a Trade Ally are that LADWP will maintain a list of Trade Allies on their website and a firm must be a Trade Ally to become a Trade Professional. To maintain their Trade Ally status, a firm's EETAP projects must achieve an implementation rate greater than 25%. LADWP will remove from the Trade Ally Program any contractor/engineering firm with an implementation rate of 25% or less for a total of two projects through the CPP following EETAP audits. A contractor/engineering firm removed from the Trade Ally Program may request status reinstatement by submitting an application for re-enrollment and completing three (3) new successive energy efficiency projects that receive an implementation rate exceeding 50%.

In order to become a Trade Professional, a firm must:

- Be an EETAP Trade Ally
- Successfully complete at least three (3) energy efficiency projects with a minimum of 75% implementation rate of approved audit report-recommended measures as an EETAP Trade Ally
- Submit a signed Trade Professional Enrollment Form as soon as all qualification requirements are met

The primary benefit of becoming a Trade Professional is that up to 50% of the EETAP incentive cap will be paid to the customer upon final approval of the EETAP application and audit report and receipt by LADWP of required documentation, with the balance paid on implementation of measures, etc. In addition, a separate list of Trade Professionals will be kept up to date with a track record of successful projects.

Program Objectives & Expected Outcome

EETAP leverages internal and external resources to offer incentives for technical support such as audits and assessments, technical analysis of various energy efficiency measures and options, economic analysis and prioritization of recommendations, presented in a manner that enables the customer to choose and plan the implementation of energy efficiency measures. The efforts included in EETAP are intended to lead to increased participation and energy savings in other LADWP resource programs. The nature of these custom, calculated

projects allows LADWP and its customers to find real energy savings projects that are highly cost-effective and deliver savings that would otherwise be unrealized.

The objectives of this program include:

- Incentivize customers to conduct energy and water audits and financial analyses leading to a more cost-effective approach to energy and water efficiency
- Incentivize customers to implement energy audit recommendations
- Upgrade outdated or inefficient large equipment with new, energy efficient technologies, through large and/or phased projects
- Leverage existing program incentives and processes to drive comprehensive energy savings projects that are cost-effective and deliver real savings.
- Increase participation in other LADWP efficiency programs
- Reduce energy consumption for LADWP CII customers, increasing their profit margins and reducing greenhouse gas emissions
- Achieve full compliance with AB 2021 by seeking comprehensive cost-effective energy savings
- Increase satisfaction for commercial customers
- Reduce the amount of staff time required to determine energy savings on larger, more complex projects by incentivizing trade allies to perform energy modeling to calculate energy savings.

Program Strategy and Implementation

EETAP leverages a combination of internal and external technical resources to deliver the program to the qualifying LADWP customer base. Past attempts to provide incentives for energy audits and assessments, were unsuccessful in resulting in the actual implementation of measures. The current EETAP is designed to tie incentives to customer implementation of selected measures.

EETAP includes Trade Ally and Trade Professional Programs to provide a selection of firms that meet certain minimum standards and have received training in the EETAP process and program guidelines, EETAP payment criteria and schedule, determination of EETAP incentive caps, and proper completion of the EETAP application package. These programs incentivize contractors and engineering firms to maximize implementation of cost-effective measures as a condition of participation in the Trade Ally and Trade Professional Programs.

As implementation progresses and matures, customer outreach may include workshops and presentations to customers in larger groups, potentially asking customers that have recently participated to present on their projects, the process, the rebate levels, ROI, payback periods, energy savings, etc. These workshops could be utilized as a cost-effective forum to gain knowledge from customer insights, inform vendors and customers of program revisions, as well as promote LADWP's partnering with Southern California Gas Company to jointly promote energy efficiency to customers in both service territories.

Program Barriers

There are several apparent barriers to EETAP, primarily related to the core programs through which EETAP projects will be routed for incentives:

- Initial expense for audit
- Complexity of projects qualifying for the program
- Implementation and processing time
- Requirement to implement measures to receive rebate on technical work
- Confusion regarding the technical details of the program

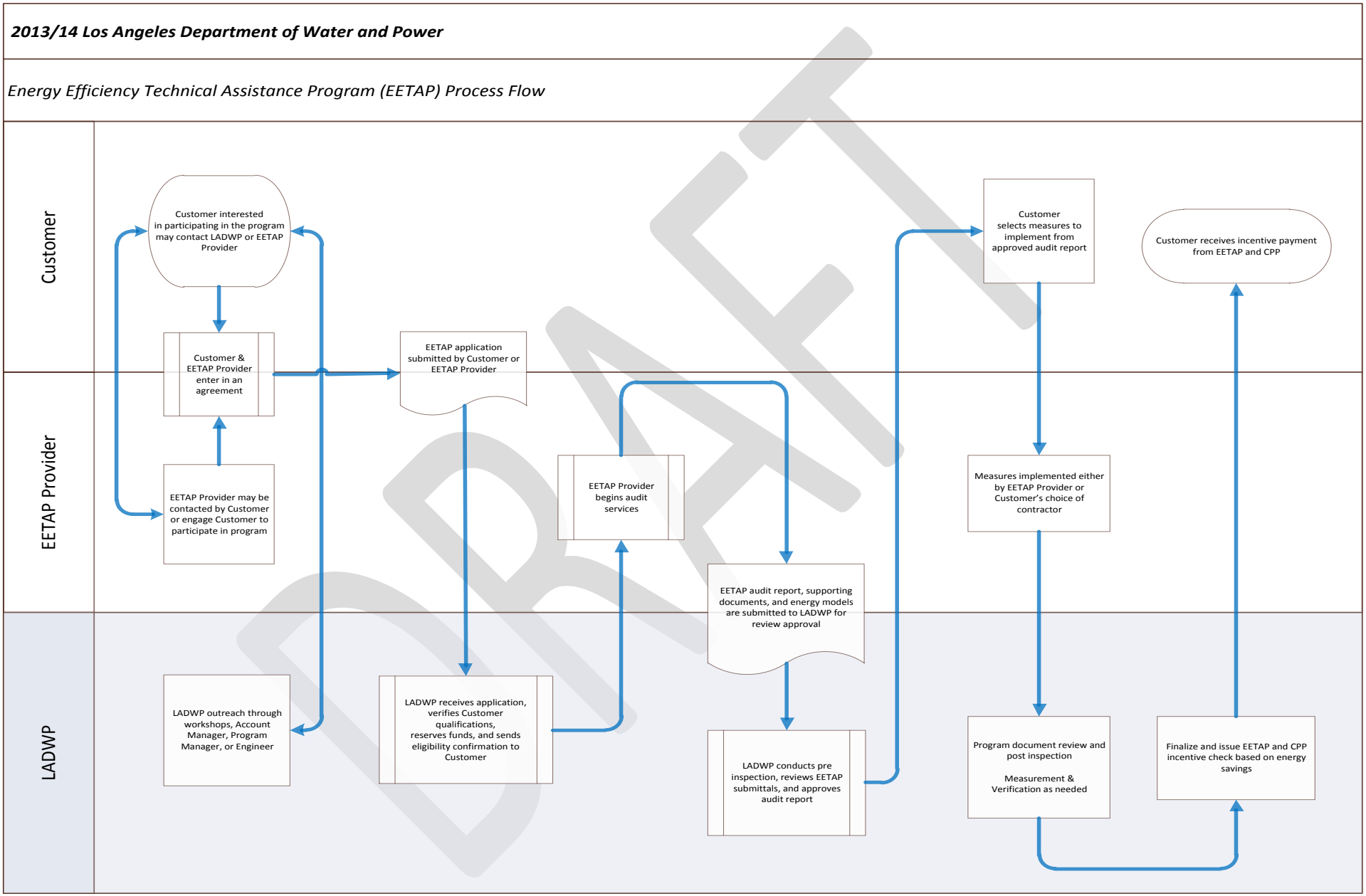
The ES Program Management Group is currently looking at ways to streamline the technical process.

Integration and Transformation Opportunities

Integration opportunities include extending EETAP to include offerings from LADWP's water efficiency programs and natural gas measures offered by Southern California Gas Company (SoCalGas). LADWP partnership with SoCalGas may be extended to EETAP, as appropriate, and will allow customers to better leverage energy efficiency activities with natural gas and electric energy efficiency integration opportunities. LADWP will also look for "additional" integration opportunities when on customers' premises for pre or post-field inspections.

Long-Term Vision/Goals

The long-term vision of EETAP is to design and implement a program that drives comprehensive projects that install energy efficiency measures that give customers additional control of their energy consumption and lower their utility expenses. EETAP will continue to explore and implement additional practices that fit within the guidelines of LADWP's programs, as well as give critical input to codes and standards to transform the market.


2013/14 Los Angeles Department of Water and Power
Energy Efficiency Technical Assistance Program (EETAP) Process Flow
Customer
EETAP Provider
LADWP
Customer interested in participating in the program may contact LADWP or EETAP Provider
Customer & EETAP Provider enter in an agreement
EETAP Provider may be contacted by Customer or engage Customer to participate in program
LADWP outreach through workshops, Account Manager, Program Manager, or Engineer
EETAP application submitted by Customer or EETAP Provider
LADWP receives application, verifies Customer qualifications, reserves funds, and sends eligibility confirmation to Customer
EETAP Provider begins audit services
EETAP audit report, supporting documents, and energy models are submitted to LADWP for review approval
LADWP conducts pre inspection, reviews EETAP submittals, and approves audit report
Customer selects measures to implement from approved audit report
Measures implemented either by EETAP Provider or Customer's choice of contractor
Program document review and post inspection
Measurement & Verification as needed
Finalize and issue EETAP and CPP incentive check based on energy savings
Customer receives incentive payment from EETAP and CPP

LADWP

Upstream Heating, Ventilation and Air Conditioning (HVAC) Program Business Plan

FYs 2014/15 – 2019/20

Program Overview

The nonresidential upstream Heating, Ventilation and Air Conditioning (HVAC) Program is a market transformation oriented program. This program offers incentives to upstream market actors who sell qualifying high efficiency HVAC equipment. The logic that underscores this program's design is that a small number of upstream market actors are in a position to impact thousands of customers and influence their choice of equipment by increasing the stocking and promotion of high efficiency HVAC equipment. The upstream model cost-effectively leverages this market structure and existing relationships. The upstream program is designed to adapt to market changes, and therefore LADWP will continue working with relevant industry players to continually enhance the program to include new beyond-code upstream incentives.

Fiscal Year	**FY 13-14 Actual**	**FY 14-15**	**FY 15-16**	**FY 16-17**	**FY 17-18**	**FY 18-19**	**FY 19-20**
Projected Program Budget* (x$1,000)							
Energy	$1	$2	$2,160	$2,100	$2,100	$2,100	$2,100
Projected Program Impact							
Energy							
MW	0.0	0.0	1.3	1.3	1.3	1.3	1.3
GWh	0.0	0.0	6.0	6.0	6.0	6.0	6.0
CO_2 Avoided	0	0	3,187	2,694	2,659	2,615	2,561

* Program Budget numbers for FY 2015/16 and later are estimates only and have not been approved by either the Board of Commissioners or the City Council.

Program Cost-Effectiveness

- TRC To be determined
- PAC To be determined
- $/kWh To be determined

The generally accepted cost-effectiveness standard for energy efficiency in the industry is a TRC of 1.0 or above. Anything at or above that benchmark is considered to be cost effective, as this indicates that the "benefit" gained is greater than or equal to the "cost" to capture savings in the program or measure. Reducing energy usage also results in avoided greenhouse gas emissions, reported here as metric tons of avoided carbon dioxide (CO2) emissions. The CO2 avoided for energy savings is based on the current and projected CO2 emissions factors for LADWP's power portfolio.

The cost effectiveness of the UHVAC program has not been determined.

Program Descriptors

Market Sector

Commercial

- Offices & Buildings
- Hotels
- Retail

Institutional

- Colleges and Universities
- Governmental Facilities
- Hospitals/Medical Centers

Industrial

Program Status Under development

Launch Date To be determined

Measures Eligible equipment measures will include packaged and split system air conditioners, heat pumps, and other commercial HVAC equipment.

Engagement Channels Contractors
Distributors
Manufacturers

Most California investor owned utilities offer the same or similar programs, it is not necessary to seek out expensive or non-cost-effective channels to market and/or deliver this program. The manufacturers and distributors, who may be participating in the program, are aware of such programs or participate in them through the existing IOU upstream HVAC programs. The naturally occurring channels in this segment are HVAC contractors, distributors and manufacturers. Their existence in this space and motivation to upsell their products, allows LADWP to leverage these channels to deliver the program specifications, when applicable. Additionally, LADWP makes qualified personnel available, as needed, to consult with the end-use customer on the details and intricate specifications of the program.

