



To: Honorable Public Utilities Board

Submitted by: \_\_\_\_\_ */S/*

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Subject: By Motion, Accept Alameda Municipal Power’s Senate Bill 1037 Energy Efficiency  
Report for Fiscal Year 2022

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### RECOMMENDATION

*By motion*, accept Alameda Municipal Power’s Senate Bill 1037 Energy Efficiency Report for fiscal year 2022.

### BACKGROUND

In September 2005, Senate Bill (SB) 1037 was enacted into law, which created certain reporting obligations regarding energy efficiency affecting publicly owned electric utilities. These reporting obligations were later modified by Assembly Bill (AB) 2227 in 2012. Through those laws, California Public Utilities Code Sections 9505 and 9615 requires the following of all publicly owned electric utilities:

- 1) Each publicly owned electric utility, in procuring energy, shall first acquire all available energy efficiency and demand-reduction resources that are cost-effective, reliable, and feasible (Pub. Utilities Code Sec. 9615).
- 2) Each publicly owned electric utility shall report annually to its customers and to the California Energy Commission, its investment in energy efficiency and demand-reduction programs. The report shall contain a description of programs, expenditures, and expected and actual energy savings results; the sources for funding of its energy efficiency and demand reduction programs; and the methodologies and input assumptions to determine the cost-effectiveness of these programs. (Pub. Utilities Code Sec. 9505).

Since 2006, Alameda Municipal Power (AMP) has reported to the California Energy Commission (CEC) its investment in energy efficiency programs as part of a collaborative effort of the California Municipal Utilities Association (CMUA), Northern California Power Agency (NCPA),

and the Southern California Public Power Authority (SCPPA). Approximately 40 publicly owned electric utilities across the state participate in this effort. The collaborative process ensures consistency in reporting.

As part of this collaboration, CMUA retained the consulting firm Energy & Resources Group to develop a Technical Resource Manual (TRM) to standardize the energy savings based on existing, widely accepted sources such as white papers from the CEC and studies from Pacific Gas and Electric Company (PG&E). The TRM provides the methods, formulas, and default assumptions used for estimating energy savings and peak-demand impacts from energy efficiency measures. The energy-savings estimates are used to report program accomplishments and measure progress towards program goals. The TRM was updated in June 2017.

In addition, NCPA retained the firm Energy Platforms to re-design the Economy-Energy-Environment (E3) tool used by utilities to measure energy efficiency program savings and cost-effectiveness per the CEC's guidelines. The TRM June 2017 data is in the E3 tool used for fiscal year (FY) 2022 reporting.

AMP is required to notify the CEC and AMP customers of its investment in energy efficiency programs annually. This Administrative Report is part of the notification process, and information will be available on AMP's website and in AMP's customer newsletter, The Flash. On March 15, 2023, NCPA will submit the draft SB 1037 report to the CEC. It will include the results from all California municipal utilities.

The goals of AMP's energy efficiency programs are to:

- 1.) Meet Public Utilities Board (Board) annual energy efficiency targets, as approved on February 23, 2021, and comply with California Assembly Bill (AB) 2227.
- 2.) Acquire all available energy efficiency and demand-reduction resources that are cost effective, reliable, and feasible.
- 3.) Enhance customer satisfaction.
- 4.) Comply with all state policies.
- 5.) Provide equal opportunity for all customers to participate.

## DISCUSSION

### **Energy Efficiency Programs**

AMP customers had a variety of opportunities in FY 2022 to participate in energy efficiency programs. Funding for these programs came from the short-term sale of AMP's renewable energy certificates (RECs) not needed for compliance with the State's Renewable Portfolio Standard (RPS), as well as from the utility's Public Purpose Fund, which requires utilities to set aside 2.85 percent of revenues for energy efficiency, renewables, research and development, and low-income assistance.

1. **Energy Plus Program** – The Energy Plus Program, which started in January 2016, was a non-residential direct-install lighting, refrigeration, and heating, ventilation, and air conditioning (HVAC) program. This program was also available to local municipal customers doing energy efficiency upgrades. In FY 2022, five customers participated in

lighting and refrigeration upgrades with low co-pay amounts, due to AMP's rebates. This program ended December 31, 2021.

2. **Non-Residential Lighting (Custom) Program** – This program, like Energy Plus, offers non-residential customers rebates for energy efficiency upgrades such as lighting, HVAC, and refrigeration. In FY 2022, four customers participated in lighting upgrades with low co-pay amounts, due to AMP's rebates. AMP maintains this program as an umbrella commercial rebate program, after Energy Plus ended, to provide continuing support for commercial customer's