Additional future opportunities to expand channels could result from an increased presence in trade events, especially those that are in the Greater Los Angeles Area and California. This would give LADWP additional presence and exposure in this space, with the existing channels and with decision makers. These opportunities could include additional sponsorship and/or direct participation as a vendor of services and as a

participating registrant. Both opportunities would give LADWP tremendous opportunities to market UHVAC, as well as other integrated program opportunities that might benefit the customers and/or vendors that attend these seminars.

Target Customers Commercial, Industrial, Institutional (CII) & Retail

Staffing Plan Staffing for the program will be determined when it is decided if the program will be managed in-house or through a third-party. The program may be staffed primarily by the Efficiency Solutions Program Management Group.

Program Description

Through an agreement with the participating distributors and manufacturers, the higher cost of high efficiency HVAC equipment is reduced through incentives paid directly to the distributor. The utility incentives allow distributors to price energy efficient equipment at a competitive cost to standard efficiency equipment. Contractors and HVAC customers, can then immediately access premium replacement technology at a comparable cost to conventional technology. The upstream approach allows LADWP to capture the energy savings of all the high efficiency equipment installed in the service territory and transform the market.

UHVAC is a program designed to assist office buildings, hotels, hospitals/medical facilities, institutional facilities, retail, or any business with an HVAC system. The program is designed to incentivize nearly every HVAC project in the LADWP service territory to be highly efficient.

Program Objectives & Expected Outcome

LADWP has incentivized for high efficiency HVAC for several years with marginal success and minimal participation in the non-residential customer segment with respect to estimated annual HVAC sales. By developing an upstream incentive program, LADWP will increase the pool of participants captured at the point of sale rather than after an installation is complete. LADWP will leverage an already established network of HVAC distributors currently participating in the California Investor Owned Utilities' (IOU) Statewide Upstream HVAC Program since 2004. These distributors are incentivized to stock up and sell more high efficiency equipment. Historically the IOU Upstream Program has increased the participation pool substantially in comparison to a traditional downstream program.

The objectives of this program include:

- Seek out and upgrade out dated or inefficient air conditioning systems with new, energy efficient technologies
- Upgrade energy efficiency of HVAC systems for every retrofit project in the LADWP service territory
- Reduce energy consumption for LADWP customers, increasing their profit margins and reducing greenhouse gas emissions

- Increase satisfaction for all customer classes and segments

The expected outcome is to offer UHVAC to all qualifying LADWP customers at their point of sale.

Program Strategy and Implementation

UHVAC is a program in development. The strategy for UHVAC is to meet the needs of commercial, industrial, and institutional (CII) consumers who need either a single measure or multiple HVAC equipment, by encouraging the adoption of energy-efficient choices when purchasing and installing commercial heating, ventilation, and air conditioning equipment. This is accomplished by leveraging the naturally occurring market place (manufacturers, distributors, retailers, etc.) to market energy efficient products and LADWP's rebates.

This program is typically intended for equipment that has demonstrated outstanding energy efficiency savings. Changes will continue to be made to the list of equipment that offer upstream rebates as codes and standards change or as new qualifying emerging technologies enter the market and are commercially available.

UHVAC continues to position LADWP as a leader in energy efficiency, offering another suite of products to complete its CII portfolio, which assists LADWP in complying with the AB 2021 mandate of capturing all cost-effective energy efficiency, as well as ensuring that all LADWP customer segments, including the CII customer, have access to real and meaningful energy efficient equipment and measures.

Program Barriers

While there are no apparent barriers to UHVAC if LADWP adopts the UHVAC program currently implemented by other utilities with assistance from SCPPA, there will be barriers if LADWP decides to develop this program from the ground up. These barriers include:

- Lack of personnel to implement and support the program
- Convenience of the program (e.g., manufacturers, distributors, retailers, etc.)
- Time to develop relationships with manufacturers, distributors, retailers, etc.
- Lack of IT platform used to manage the program familiar to intended program participants

Integration and Transformation Opportunities

UHVAC is intended to be an additional offering in LADWP's non-residential energy efficiency portfolio, which compliments the extensive suite of energy efficiency offerings. As such, UHVAC continues to position LADWP as a leader in energy efficiency and encourages extensive integrations of energy efficiency, including water, electric and natural gas efficiency.

Long-Term Vision/Goals

The long-term vision of this program is to continue to enable LADWP CII customers to achieve energy efficiency. UHVAC will offer upstream rebates for energy efficiency measures to manufacturers, distributors, and retailers to benefit LADWP's non-residential customers. UHVAC will be an effective tool for promoting equipment that provides outstanding energy savings to customers. Specific upstream equipment rebate offerings will continue to be added as emerging technologies become commercialized in the marketplace and removed as codes and standards, etc. enter the market that remove the need and/or cost-effectiveness of such impacted equipment.

The goal of UHVAC, as with all LADWP energy efficiency measures and programs, is to make all cost-effective energy efficient equipment available to the market, including the non-residential segment. The ultimate goal of UHVAC, along with the entire LADWP portfolio, is to educate customers on energy efficiency, make energy efficiency a common first option when considering new equipment, commercial improvements, etc. and ultimately lead to market transformation of the non-residential sector.

LADWP

SoCal Water$mart Rebates Program Business Plan

FYs 2013/14 – 2019/20

Program Overview

The SoCal Water$mart Rebates (SCWR) Program offers incentives to residential, commercial, industrial and institutional customers to promote and advance water conservation including rebates for appliances, devices, and turf removal. This is a joint program managed by the Metropolitan Water District of Southern California (MWD) and supported by LADWP. SCWR is designed to offer and promote specific water conservation solutions within the residential, multi-family, commercial, industrial and institutional market sectors.

Fiscal Year	2013/14	2014/15	2015/16	2016/17	2017/18	2018/19	2019/20
Projected Program Budget* ($x1,000)	$18,485	$19,458	$19,816	$20,191	$20,589	$20,932	$21,268

* Program Budget numbers for FY 2014/15 and later are estimates only and have not been approved by either the Board of Commissioners or the City Council.

Program Cost-Effectiveness

- **$/AF** $350

The method used for assessing cost-effectiveness for LADWP's water conservation and efficiency programs is to compare the cost per AF of water saved to the avoided marginal cost of the first source of water supply that would be eliminated as a result of the savings. For LADWP, the first source of supply that would be eliminated is the purchase of water from MWD. The cost of water saved through the SCWR Program is $350/AF, which is substantially less than the 2013 MWD water rate of $847/AF for Tier 1 Full Service Treated Water. The program is cost effective by this standard.

Reducing water usage also results in energy savings along with a reduction in associated greenhouse gas emissions, reported here as metric tons of avoided carbon dioxide (CO_2) emissions. The total energy savings associated with the reduction in water purchased from MWD includes the energy used by MWD to import the water and the energy used by LADWP to treat the water, distribute the water and treat the wastewater, where applicable. In assessing the energy savings and the avoided CO_2 emissions associated with water savings, the CO_2 emissions associated with the LADWP energy savings are considered direct avoided emissions and those associated with the MWD energy savings are considered indirect avoided emissions.

The cost per kilowatt hour (kWh) of energy saved and the cost per ton of CO_2 emissions avoided associated with the water savings are yet to be determined. However, both the energy savings and the CO_2 emissions avoided are co-benefits of the water savings and the cost per kWh and per metric ton avoided may be provided in the future or informational purposes only.

Program Descriptors

Market Sectors Residential (Single family and up to 3 dwelling units)
Multi-family (4 units or more)
Commercial, Industrial, and Institutional (CII)

Program Status Continuing

Launch Date Continuing

Measures Targeted

	Residential	Multi-Family	CII
Appliances			
High-Efficiency Clothes Washer (WF 4.0 or less)	√	√	
Irrigation			
Weather-Based Irrigation Controllers	√	√	√
Rotating Sprinkler Nozzles (Min. of 15)	√	√	√
Large Rotary Nozzle (Min. of 8)			√
California Friendly Landscape Incentive Program*			
2000 square feet maximum	√		
250 square feet minimum	√	√	√
Toilets			
High-Efficiency Toilets (1.28 gpf, tank type)	√	√	√
High-Efficiency Toilets (1.28 gpf, flushometer type)			√
Zero and Ultra Low Water Urinal (0.0 to 0.125 gpf)			√
Cooling Tower Controllers			
Conductivity Controller		√	√
pH/Conductivity Controller		√	√
Food Equipment			
Air-Cooled Ice Machine (Must be Tier III)			√
Connectionless Food Steamer			√
Dental and Medical Equipment			
Dry Vacuum Pump (Max. 2 HP)			√

* The multi-family and CII California Friendly landscaping applications are managed entirely within LADWP.

Engagement Channels Vendors
Contractors
Retailers
LADWP Website
MWD Website
Advertising – Print, radio, television, bus, movie theatres, and billboards

Target Customers Residential
Multi-family
Commercial, Industrial, and Institutional (CII)

Qualifications LADWP customer of record
One rebate application per category per address
List of qualifying water conservation devices
Pre-approval required for all turf removal projects
Reservation required for all CII projects

 # Customers LADWP serves 675,000 water customers and approximately 3.9 million people. Targeted customers include those LADWP customers that are considering the purchase of a new appliance, toilet, or landscape improvement to incentivize them to upgrade the efficiency of such purchases and projects.

Staffing This is a joint program between LADWP and the MWD. MWD manages several components of the program including customer intake, screening, quality control (QC) review of project completion documentation and rebate processing. MWD hires a contractor to do this work. LADWP verifies customer qualification information and pays the LADWP portion of the rebate. LADWP staff is comprised of employees from the Water Conservation Group. The staff time required to manage the LADWP portion of the program is dependent on the effectiveness of the MWD contractor. Contractor turnover increases the workload during ramp up and increases processing time for rebates. The long-term staffing requirements for this Program are dependent on MWD continuing to support the program at their current level. If MWD discontinues support for portions of the program, such as for high-efficiency toilets (HET), LADWP would need to decide whether to continue that portion of the program on their own. In this instance, a reallocation of staffing would be needed to cover the components of the program currently managed by MWD.

Program Description

MWD initiated the region-wide SCWR Program for multi-family and commercial customers in 2001 and residential customers in 2008. This program replaced previous LADWP rebate and conservation programs that had been in place since 1987. The SoCal Water$mart Program provides baseline funding for a set of uniform rebates across the MWD service area and provides a clearinghouse for processing rebates for all MWD member agency customers. Local agencies have the option of supplementing baseline rebate amounts to their customers through the program. LADWP has increased baseline rebates for several qualifying products and programs.

LADWP's SCWR Program is designed to offer and promote indoor and outdoor water conservation solutions within the residential, multi-family and CII market sector. By encouraging adoption of economically viable water conservation measures, the program strives to overcome market barriers and to deliver programs and services aligned to support the UWMP and Water Reliability 2025 objectives.

The SCWR Program offers residential customers incentives ranging from $100 to $300 for the purchase of water-efficient devices, with the LADWP portion of the rebate ranging from $75 to $215. Residential customers are

limited to one rebate per type per address. Turf removal for residential customers is also managed out of this program. Residential customers can receive $2 per square foot, up to a maximum of 2,000 square feet, for the replacement of live turf with California Friendly, water wise landscaping.

Multi-family customers are covered under the CII portion of the program. The indoor and outdoor water use measures offered to multi-family customers are similar to those for residential customers but with higher rebate amounts for toilets. The turf removal/California Friendly® Landscaping program for multi-family customers is managed solely through LADWP with rebate co-funding from MWD. The rebate amount for multi-family turf removal is $1 per square foot, with a 250 square foot minimum.

The offerings for CII customers are expanded to include items specific to CII operations and higher rebate amounts are offered for most items. Rebates for CII customers range from $125 to $3,000 for the purchase of water-efficient equipment and plumbing fixtures, with the LADWP portion of the rebate ranging from $0 to $1,250. The turf removal/California Friendly Landscaping program for CII customers is managed solely through LADWP with rebate co-funding from MWD. The rebate amount for CII turf removal is $1 per square foot, with a 250 square foot minimum, or 100% removal if total landscaped area is less than 250 feet.

In addition to providing rebates, the MWD site provides lists of qualifying products for each measure, giving the customer a wide range of choices. Residential customers receive rebates for qualifying water-efficient devices by submitting a Consumer Rebate Program Application along with documentation of the qualifying purchase to LADWP.

The general process for the CII equipment purchase portion of the SCWR program is as follows:

- Customer must obtain a rebate reservation approval prior to purchasing the equipment.
- Customer submits a rebate reservation through the MWD website.
- MWD prescreens the applications, conducts QC review of project documentation, and issues rebate reservations.
- LADWP verifies account information, and approves rebate reservations.
- Customer purchases qualifying equipment and sends verifying documentation to MWD.
- MWD reviews post-project documentation and then pays out the full rebate amount for completed projects and invoices LADWP for its portion.

The process for single family residential turf removal/California Friendly landscaping projects is more involved than the equipment rebate process and includes the following basic steps:

- Customer must obtain pre-approval prior to beginning the project
- Customer submits an application, including photographs of the turf to be replaced, for pre-approval through the MWD website
- MWD prescreens the applications and passes their findings on to LADWP
- LADWP verifies account information, pre-inspects a portion of the applications and approves rebate reservations
- Customer completes the project and sends Part 2 of the application to MWD who forwards this information to LADWP

- LADWP conducts a post-inspection for most turf removal projects and approves for payment
- MWD pays out the full rebate amount for completed projects and invoices LADWP for its portion of the rebate

Due to the complexity and size of the turf removal projects for multi-family and CII customers, these projects are managed totally by LADWP staff. The process for these projects includes the following steps:

- Multi-family or CII customer must obtain an application pre-approval prior to beginning the project.
- Customer submits an application package, including photographs of the turf to be replaced, for pre-approval to the LADWP Water Efficiency and Conservation Group.
- LADWP conducts pre-screening and contacts eligible customers to conduct a pre-inspection. 100% of CII projects are pre-inspected.
- On approval, customer begins the project, with LADWP conducting check-up inspections as the project proceeds.
- Rebates for CII projects can be paid out by LADWP in up to 4 progress installments.
- In order to receive the last payment, the project must be completed. A plant list must be submitted and the irrigation system is checked to ensure that it meets program requirements.

This program is designed to both educate and encourage LADWP customers to purchase and install qualifying products in their homes and buildings and to implement water efficient measures in their landscaping. SCWR meets the need of customers who are planning plumbing and equipment purchases and landscaping improvements.

Program Objectives and Expected Outcome

LADWP, as a part of the UWMP, has set ambitious water conservation goals, including reducing potable water use by 64,000 AFY by 2035 and meeting SB x7-7 mandates. The Water Reliability 2025 Initiative may accelerate these goals. SCWR is one of the core programs for helping LADWP achieve significant progress toward its water conservation goals by focusing on offerings that leverage naturally occurring market channels (e.g. retailers, contractors, etc.).

Rebates are the most cost-effective means for incentivizing the implementation of products and measures requiring a degree of skill or specialization to install. The SCWR Program is more cost effective and more versatile than direct install and free equipment in these types of applications. Rebates also incentivize the customer to install water efficient equipment and landscaping while allowing them to choose the extent and scope of the project.

LADWP's SCWR Program is designed to offer and promote indoor and outdoor solutions within all market sectors. By encouraging adoption of economically viable water conservation measures, the program strives to overcome market barriers, to increase market penetration and to deliver programs and services aligned to support its water conservation goals.

The objectives of the program are:

- To shift the market to more efficient technology
- To increase the number and variety of water-efficient products available through retailers and other commercial outlets
- To reduce the costs of advanced water-efficient products
- To lead to legislative mandates for improved water efficiency in products and codes
- To give customers the choice of how they will implement measures at a range of cost to themselves
- To facilitate and sustain the long-term adoption of water-efficient appliances and equipment
- To facilitate and sustain the long-term transition to water-efficient landscaping
- To provide attractive California Friendly landscaping which urges others to act
- To provide program services to residential, multi-family and CII customers in all Council Districts
- To enhance the customer experience with LADWP

Incentives encourage customers to request and install equipment with advanced efficiency capabilities. This in turn reduces the cost and increases the availability of advanced water-efficient equipment available on the market. As advanced technologies become more economical and available, legislation and ordinances evolve to require these advanced technologies. This is the path that led to the current requirement for 1.28 gallon per flush toilets in new construction.

Additionally, this program continues to contribute to the economic vitality and job creation in the City of Los Angeles and beyond, by incentivizing customers to take actions that benefit the economy and create jobs, such as buying appliances, replacing plumbing fixtures, or installing California Friendly landscaping on their property.

Program Strategy and Implementation

As an ongoing program, the strategy for the SCWR Program is to meet the needs of customers who need either a single measure or multiple measures, by encouraging the adoption of water-efficient choices when purchasing and installing household appliances, toilets, commercial and industrial equipment and installing landscaping projects. This is accomplished by leveraging the naturally occurring market place (retailers, contractors, etc.) to market water conservation products and practices and LADWP's rebates. It does this by offering customers educational materials about water conservation options, rebates, and other incentive offerings via market channels, LADWP's website and MWD's website. In addition to influencing efficient purchases, the SCWR Program educates customers about indoor and outdoor water conservation practices.

SCWR is a mature program, in existence since 2001 for multi-family and CII customers and 2008 for residential customers and a replacement of LADWP rebate programs in place since 1987. Its current structure includes MWD intake and rebate processing with LADWP conducting support activities. Changes will continue to be made to the qualifying list of measures as codes and standards change or as new qualifying emerging technologies enter the market and are commercially available. The program has sufficient capacity to accommodate current demand.

As currently designed, implementation of SCWR includes the MWD intake and rebate processing with review and approval by the LADWP Water Conservation Group. The SCWR Program will continue to be offered to LADWP customers to make water conservation available to all customer segments and to achieve cost-effective water conservation. This program is intended for products and practices that are commercially available but have not yet penetrated the market. SCWR continues to position LADWP as a national leader in water conservation and assists LADWP in meeting its UWMP goals, as well as ensuring that all LADWP customer segments, including the residential, multi-family and CII customer, have access to real and meaningful water conservation.

Program Barriers

While there are several apparent barriers to SCWR, they are barriers that can be mitigated, given enough information, investigation and/or attention. These barriers include:

- Lack of customer awareness of program
- Lack of knowledge on benefits vs. expense
- Customer must purchase the product or install landscaping prior to receiving the rebate
- Length of time to obtain rebate

Integration and Transformation Opportunities

SCWR, as currently designed, is intended to be an additional offering in LADWP's water conservation portfolio, which compliments the extensive suite of water conservation offerings. As such, SCWR continues to position LADWP as a national leader in water conservation and encourages indoor and outdoor water conservation.

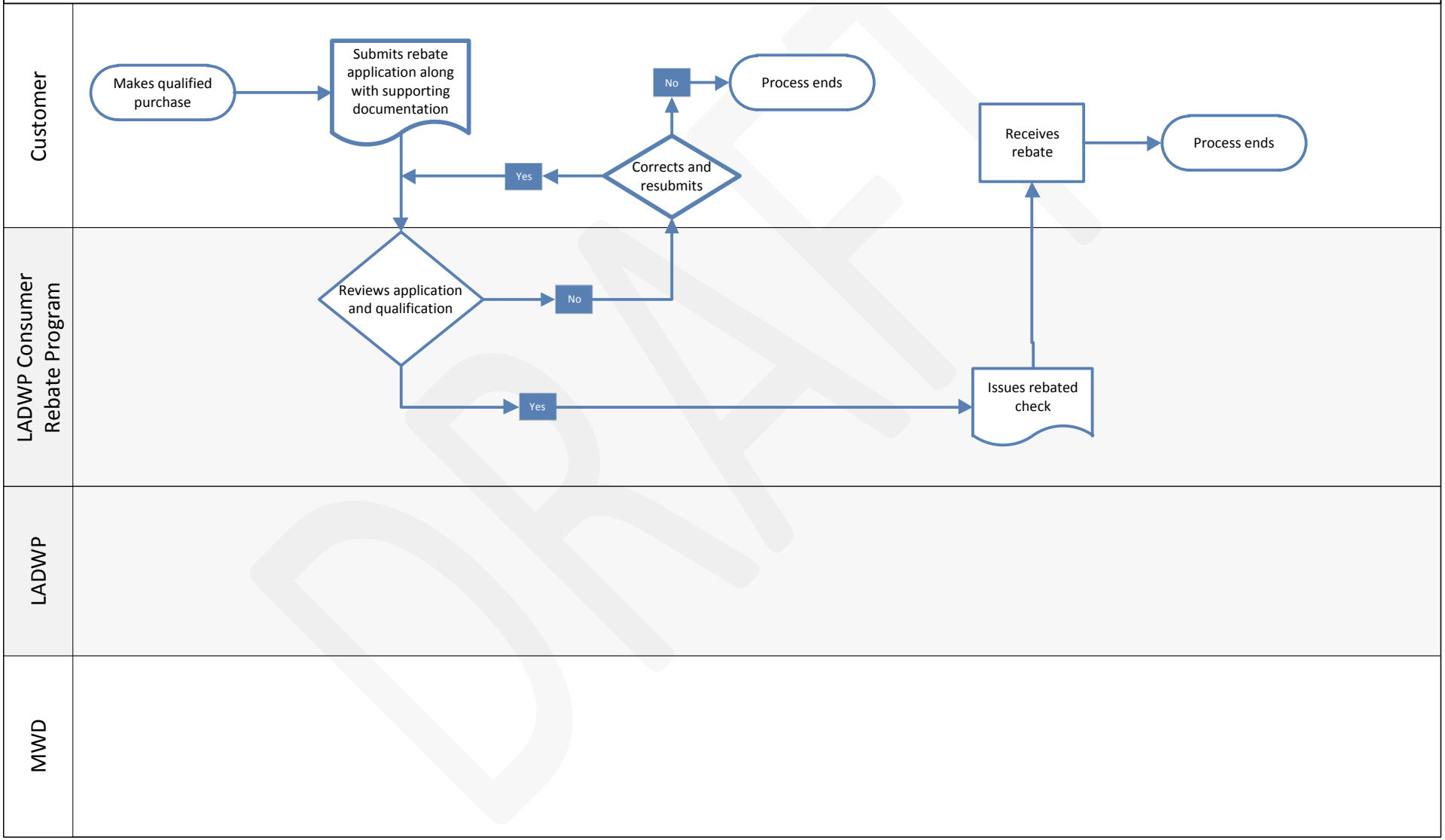
Long-Term Vision/Goals

The long-term vision of this Program, as it is designed, is to continue to enable LADWP customers to achieve water conservation. SCWR will continue to offer rebates for water conservation measures to LADWP's customers. SCWR is an effective tool for promoting measures that are entering the commercial implementation phase of the product life cycle. Specific measure offerings will continue to be added as new emerging technologies become commercially available and removed as codes and standards, etc. are adopted that remove the need and/or cost-effectiveness of such impacted measures.

The goal of SCWR, as with all LADWP water conservation measures and programs, is to make cost-effective water conservation available to the market, including the residential, multi-family and CII segments. The ultimate goal of SCWR, along with the entire LADWP portfolio, is to educate customers on water conservation, make water efficiency a common first option when considering new appliances, landscape improvements, etc. and ultimately continue to transform the residential, multi-family and CII sectors.

FY 2013/14 Los Angeles Department of Water and Power

SoCal Water$mart Rebates Program (SCWR) – Residential Consumer Rebate Program



LADWP

Free Water Conservation Items Business Plan

FYs 2013/14 – 2019/20

Program Overview

The Free Water Conservation Items Program offers free water saving equipment to help residential, multi-family, commercial, industrial and institutional (CII) customers use water efficiently in their homes and buildings. This program is designed to offer and promote the installation of advanced high efficiency devices and equipment in all market sectors. As an extension to this program, LADWP has a joint program with the Southern California Gas Company (SoCalGas), called the Multifamily Direct Therm Savings Program (MFDT), that provides free installation of water efficient devices in gas water-heated, multi-family buildings.

Fiscal Year	2013/14	2014/15	2015/16	2016/17	2017/18	2018/19	2019/20
Projected Program Budget* ($x1000)							
Free WC Items	$263	$267	$281	$286	$301	$310	$322
Multifamily Direct Therm	$644	$651	$686	$699	$736	$758	$788

* Program Budget numbers for FY 2014/15 and later are estimates only and have not been approved by either the Board of Commissioners or the City Council.

Program Cost-Effectiveness

- **$/AF Free WC Items** $52
- **$/AF Multifamily Direct Therm** $229

The method used for assessing cost-effectiveness for LADWP's water conservation and efficiency programs is to compare the cost per AF of water saved to the avoided marginal cost of the first source of water supply that would be eliminated as a result of the savings. For LADWP, the first source of supply that would be eliminated is the purchase of water from MWD. The cost of water saved through the LADWP Free Water Conservation Items Program is $52/AF, which makes this program extremely cost effective. The cost effectiveness for the MFDT Program is $229/AF. The MFDT Program has a higher cost due to the cost for direct installation of the items. The costs per AF for both parts of the Free Water Conservation Items Program, are substantially less than the 2013 MWD water rate of $847/AF for Tier 1 Full Service Treated Water and both parts of the programs are cost effective by this standard.

Reducing water usage also results in energy savings along with a reduction in associated greenhouse gas emissions, reported here as metric tons of avoided carbon dioxide (CO_2) emissions. The total energy savings associated with the reduction in water purchased from MWD includes the energy used by MWD to import the water and the energy used by LADWP to treat the water, distribute the water and treat the wastewater, where applicable. In assessing the energy savings and the avoided CO_2 emissions associated with water savings, the

CO_2 emissions associated with the LADWP energy savings are considered direct avoided emissions and those associated with the MWD energy savings are considered indirect avoided emissions.
The cost per kilowatt hour (kWh) of energy saved and the cost per ton of CO_2 emissions avoided associated with the water savings are yet to be determined. However, both the energy savings and the CO_2 emissions avoided are co-benefits of the water savings and the cost per kWh and per metric ton avoided may be provided in the future for informational purposes.

Program Descriptors

Market Sectors Residential (Single family and up to 3 units)
Multi-family (4 units or more)
Commercial, Industrial, Institutional (CII)

Program Status Continuing

Launch Date Continuing

Measures Targeted

	Residential	Multi-Family	CII
Plumbing Devices			
Bathroom Faucet Aerators	√	√	√
Kitchen/Break Room Faucet Aerators	√	√	√
Low-Flow Showerheads	√	√	√
Free Installation (MFDT)		√	
Equipment			
Pre-Rinse Spray Nozzles			√
Water Broom			√

Engagement Channels Customer Service Centers
Premier Account Executives
Customer Request
Water Conservation Hot Line
Events
Public Outreach & Community Partnership Program
LADWP Website
SoCalGas Website

Target Customers Residential, Multi-Family, Commercial, Industrial, and Institutional

General Qualifications LADWP customer
Demonstrate a need for the quantity and type of items requested

 # Customers LADWP serves 675,000 water customers and approximately 3.9 million people.

Targeted customers for general items include all LADWP residential, multi-family, commercial, industrial, and institutional customers. Targeted customers for special items include LADWP CII customers who can show a need for the item and a commitment to install and use the item.

Staffing Plan The Free Water Conservation Items Program staff is comprised of employees from the Water Conservation Group and the Customer Services Group. The Water Conservation Group manages the major functions of the program and distribution of items to customers and other LADWP groups. The Customer Services Group manages the distribution of free items to residential customers through LADWP's 13 Customer Service Centers. SoCalGas is the primary administrator of the MFDT Program, with the Water Conservation Group providing support and coordination.

Program Description

The Free Water Conservation Items Program is an existing program that offers free items to LADWP customers including faucet aerators, showerheads, and selected high efficiency commercial items. This Program is intended for products with water efficiencies greater than what are commercially available.

The program began in 1977 with the distribution of 1.5 million water conservation retrofit kits. During the drought of 1987 through 1992, multiple free water conservation item programs were developed and launched by LADWP. Today, distribution of free faucet aerators and showerheads continues for all single-family, multi-family, and commercial, industrial and institutional customers. Additional items, including pre-rinse spray nozzles and water brooms are offered to commercial, industrial and institutional customers. In addition, LADWP recently entered into an agreement with SoCalGas to offer free installation of faucet aerators and showerheads in multi-family housing.

LADWP's Free Water Conservation Item Program is designed to offer and promote water conservation within all market sectors. Providing free water conservation items encourages customers to change out equipment to a higher efficiency earlier than they normally would and opens the door to the implementation of additional conservation measures. For many customers, this program is often the customer's first introduction to water conservation and is empowering to them because they institute cost-effective change.

Water-saving showerheads and faucet aerators are available to LADWP customers, free of charge, upon request. Residential customers can pick up free faucet aerators and low-flow showerheads at Customer Service Centers located throughout the City or by calling the Water Conservation Hotline. These items are also routinely handed out at community events and business events where LADWP is an exhibitor. The Water Efficiency and Conservation Group sends boxes of free items to the Customer Service Centers for distribution and provides items for other LADWP groups as requested for handouts at events.

Multi-family and CII customers can obtain free items by calling the Water Conservation Hotline or through the SoCalGas MFDT Program. The Water Conservation Group handles the Water Conservation Hotline calls and

determines the type and quantity of items to be provided. Traditionally, the items are then boxed and delivered or mailed to the customer.

Multi-family customers are also eligible to participate in the SoCalGas MFDT Program. This program is administered by a designated contractor under a contract awarded by SoCalGas. Customers who wish to participate in the program communicate directly with the contractor listed for the MFDT Program on the SoCalGas website. The contractor enrolls customers, schedules installation appointments, and conducts the installations. LADWP verifies customer eligibility submitted by SoCalGas on a quarterly basis, and coordinates with SoCalGas on certain aspects of the program.

CII customers obtain free items by calling the Water Conservation Hotline. The Water Conservation Group handles these calls and determines the type and quantity of items to be provided. The items are then boxed and delivered or mailed to the customer. CII customers requesting pre-rinse nozzles or water brooms must show a need for the item and a commitment to install it, in order to receive these items.
Through adoption of economically viable water efficiency measures, the program strives to overcome market barriers and to deliver services aligned to support the UWMP and Water Reliability 2025 objectives.

Program Objectives & Expected Outcome

LADWP, as a part of the UWMP, has set ambitious water conservation goals, including reducing potable water use by 64,000 AFY by 2035 and meeting SB x7-7 mandates. The Water Reliability 2025 Initiative may accelerate the UWMP goals. Free Water Conservation Items seeks to be one piece of the objective to assist LADWP to achieve progress toward these goals. The program facilitates this effort, focusing on offerings that leverage existing channels.

LADWP's Free Water Conservation Items Program is designed to offer and promote water conservation solutions within the residential, multi-family and CII market sectors. By encouraging adoption of economically viable water conservation measures, the program strives to overcome market barriers and to offer products and services aligned to support the UWMP and Water Reliability 2025 objectives.

The program's objectives include:

- Introduce customers to water efficiency
- Provide a simple, cost-effective method for customers in all market sectors to conserve water
- Open the door for introducing customers to other LADWP water conservation and efficiency programs
- Facilitate and sustain the long-term delivery and adoption of water-efficient products and services for residential, multi-family and CII buildings
- Cultivate, promote and sustain lasting water-efficient behaviors by customers
- Enhance the customer experience with LADWP and its water conservation programs
- Educate and encourage LADWP customers to purchase and install advanced water efficient products in their home

Program Strategy and Implementation

As an ongoing program, the strategy for the Free Water Conservation Items Program is to introduce consumers to water efficiency, by encouraging the installation of water-efficient items in their homes and businesses. This is accomplished by leveraging existing channels (Customer Service Centers, public events, Premiere Account Executives) to market and distribute free water conservation items. Approximately 27,600 showerheads and 62,200 faucet aerators were distributed between July 2007 and June 2013, resulting in water savings of approximately 743 AFY.

This program is extremely cost effective. The items that are given away are very inexpensive and provide a lasting benefit in water conservation and enhanced customer experience. The strategy moving forward is to continue to fund and administer the Free Water Conservation Items Program to all LADWP customers and to continue to partner with SoCalGas in the MFDT Program.

Free Water Conservation Items is a mature program, in existence since 1977. The existing structure includes the Water Conservation Group, Customer Service, and Premier Account Executives. The SoCalGas MFDT Program, added in Q3 of FY 2012/13, expands marketing and implementation of the Free Water Conservation Items Program for multi-family buildings. Existing staffing levels are adequate to continue to serve this program.

Program Barriers

There are few barriers to the Free Water Conservation Items Program. Everyone loves "free" items. The barriers that exist can be mitigated through expanded outreach and assistance. These barriers include, but are not limited to:

- Lack of customer awareness of the program
- Lack of knowledge (or initiative) on installing the free items
- Some newer faucets are not amenable to aerator replacement

The Program Outreach and Community Partnerships Program assists in overcoming lack of awareness of the program by reaching out to and educating hard to reach customers. The SoCalGas MFDT program assists in overcoming the installation barrier by providing free installation of faucet aerators and low-flow showerheads in multi-family buildings. This should increase penetration into the multi-family market sector. Increased marketing of the Free Water Conservation Items Program by Premier Account Executives would assist in increasing awareness of the program and distribution of items available for CII customers.

Integration and Transformation Opportunities

Free Water Conservation Items, as currently designed, is intended to be an additional offering in LADWP's water conservation portfolio, which compliments the extensive suite of water conservation offerings. This program introduces customers to water conservation through simple measures that they implement themselves or that are implemented by direct installation through the MFDT program. This introduction to water conservation raises customer awareness and can lead them to seek additional water savings either on their own or through

other LADWP programs. The partnership with SoCalGas for the MFDT part of the program, integrates water conservation measures with natural gas energy savings. This can lead customers to seek additional opportunities for energy efficiency through LADWP's energy efficiency programs. This is a simple program that provides attractive first touch outreach opportunities to customers, potentially leading to continuing water conservation and energy efficiency practices.

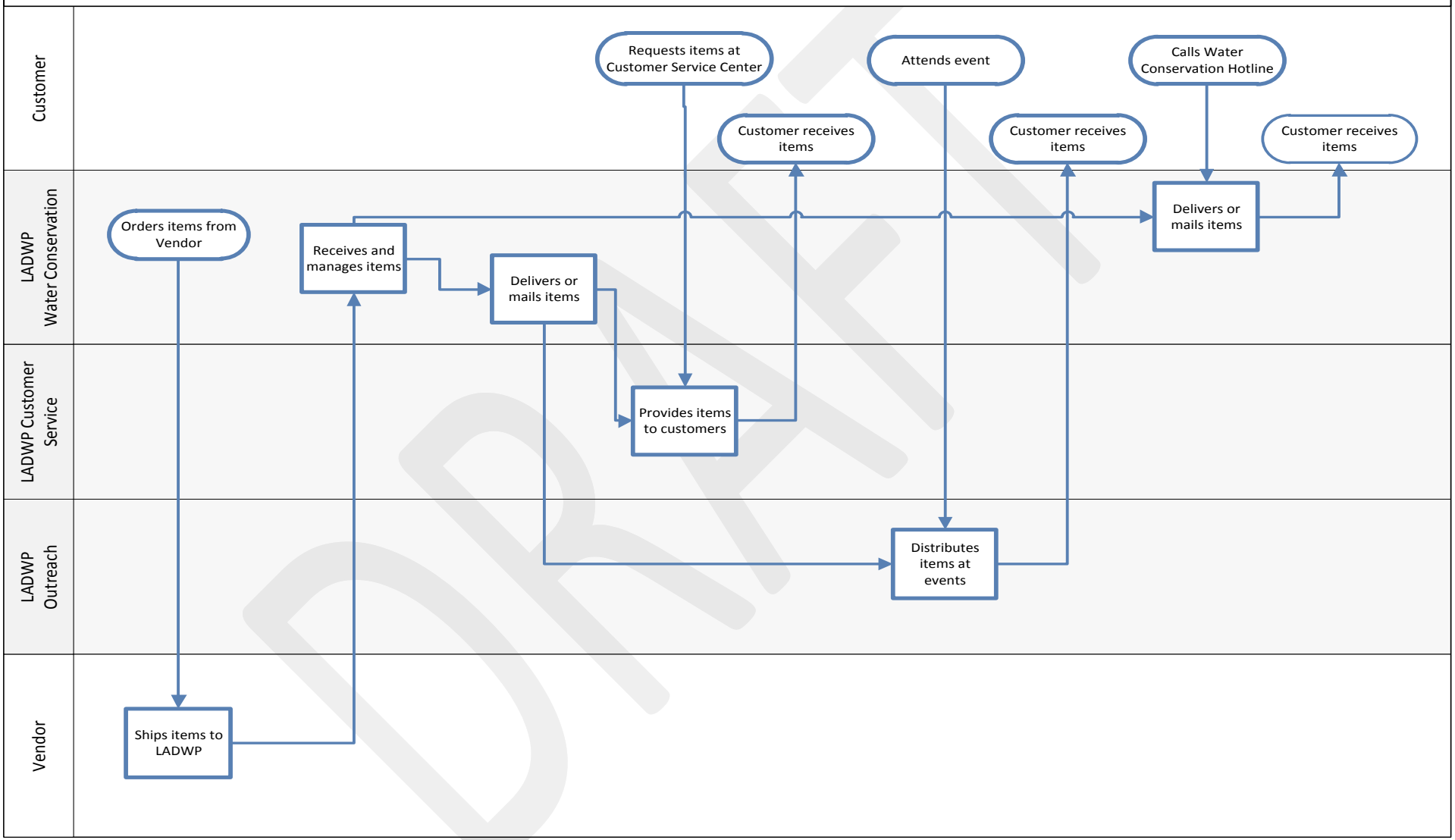
Long-Term Vision/Goals

The long-term vision of this program is to continue to enable LADWP customers to achieve water conservation. This is "one piece" of LADWP's support for the UWMP, SBx7-7 and Water Reliability 2025 goals and continued leadership in water conservation. The program will continue to offer free items to LADWP's customers and is an effective tool for promoting the installation of advanced efficiency water conservation items that have been tested but are still emerging in the market. New and improved items will continue to be added as new technologies move from research to implementation and others removed as items become commercialized in the marketplace.

The goal of Free Water Conservation Items, as with all LADWP water conservation measures and programs, is to make cost-effective water conservation available to all sectors of the market. The ultimate goal of the program, along with the entire LADWP portfolio, is to educate customers on water conservation, encourage customers to install advanced water efficient devices, make water conservation a common practice, and lead to market transformation of water saving devices for all market sectors.

FY 2013/14 Los Angeles Department of Water and Power

Free Water Conservation Items (FWCI)



LADWP

Water Conservation Technical Assistance Program (WCTAP) Business Plan

FYs 2013/14 – 2019/20

Program Overview

The Water Conservation Technical Assistance Program (WCTAP) is a financial incentive program offered through LADWP for commercial, industrial, institutional (CII), and multi-family customers. The program pays up to $250,000 for the installation of pre-approved equipment and products that demonstrate water savings. The joint effort between LADWP and the customer, helps modernize customer facilities with the latest water-efficient technology and equipment, helps to make the customer's business more competitive by saving the customer money and conserves water.

Fiscal Year	2013/14	2014/15	2015/16	2016/17	2017/18	2018/19	2019/20
Projected Program Budget ($x1000)*	$1,090	$1,091	$1,096	$1,097	$1,101	$1,102	$1,103

* Program Budget numbers for FY 2014/15 and later are estimates only and have not been approved by either the Board of Commissioners or the City Council.

Program Cost-Effectiveness

- **$/AF** $250

The method used for assessing cost-effectiveness for LADWP's water conservation and efficiency programs is to compare the cost per AF of water saved to the avoided marginal cost of the first source of water supply that would be eliminated as a result of the savings. For LADWP, the first source of supply that would be eliminated is the purchase of water from MWD. The cost of water saved through the LADWP Water Conservation Technical Assistance Program is $250/AF, which is substantially less than the 2013 MWD water rate of $847/AF for Tier 1 Full Service Treated Water. The program is cost effective by this standard.

Reducing water usage also results in energy savings along with a reduction in associated greenhouse gas emissions, reported here as metric tons of avoided carbon dioxide (CO_2) emissions. The total energy savings associated with the reduction in water purchased from MWD includes the energy used by MWD to import the water and the energy used by LADWP to treat the water, distribute the water and treat the wastewater, where applicable. In assessing the energy savings and the avoided CO_2 emissions associated with water savings, the CO_2 emissions associated with the LADWP energy savings are considered direct avoided emissions and those associated with the MWD energy savings are considered indirect avoided emissions.

The cost per kilowatt hour (kWh) of energy saved and the cost per ton of CO_2 emissions avoided associated with the water savings are yet to be determined. However, both the energy savings and the CO_2 emissions avoided

are co-benefits of the water savings and the cost per kWh and per metric ton avoided may be provided in the future for informational purposes.

Program Descriptors

Market Sector	Multi-family, Commercial, Industrial, Institutional (CII)
Program Status	Continuing
Launch Date	Continuing
Measures Targeted	Advanced Cooling Tower Water Treatment Systems On-site Recycling of Wastewater Emerging Technologies Industry Process-Specific Technologies Flow Restrictor Projects
Engagement Channels	Premier Account Managers Manufacturers Contractors Vendors Customers
Target Customers	Commercial Governmental Industrial Institutional Multi-family
Qualification Guidelines	Must be a LADWP multi-family or CII water customer, in good standing Project must have demonstrated water savings of 25,000 gallons or more per year Water savings must be measurable by direct metering or some other method Project is not covered by other LADWP water conservation programs
# Customers	190,000 The qualifying project size for WCTAP has recently been reduced thus expanding the applicability of the program to a much larger customer base including multi-family and CII customers.
Economic Climate	Although the economy is improving, businesses in the City of Los Angeles continue to face economic challenges. WCTAP assists multi-family and CII customers in reducing

their water costs, which strengthens their revenue position, profitability and ultimately increases the odds that they will prosper in this emerging economic recovery.

Staffing Plan Internal and external resources are leveraged to provide the services offered through WCTAP. The internal staff is comprised of employees from the Water Conservation Group. The Water Conservation Group manages the entire WCTAP process including intake, administration, pre-inspection, project assessment, and confirmation of potential savings and rebate amounts.

Program Description

WCTAP provides rebates for custom projects that are implemented by CII and multi-family customers. The rebate was initially set at $1.75/1,000 gallons of water saved over a 2-year period, with projects required to be permanent physical changes, additions or deletions to the customer's facility resulting in a water savings of 75,000 gallons/year and lasting for at least 5 years.

In an effort to expand customer participation and respond to recent water efficient technologies, the following changes to the WCTAP program were made in FY 2012/2013.

- The program provides rebates for new construction projects that go above and beyond local, state, and federal regulatory requirements while meeting program guidelines.

- For water conservation device retrofits that exceed the savings of equipment rebated in the MWD SoCal Water$mart Rebates (SCWR) Program, such devices are incentivized at a rate of $1.75 per 1000 AFY over the published life designated by MWD.

- For measures that are expected to last 10 years or more (i.e., recycling systems, softening systems, process improvement systems), the WCTAP incentive will be calculated for each additional 5-year period up to the measure life.

- The minimum water savings to participate in WCTAP is 25,000 gallons/year.

- If customer service issues arise in the SCWR Program, the WCTAP can be used to pay a customer the same rebate that would be received through the MWD SCWR Program.

These recent program changes substantially expand the applicability of the WCTAP to a wider range of customers and projects.
Past projects have included:

- Cooling tower water treatment upgrades
- Water recycling systems for commercial laundries
- Water saving systems for hospitals
- Efficient dye and tunnel washer machines
- Industrial process improvements

The program offers up to $250,000 in financial incentives for pre-approved equipment and products that demonstrate water savings. The incentive amount is based on the water savings accomplished by the project. The incentive is calculated at $1.75 per 1,000 gallons of water saved over a number of years depending on the project, with a cap not to exceed the installed cost of the project. Incentives are paid upon verified installation and demonstrated water savings. Eligible customers include multi-family and CII customers.

The general WCTAP program process involves the following:

- Customer sends application and supporting documentation to LADWP
- LADWP Water Conservation Group reviews and approves the application
- LADWP provides pre-inspection, sends a letter of approval with a preliminary estimate of savings and rebate.
- Customer installs and operates equipment as proposed on the application and supporting documentation.
- LADWP inspects the completed project and invoices, and makes final determination of cost and savings estimates and issues rebate.

Program Objectives and Expected Outcome

As the nation's largest municipal utility, LADWP utilizes WCTAP to contribute to achieving its water conservation goals. This includes capturing water efficiency projects that may otherwise not be realized by LADWP multi-family and CII customers, potentially losing tremendous water savings. WCTAP further positions LADWP as a progressive, nation leading publicly owned utility in water conservation, as well as assisting its customers in controlling water expenditures now and into the future. The nature of these projects allows LADWP and its customers to find real water savings projects that are highly cost effective and deliver savings that would otherwise be unrealized.

The objectives of this Program are to:

- Partner with customers to seek out and upgrade equipment with new, advanced water-efficient technologies
- Promote and encourage the installation of customer specific water-efficient equipment that would not otherwise be accommodated by other LADWP programs
- Reduce water consumption for LADWP customers, increasing their profit margins and reducing GHGs emitted into the environment
- Increased satisfaction by all customer bases
- Leverage program incentives and processes to drive comprehensive water savings projects that are highly cost effective and deliver real savings
- Help promote promising water-efficient technologies

LADWP's WCTAP Program is an extension of LADWP's standard incentive programs. It goes a step beyond standard programs to encourage customers to implement advanced efficiency, industry specific and unique water conservation projects that are not otherwise covered by LADWP's other water incentive programs. These

types of projects are not necessarily scalable to the average customer and have savings that are a tremendous benefit to these LADWP customers.

The recent changes to the program extend its reach to a broader customer base and a larger range of projects. These changes are expected to substantially increase participation in the program, especially by multi-family customers. Although water savings per project may be smaller, the increase in the number of projects is expected to lead to higher overall water savings achieved by the program.

Program Strategy and Implementation

WCTAP leverages technical resources to deliver this program to the qualifying LADWP customer base. In today's economy and market conditions, capital is often readily available to many of the larger customers with these types of projects. The current strategy is to ensure that these customers are aware of the available capital, rebates and fast payback periods and utilize this message to capitalize on the market conditions and integrate other programs that these customers might benefit from.

Although an established program, WCTAP still has tremendous growth opportunity with increased and targeted outreach. These types of activities could include additional targeted marketing, strategically approaching key customers with Premier Account Executives, promotions at trade shows to market the program and to gain education of latest technologies. Additionally, LADWP will increase its presence with contractors in its service territory, leverage relationships with these contractors and its largest customers and seek out additional opportunities that benefit LADWP and the customer. One current marketing tactic is targeted advertising designed to promote the WC TAP and having the Water Conservation Group staff serve as the project advisory team. The development of webinars for specific industries, such as hospitals, is also being considered.
The program was recently changed to extend the applicability of the program to a broader range of customers and projects. This has resulted in an expansion of the number of projects from approximately 50 per year to greater than 200 projects anticipated for FY 2013/14. A large part of this increase is attributable to multi-family toilet retrofit projects using the most efficient toilet currently available.

WCTAP is a mature yet evolving program. As currently designed, WCTAP targets and benefits a large number of multi-family and CII customers with high water savings potential, giving LADWP's water conservation portfolio an additional boost to its savings. WCTAP will continue to be a LADWP program offered to multi-family and CII water customers to make water conservation available to these customer segments and to achieve cost-effective water conservation.

Program Barriers

The barriers to WCTAP include:

- The initial expense to install qualifying measures can be rather large
- Customers may be unaware of the program
- Customers may be unaware of potential cost savings for water efficiency measures

Integration and Transformation Opportunities

Integration opportunities vary from customer to customer, but often times can be combined with offerings from LADWP's energy efficiency programs, as well as gas measures offered by Southern California Gas Company (SoCalGas). LADWP has recently begun to partner with SoCalGas, which could be extended to WCTAP, as appropriate, and would allow customers to better leverage water conservation activities with natural gas and electric integration opportunities. LADWP could also benefit from looking for additional integration opportunities when on customers' premises for pre or post-field inspections.

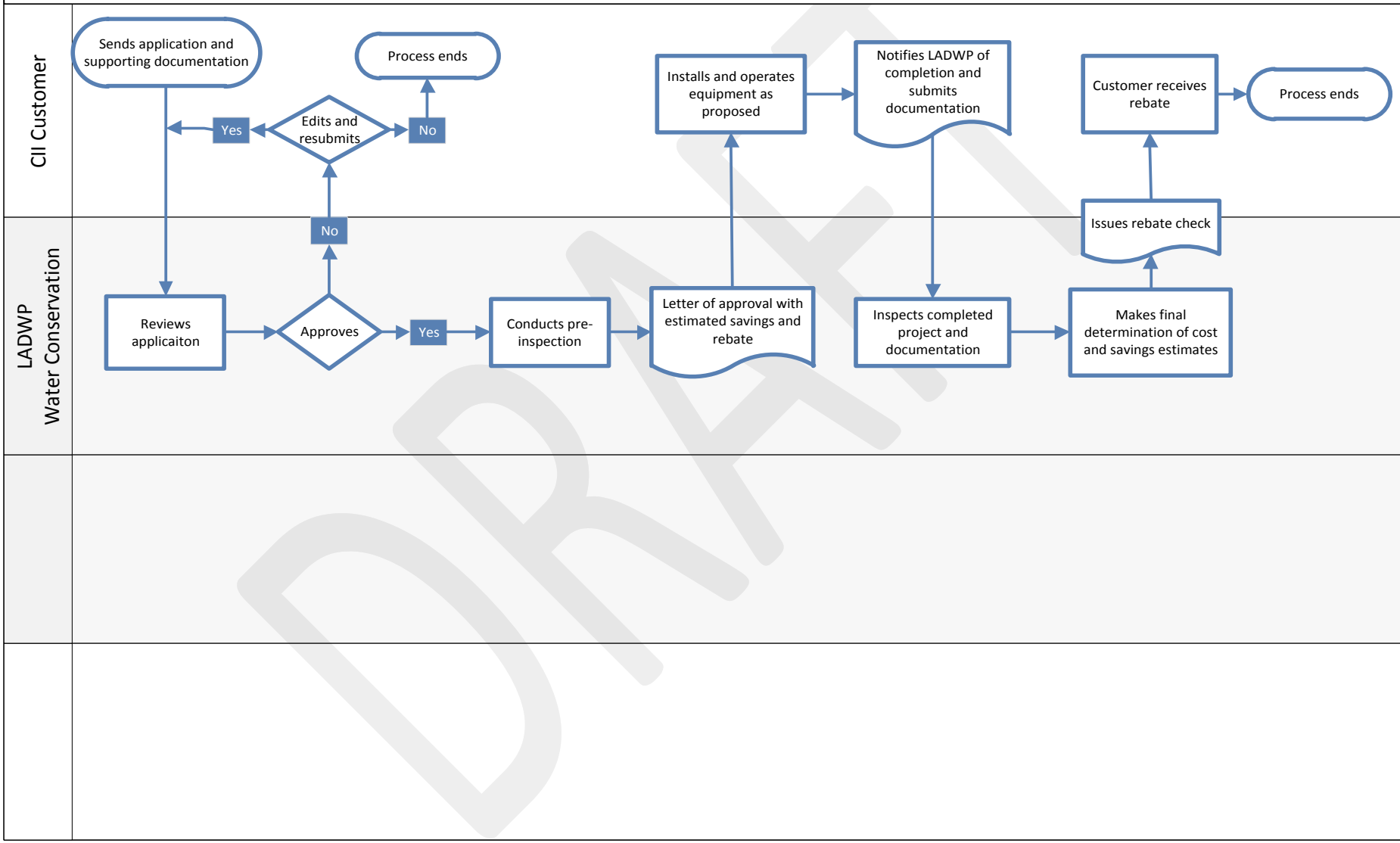
LADWP will continue to strive to be a leader in the water conservation space, adapting to the future systems and strategies that manufacturers develop and market to push "efficiency limits" to achieve all cost-effective water conservation and benefit LADWP customers. Transformation may include commercializing emerging technologies, moving higher-efficiency products to the broader marketplace and supporting additional codes and standards, as appropriate.

Long-Term Vision/Goals

The long-term vision of WCTAP to stay on top of the trends in the industry, looking for new technologies that can provide water conservation benefits for the targeted customer segment, decreasing their energy expenses, increasing their profits, and ultimately adding to the economic vitality of the Greater Los Angeles Area economy.

FY 2013/14 Los Angeles Department of Water and Power

Water Conservation Technical Assistance Program (WCTAP)



LADWP

Los Angeles Recreation and Parks (LARAP) Irrigation Efficiency

Program Business Plan

FYs 2013/14 – 2019/20

Program Overview

The Los Angeles Recreation and Parks (LARAP) Irrigation Efficiency Program is designed to improve water efficiency throughout the City's recreation and park facilities through upgrades in irrigation equipment and system design and to reduce potable water use through conversion to recycled water for irrigation. This program provides funding for irrigation improvement, landscape transformation to California Friendly plants, and recycled water projects proposed and implemented by LARAP.

Fiscal Year	2013/14	2014/15	2015/16	2016/17	2017/18	2018/19	2019/20
Projected Program Budget* ($1,000)	$3,000	$3,000	$3,000	$3,000	$3,000	$3,000	$3,000

* Program Budget numbers for FY 2014/15 and later are estimates only and have not been approved by either the Board of Commissioners or the City Council.

Program Cost-Effectiveness

The method used for assessing cost-effectiveness for LADWP's water conservation and efficiency programs is to compare the cost per AF of water saved to the avoided marginal cost of the first source of water supply that would be eliminated as a result of the savings. For LADWP, the first source of supply that would be eliminated is the purchase of water from MWD. The LARAP Irrigation Efficiency program is still under development. Since 2007, the City of Los Angeles has been forced to reduce its expenditures. These budget reductions have hit every department in the City and have been especially felt by the Department of Recreation and Parks. This Program offers LADWP and LARAP an opportunity to make a difference in park operating costs and enhance recreational opportunities for City residents. Cost-effectiveness data will be provided upon further implementation of the program.

Reducing water usage also results in energy savings along with a reduction in associated greenhouse gas emissions. The total energy savings associated with the reduction in water purchased from MWD includes the energy used by MWD to import the water and the energy used by LADWP to treat the water, distribute the water and treat the wastewater, where applicable. In assessing the energy savings and the avoided CO_2 emissions associated with water savings, the CO_2 emissions associated with the LADWP energy savings are considered direct avoided emissions and those associated with the MWD energy savings are considered indirect avoided emissions.

The cost per kilowatt hour (kWh) of energy saved and the cost per ton of CO_2 emissions avoided associated with the water savings are yet to be determined. However, both the energy savings and the CO_2 emissions avoided are co-benefits of the water savings and the cost per kWh and per metric ton avoided will be provided for informational purposes only. This data also will be provided upon further implementation of the LARAP Irrigation Efficiency Program.

Program Descriptors

Market Sector	LA Recreation and Parks
Program Status	Continuing
Launch Date	2007
Measures Targeted	High efficiency sprinkler heads Smart irrigation controllers Repair or replacement of irrigation distribution systems California Friendly landscaping Conversion to recycled water for irrigation
Engagement Channels	LA Recreation and Parks
Target Customers	LA Recreation and Parks
# Customers	1
Staffing Plan	The staff is comprised of employees from the LARAP and the LADWP Water Conservation Group. The project planning and implementation is managed by LARAP, while the LADWP Water Conservation Group reviews and recommends projects for approval to be funded and monitors progress.

Program Description

LADWP and LARAP are working in partnership to promote and advance water conservation and efficiency in Los Angeles at City parks. A Memorandum of Understanding (MOU) was adopted in 2007 that established a mechanism by which the LADWP provides annual funding to LARAP for the implementation of water conservation and water efficiency projects at City parks. Water efficiency improvements include, but are not limited to repair and replacement of existing irrigation distribution systems, installation of high efficiency sprinkler heads, installation of weather-based smart irrigation controllers, and replacement of turf with California Friendly landscaping. The program also provides funding for projects that switch potable water irrigation systems to recycled water use which results in a savings of the entire pre-project potable water use for these projects.

The MOU between LADWP and LARAP lays out the following parameters for the program; identification of specific parks, the work to be conducted at each location, and estimated costs, developed by LARAP and presented in the form of an annual water conservation work plan. The plan must include detail, on a park-by-park basis, regarding the work to be performed, project milestones, and the cost estimates for each project in the respective fiscal year. The work plan is submitted to the LADWP Water Conservation Group for review and transmitted to the LADWP General Manager for final approval.

Required irrigation system characteristics for each project include:

- Proper hydrozoning, using irrigation equipment having matched precipitation rates
- Use of high efficiency sprinklers and installation of master valves where appropriate
- Achievement of a minimum irrigation system distribution uniformity of 70 percent
- Installation of a master valve and flow sensor
- Installation of weather-based irrigation control equipment with flow sensor capability

Upon receipt of written approval, the Water Conservation Group transmits the approved funding amount to LARAP via interdepartmental transfer. LARAP submits quarterly project reports including itemized expenditures for the period, cumulative expenditure total, a description of the work accomplished, work remaining and any implementation issues that may have arisen. A final report is submitted upon completion of each project including an accounting of all funds expended, explanation of any significant deviation from estimated cost, and a summary description of the work performed and discussion of any prescribed work not performed. LADWP benefits from the water conserved at each park and sustained over time by LARAP through ongoing maintenance and repair. LARAP benefits from reduced operating and water costs.

The LARAP Irrigation Efficiency Program was launched in response to the opportunities for water efficiency at LARAP facilities, the Department's budget challenges and the numerous opportunities to be able to capture water and cost savings for the Department. This program provides funding for LARAP to implement badly needed irrigation efficiency improvement projects that result in a reduction in water consumption and a corresponding reduction in water expenses for LARAP. The program also provides employment and job training opportunities for City youth. Funding for each year is at the discretion of LADWP and is dependent on completion of projects funded in prior years. The maximum annual funding amount is $3,000,000.

Program Objectives and Expected Outcomes

As the nation's largest municipal utility, LADWP believes in investing in the future success of Los Angeles. Part of this success hinges on improving water efficiency within the City's operations. LARAP Irrigation Efficiency is designed to leverage the resources and programs of LADWP and LARAP to make cost-effective water efficiency measures available to LARAP park facilities, as necessary and appropriate. LARAP has a high water footprint, but very limited resources to capture water efficiency and needs LADWP assistance.

This program develops and promotes water conservation by maximizing landscape water use efficiency and converting to recycled water use at City parks. The anticipated benefits include long-term water conservation, elimination of irrigation system water leaks, reduction of dry weather runoff, and improved health and

appearance of park landscape materials. By providing the opportunity for City parks to switch to recycled water use, the program also assists LADWP in achieving its recycled water goal of 59,000 AFY by 2035.
The objectives of this program are to:

- Assist LARAP to reduce its water costs, resulting in reduced operating costs to this end-use customer
- Sustain recreational opportunities for City residents
- Provide program services to LARAP in all Council Districts
- Provide job training and opportunities for City youth.
- Spur economic growth and invest back into the community
- Give LADWP and LARAP an opportunity to partner and lead by example in water efficiency
- Reduce GHG emissions and carbon footprint of the LARAP as a customer

Ultimately, the goal of the Program is to ensure that cost-effective water efficiency upgrades are made at LARAP facilities, benefitting LADWP customers and the environment. These practices lead to better health and appearance of park landscape and lead to a reduction in maintenance costs because of replacement of poor performing systems and installation of weather-based irrigation controllers. City youth who are employed by LARAP to assist with installation of the projects, learn valuable skills and water conservation practices that they take with them into the future.

Program Strategy and Implementation

The strategy for this program is for LADWP to partner with LARAP to assist LARAP in reducing water usage. LADWP's partnership with LARAP is facilitated by an MOU between LADWP and LARAP, which allows LADWP to fund LARAP's water efficiency and conservation projects. LARAP is the lead on this program with regard to project planning and implementation. LADWP approves the proposed project list, monitors progress and provides funding. Through this program, LADWP Water Conservation staff provides support services to LARAP, which include, but are not limited to:

- Review proposed project plans for compliance with program parameters and cost-effectiveness
- Assist with calculating and validating water savings estimates
- Inspect completed projects for compliance with the proposed project and with irrigation water efficiency standards

In spite of the recent downturn in the nation's state and local economies, LARAP continues to promote community welfare through programs and services offered at over 420 parks citywide. Since 2007, the City of Los Angeles has been forced to reduce its expenditures. These budget reductions have hit every department in the City and have been especially felt by LARAP. Although the Department gets a direct appropriation from the City's property tax valuation, citywide services including water and energy, which had been provided as a centralized cost to all City departments is now allocated against the Department.

This Program offers LADWP and LARAP a real opportunity to make a difference in park operating and maintenance costs, contribute to achieving LADWP water efficiency and conservation goals, and enhancing

recreational opportunities for City residents. LARAP has also utilized the program to offer training and job opportunities to City youth through summer youth employment programs.
LADWP has seized this opportunity to proactively partner with LARAP to implement a program that has multiple benefits to the environment, residents, and the Los Angeles economy.

Recent and current projects include:

- Richie Valens Park – Irrigation infrastructure upgrade, smart controllers, and turf reduction. Water savings 15.4 AFY.
- Los Feliz Golf Course - Converting to 100% recycled water for irrigation, turf reduction, and smart controllers. Potable water savings 23 AFY.
- Conversion to recycled water - Branford Recreation Center, Chevy Chase Recreation Center, Delano Recreation Center, North Atwater Park, and Wilmington Recreation Center. Potable water savings 66 AFY.

Program Development

The initial MOU for the program was designed to provide assistance to LARAP to improve irrigation efficiency and reduce water consumption. The program started with $1,000,000 for projects at Arroyo Seco Park, Mt. Carmel Recreation Center, and Elysian Park. As the program moved forward, the type of eligible projects was expanded to include conversion to recycled water for irrigation, which reduces potable water usage and is consistent with the LADWP goal to achieve its recycled water goal of 59,000 AFY by 2035 cost effectively.
The program currently focuses on repair and replacement of existing irrigation distribution systems, installation of high efficiency sprinkler heads, installation of weather-based smart irrigation controllers, and conversion to recycled water use. These methods have proven to be very cost-effective technologies in improving irrigation efficiency and will provide benefits to LARAP for many years to come.

With the severe cuts in overall City funding to LARAP over the past two years, the LARAP Irrigation Efficiency Program has been greatly impacted. The program relies on LARAP staff to prepare the annual work plan and crews to implement the approved projects. Layoffs and furloughs within LARAP have slowed and in many cases halted the construction of projects that were approved and funded in prior years. Thus, LADWP is waiting for those projects to be completed or at least to show substantial progress before funding additional projects.
This program will be continued for many years to come with a rate of funding that is determined to be feasible, given the nature of such projects, and LARAP staffing availability.

Program Barriers

Program barriers include:

- Lack of manpower in LARAP to manage projects
- Lack of installation capacity in LARAP
- LARAP budget cuts and furloughs

Integration and Transformation Opportunities

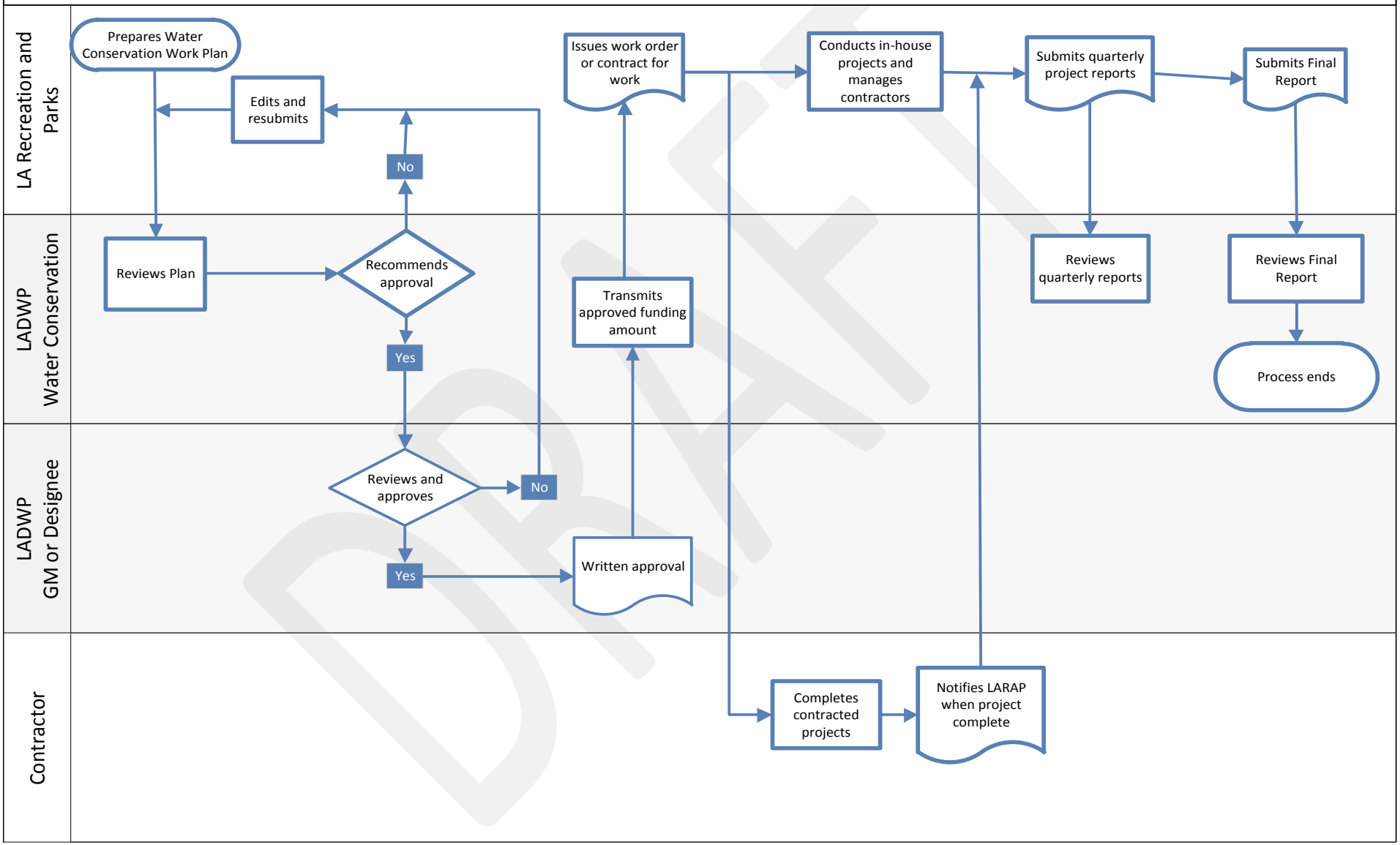
LARAP Irrigation Efficiency is founded on the principal of integration, utilizing proven water saving technologies to reduce operating and maintenance costs in a cash strapped City department. Additional opportunities may exist for LARAP in energy efficiency, such as lighting, and in other City departments. The critical factor is the ability of these departments to manage and implement funded projects in a timely and cost-effective manner. The transformation opportunities for LARAP Irrigation Efficiency include encouraging LARAP to expand implementation of these water saving measures to all of its parks, producing a more efficiently operating park system and leading to enhanced water savings for years to come.

Long-Term Vision/Goals

The long-term vision of the LARAP Irrigation Efficiency Program is for LADWP to continue to partner with LARAP to fund water saving irrigation projects and recycled water projects to reduce potable water consumption and seek out LARAP park facilities that have water savings potential.

FY 2013/14 Los Angeles Department of Water and Power

Los Angeles Recreation and Parks Irrigation Efficiency Program



GLOSSARY OF KEY TERMS

Term	Definition
AF	Acre-foot. One acre-foot is the volume of water covering an area of one acre at a depth of one foot. It is equivalent to 325,851 gallons or 43,560 cubic feet of water.
AFY	Acre-feet per year.
AB 2021	California legislation that requires each California utility (POU/IOU) to meet all achievable cost-effective energy efficiency measures by 2020, in an effort to reduce greenhouse gas emissions back to 2009 levels.
AB 32	California legislation, signed into law in 2006, which set the 2020 greenhouse gas emissions reduction goal into law.
ARCA	Appliance Recycling Centers of America
ARRA	American Recovery and Reinvestment Act of 2009, also known as the "stimulus bill," this legislation included the single largest investment in energy efficiency in history with approximately $20 billion specifically for efficiency. This legislation included funds for the Weatherization Assistance Project, State Energy Offices, and Energy Efficiency and Conservation Block Grants. A large proportion of the stimulus funds related to energy efficiency went to state and municipalities.
Behavior-Based Programs	Energy and water efficiency programs that utilize an understanding of how individuals interact with energy and water in order to decrease energy and water use.
Behavior Change	As it affects energy and water efficiency, behavioral change is a change in energy- or water-consuming activity originated by, and under control of, a person or organization. An example of behavioral change is adjusting a thermostat setting, or changing showering habits.
BMP	Best Management Practice
British Thermal Unit (BTU)	The amount of heat required to raise the temperature of 1 pound of liquid water by 1 degree Fahrenheit at the temperature at which water has its greatest density (approximately 39 degrees Fahrenheit).
California Strategic Plan	Plan presented and adopted by the CPUC (California Public Utilities Commission), presenting a single roadmap to achieve maximum energy savings across all major groups and sectors in California. This comprehensive Plan for 2009 to 2020 is the state's first integrated framework of goals and strategies for saving energy, covering government, utility, and private sector actions, and holds energy efficiency to its role as the highest priority resource in meeting California's energy needs.
California Water Plan	The California Water Plan, prepared by the DWR in collaboration with elected officials, agencies, tribes, water and resource managers, businesses, academia, stakeholders and the public, presents the status and trends of California's water resources and demands. It also evaluates different combinations of

	resource management strategies to reduce water demand, increase water supply, reduce flood risk, improve water quality, and enhance environmental and resource stewardship.
Carbon Footprint	Total carbon dioxide (some analyses include all greenhouse gases) emissions produced by an individual, group or event. This can be by transportation, food consumption and most any economic activity. Emissions for all GHG are usually measured in carbon dioxide equivalent (CO_2e).
CBO	Community based organization
CEC	California Energy Commission, which because of California's size often sets energy standards throughout the country.
Channel	A set of practices or activities necessary to transfer the ownership of goods, and to move goods, from the point of production to the point of consumption and, as such, which consists of all the institutions and all the marketing activities in the marketing process.
Channel Partner	A company/retailer/ESCO/individual that partners with a utility, manufacturer or producer to market and sell the products, services, or technologies. This is usually done through a co-branding relationship. Channel partners may be distributors, vendors, retailers, consultants, systems integrators (SI), technology deployment consultancies, and value-added resellers (VARs) and other such organizations.
Chillers	One or more "chillers" are the heart of the air-conditioning system for most large buildings. Most chillers use a vapor-compression cycle, much like residential equipment, dehumidifiers, and common garden-variety refrigerators. The difference is that the chiller removes heat (cools) from a water or brine loop, which typically serves air handlers that cool zones or floors of the building. The chiller rejects the heat to another water loop, typically one connected to a cooling tower mounted on the roof or near the building.
CII-Commercial, Industrial, Institutional	An energy and water efficiency customer segment that includes retail, grocery, office, restaurants, hotels, multi-family, manufacturing, hospitals, data centers, religious facilities, schools, government facilities and other large and small non-residential customers. Programs, measures and practices developed for this sector, target customers with common characteristics, including energy and water consumption profiles and complex energy and water systems.
Compact Fluorescent Lamp (CFL)	A compact fluorescent light bulb (CFL) is a fluorescent light bulb that has been compressed into the size of a standard-issue incandescent light bulb. Modern CFLs typically last at least six times as long and use at most a quarter of the power of an equivalent incandescent bulb.
Conditioned Space	The space within the building enclosure that is being environmentally controlled.
Cost-Effective Energy	All demand-side resources (energy efficiency, demand response, and

Efficiency	distributed generation) undergo a cost-effectiveness analysis. While the specific tests and the applications of those tests vary among the resources, the foundation of cost-effectiveness analysis for all demand-side resources is based in the Standard Practice Manual. To be considered cost effective, a program, measure, etc. must provide more "benefit" to society than the "cost" to society (rate payers, etc.) This is measured via a variety of ratios, including TRC, PAC, etc., which are defined in this glossary.
Cost-Effective Water Efficiency	The method used for assessing cost-effectiveness for LADWP's water conservation and efficiency programs is to compare the cost per AF of water saved to the avoided marginal cost of the first source of water supply that would be eliminated as a result of the savings. For LADWP, the first source of supply that would be eliminated is the purchase of water from Metropolitan Water District of Southern California (MWD).
Cross-Cutting	A term utilized in energy efficiency to indicate that a program, measure, etc. serves or benefits several different customer segments. (e.g. Residential, Small Business, Industrial, etc.)
CUWCC	California Urban Water Conservation Council (CUWCC) is a partnership between water agencies, public interest organizations, and private entities. The CUWCC was created to increase efficient water use statewide through partnerships among urban water agencies, public interest organizations, and private entities. The CUWCC's goal is to integrate urban water conservation Best Management Practices into the planning and management of California's water resources.
Decoupling	The separation of a utility's profit from its sales of electricity as a commodity. Instead, a utility's revenue is met by setting a revenue target, then electricity rates are regularly fine-tuned to meet that target.
Demand-Side Management	Energy demand management, also known as demand side management (DSM), is the modification of consumer demand for energy through various methods such as financial incentives and education. Usually, the goal of demand side management is to encourage the consumer to use less energy during peak hours, or to move the time of energy use to off-peak times such as nighttime and weekends.
Department of Energy (DOE)	A Cabinet-level Department tasked with "promoting America's energy security through reliable, clean, and affordable energy." Through the Office of Energy Efficiency and Renewable Energy (EERE), the agency runs programs to promote end-use efficiency, and R&D programs designed to advance energy efficiency technologies.
Department of Water Resources (DWR)	A State-level Department responsible for managing and protecting California's water.
Downstream	An energy efficiency term utilized to indicate the point at which a rebate transaction is paid. (e.g. Downstream, Midstream, Upstream) Downstream indicates that the energy efficiency measure was paid directly to the end-use

	customer.
Emerging Technology (ET)	A technology or practice that is not yet commercialized but is likely to be commercialized within a period (for example, within five years) or is already commercialized, but currently has a market share of less than about 2%.
End Use	Any specific activity performed by a sector (residential, commercial, industrial, or transportation) that requires energy, e.g., refrigeration, space heating, water heating, manufacturing process, feedstocks, etc.
Energy Assessment/Audit	An assessment of a home's energy use. These include a number of different types of surveys, including online audits, in-home home energy surveys, diagnostic home energy surveys, and comprehensive home energy audits.
Energy Conservation	Saving energy by doing with less or doing without (e.g., setting thermostats lower in winter and higher in summer; turning off lights; taking shorter showers; turning off air conditioners; etc.).
Energy Efficiency	Utilization of particular measures or practices that provides an energy efficiency benefit, without giving up comfort or additional effort. Installation of upgraded insulation, energy efficient appliances, and adjusting a boiler's limit control are examples of measures.
Energy Service Company (ESCO)	A professional business providing a broad range of comprehensive energy solutions including designs and implementation of energy savings projects, energy conservation, energy infrastructure outsourcing, power generation and energy supply, and risk management.
ENERGY STAR®	A joint EPA-DOE program that encourages energy by improving the energy efficiency of a wide range of consumer and commercial products, enhancing energy efficiency in buildings, and promoting energy management planning for businesses and other organizations
Environmental Protection Agency (EPA)	Founded in 1970, this independent agency was designed to "protect human health and safeguard the natural environment." They regulate a variety of different types of emissions, including the greenhouse gases emitted in energy use. They run several national end-use programs, like EnergyStar, Water Sense, SmartWay, Smart Growth programs, and green communities programs.
Free Rider	This evaluation term describes energy and water efficiency program participants who would have taken the recommended actions on their own, even if the program did not exist.
GPCD	Gallons per capita per day
GPF	Gallons per flush
GPM	Gallons per minute
Greenhouse Gas (GHG)	A greenhouse gas (GHG) is a gas in the atmosphere that absorbs and emits radiation within the thermal infrared range. This process is the fundamental cause of the greenhouse effect. Carbon dioxide (CO_2) is the most abundant GHG. Greenhouse gases are often reported in metric tons of carbon dioxide

	equivalent (CO_2e)
Heating, Ventilation, and Air Conditioning (HVAC)	The mechanical systems that provide thermal comfort and air quality in an indoor space are often grouped together because they are generally interconnected. HVAC systems include: central air conditioners, heat pumps, furnaces, boilers, rooftop units, chillers, and packaged systems.
HERS	Home Energy Rating System. HERS is a residential energy efficiency scoring system. Existing homes are scored on a scale where 0 indicates a net zero energy use home and 100 represents an 'American Standard Building'. The lower the score the more efficient the building. In 2009, the Department of Energy created a new scale, the EnergySmart Home Scale that subtracts HERS Index scores from 100 (making 100 a net zero energy home and higher scores better).
High-Efficiency Toilet (HET)	A high-efficiency toilet (HET) uses 1.28 gallons or less of water per flush.
Incremental Cost	The difference in cost relative to a base case, including equipment and labor cost.
Integrated Support Services (ISS)	A division within LADWP that provides skilled labor including carpenters, plumbers, and electricians for LADWP's direct install programs.
Integration	In energy efficiency, the process of including multiple end-use measures and/or solutions that might benefit the customer at the same time. (e.g. electric, natural gas, water, solar, lighting, HVAC, insulation, etc.)
Investor-Owned Utility (IOU)	Utilities owned by investors or shareholders. A privately-owned electric utility whose stock is publicly traded. It is rate regulated and authorized to achieve an allowed rate of return on capital that it has invested in the business in order to provide service to customers. IOU's can be listed on public stock exchanges.
Kilowatt (kW)	A unit of energy equal to 1000 W (watts), or 1/1000th of a MW (megawatt), of power.
Kilowatt Hour (kWh)	A unit of energy used to measure electricity, measured as 1 kilowatt (1,000 watts) of power expended for 1 hour. One kWh is equivalent to 3,412 Btu (British Thermal Units).
Levelized Cost	The level of payment necessary each year to recover the total investment and interest payments (at a specified interest rate) over the life of the measure.
Mass Market (MM)	A common energy efficiency segmentation model targeting residential and small business customers, on the premise that these customers have very similar needs. This segmentation model captures synergies/efficiencies in delivery of programs by appealing to the common needs of a general, typically uninformed audience and leverages naturally occurring market participants (retailers, contractors, etc.) to cost-effectively deliver.
Measures	Energy or water efficiency products (CFLs, LEDs, shower heads, insulation, etc.)

Megawatt (MW)	A unit of electric energy equivalent to 1,000 kW (kilowatts), or 1,000,000 W (watts) of power.
Megawatt-Hour (MWh)	A unit of electric energy equivalent to 1,000 kWh (kilowatt-hours), or 1,000,000 Wh (watt-hours), of energy.
Metropolitan Water District of Southern California (MWD)	A consortium of 26 cities and water districts that provides drinking water to nearly 19 million people in parts of Los Angeles, Orange, San Diego, Riverside, San Bernardino and Ventura counties covering 5,200-square-miles. LADWP is a member agency of the MWD.
Midstream	An energy efficiency term utilized to indicate the point at which a rebate transaction is paid. (e.g. Downstream, Midstream, Upstream) Midstream indicates that the energy efficiency incentive was paid directly to the retailer, contractor, distributor, etc. that provided the energy efficiency measure or service.
MOU	Memorandum of Understanding
Net to Gross Ratio (NTG)	The NTG adjusts the impacts of the programs so that they only reflect those energy efficiency gains that are the result of the energy efficiency program. Therefore, the NTG deducts energy savings that would have been achieved without the efficiency program (e.g., "free-riders") and increases savings for any "spillover" effect that occurs as an indirect result of the program. Can be a significant driver in the results of TRC, PACT, RIM, and SCT cost effectiveness tests. Since the NTG attempts to measure what customers would have done in the absence of the energy efficiency program, it can be difficult to determine precisely. For this reason, LADWP sets targets and measures and reports results in gross terms, and uses NTG for process evaluation and continuous improvement of program design and implementation.
New Construction	The amount of square footage constructed in the survey year and two years prior, e.g., 1988-1990 for the 1990 Residential Energy Consumption Survey.
Net Zero Energy Home	A home or building which produces as much energy as it consumes. This is usually achieved by high levels of thermal resistance, limited air leakage and renewable energy sources
Payback Period	This is the amount of time it will take to recoup the costs vs. savings. (Costs/Savings)
Post-Inspection	Inspection to verify installation of measures, equipment, etc., after installation
Pre-Inspection	Inspection to verify existing, functioning equipment is installed, prior to retrofit/installation of new measures, equipment, etc.
Program Administrator Costs (PAC)	Comparison of program administrator costs to supply-side resource costs, from the perspective of the entity implementing the program (utility, government agency, nonprofit, or other third party). The costs included in the PAC Test include overhead and incentive costs. Overhead costs are administration, marketing, research and development, evaluation, and

	measurement and verification. Incentive costs are payments made to the customers to offset purchase or installations costs. The benefits from the utility perspective are the savings derived from not delivering the energy to customers.
Publicly-Owned Utility (POU)	A nonprofit local government agency established to provide service to its community. Policy is developed and utility activities and rates are regulated by locally elected boards and/or city councils.
Public Purpose Programs *"Surcharge"*	Also referred to as Public Goods Charge (PGC). Created by Assembly Bill (AB) 1890 in September 1996, established a Public Goods Charge (PGC) that consumers pay on electricity consumption for cost-effective energy efficiency, renewable technologies, and public interest research.
Renewable Energy	Energy that comes from natural sources such as wind, sun and hydro. These sources naturally replenish. Compare to non-renewables like coal, natural gas and oil.
Retrocommissioning (RCx)	A systematic process for identifying and implementing operational and maintenance improvements in a building and ensuring continued performance over time. Retrocommissioning, or existing building commissioning, intends to optimize the operation and maintenance of building subsystems as well as how the systems function together. The RCx process focuses on O&M improvements and diagnostic testing rather than capital improvements (although some needed capital improvements may be recommended as a result).
Retrofit	Involves the installation of new, usually more efficient equipment into an existing building or process prior to the existing equipment's failure or end of its economic life. In buildings, retrofits may involve either structural enhancements to increase strength, or replacing major equipment central to the building's functions, such as HVAC or water heating systems. In industrial applications, retrofits involve the replacement of functioning equipment with new equipment.
Return on Investment (ROI)	The annual rate at which an investment earns income. It is calculated by dividing the annual earnings by the original investment. For instance, a bank savings account paying $3 per year per $100 investment, has an ROI of 3% ($3 divided by $100). An efficiency investment's ROI comes not from money paid to you, but rather from money saved by you on your energy or water bills.
SB x7-7	Senate Bill x7-7, The Water Conservation Act of 2009, requires all water suppliers to increase water use efficiency. The bill requires, among other things, that the Department of Water Resources, in consultation with other state agencies, develop a single standardized water use reporting form, which would be used by both urban and agricultural water agencies. The legislation sets an overall goal of reducing per capita urban water use by 20% by December 31, 2020. The state is required to make incremental progress towards this goal by reducing per capita water use by at least 10% by December 31, 2015.

Solid-State Lighting (SSL)	A technology in which light-emitting diodes (LEDs) replace conventional incandescent and fluorescent lamps for general lighting purposes. An SSL device produces visible light by means of electroluminescence, a phenomenon in which electric current passing through a specially formulated semiconductor diode causes the semiconductor material to glow.
Sustainable	A resource, energy or material that can be extracted and used in a manner that is viable over an indefinite period. Compare with finite resources like petroleum.
TAP	Technical Assistance Program
Therm	A commercial unit of heat. One therm equals 100,000 Btu or about 97 cubic feet of natural gas, or about 29.3 kilowatt hours (kWh) of energy.
Title 20	The California Energy Code for appliances. In 1980 the California Energy Commission was granted the right to adopt efficiency standards for appliances.
Title 24	The California Energy Code, part 6 of the California Building Standards Code, which is Title 24 of the California Code of Regulations, also titled The Energy Efficiency Standards for Residential and Nonresidential Buildings, was created by the California Building Standards Commission in 1978 in response to a legislative mandate to reduce California's energy consumption. The standards are updated periodically by the California Energy Commission to allow consideration and possible incorporation of new energy efficiency technologies and methods.
Total Resource Cost (TRC)	A benefit-cost test that includes both the participants' and the utility's costs. The benefits for the TRC are avoided energy supply costs. Avoided credit and collection costs should also be included, as they are system costs. The costs in this test are the program costs (including equipment costs) paid by both the utility and the participants, plus the increase in supply costs for any period in which load has been increased. Sometimes includes externalities
Transformation	The strategic process of intervening in a market to create lasting change in market behavior by removing identified barriers or exploiting opportunities to accelerate the adoption of cost-effective energy or water efficiency as a matter of standard practice. (Also known as Market Transformation)
Ultra-Low-Flush (ULF)	A toilet is considered Ultra Low Flush if it uses 1.6 gallons or less per flush.
Upstream	An energy efficiency term utilized to indicate the point at which a rebate transaction is paid. (e.g. Downstream, Midstream, Upstream) Upstream indicates that the energy efficiency incentive was paid directly to the manufacturer.
USS	A job classification within LADWP, Utility Services Specialist position, which typically provides primary point of contact services for business customers on a regular basis and promotes customer efficient use and conservation of electrical energy and water among commercial, governmental, institutional,

	industrial, and residential customers. The USS classification has several levels, including A, B, C, with C being the entry level. As the USS gains knowledge and experience, he/she may advance to a B, then an A classification.
USS Senior	A Senior Utility Services Specialist supervises a group of employees, which may be comprised of professional, technical, and/or clerical staff, or any combination of the above.
UWMP	Urban Water Management Plans (UWMP) are prepared by California's water suppliers to support their long-term resource planning and ensure adequate water supplies are available to meet existing and future water demands. The UWMP is required to be updated every 5 years and submitted to the DWR, which reviews the plan to make sure that it complies with the Urban Water Management Planning Act.
Variable Frequency Drive	A device that varies motor speed by adjusting the frequency of current by mechanical or electronic measures. *(*Also referred to as *adjustable speed drives, ASD, ASDs, variable speed drives, VSD, VSDs)*
Vertical Integration	Refers to the traditional electric utility structure, whereby a company has direct control over its transmission, distribution, and generation facilities and can offer a full range of power services.
Water Conservation	Saving water by living with less or doing without (e.g., taking shorter showers; washing full loads of clothes; using a broom instead of water to clean sidewalks; etc.).
Water Efficiency	Utilization of particular measures or practices that provides a water efficiency benefit, without giving up comfort or additional effort. Installation of high-efficiency toilets, faucet aerators, weather-based irrigation systems and water efficient appliances are examples of measures.
Weatherization	The activity of making a building (generally a residential structure) more energy efficient by reducing air infiltration, improving insulation, and taking other actions to reduce the energy consumption required to heat and/or cool the building. In practice, "weatherization programs" may also include other measures to reduce energy used for water heating, lighting, and other end uses.
Zero Net Energy	A state in which a home, building, etc., produces as much energy as it consumes. This is usually achieved by high levels of thermal resistance, limited air leakage and renewable energy sources.
Zero Water or Waterless Urinal	A urinal that uses no water. The drain is fitted with a cartridge that contains a sealing liquid, usually an oil-based liquid, which provides an odor barrier while allowing the urine to pass through to the waste disposal piping.

Sources: ACEEE.org, cuwcc.org, WhatIs.com, CPUC.CA.gov, Wikipedia.com, eia.doe.gov, energyefficiencybusinesses.org/energyglossary, energyauditingblog.com/glossary, LADWP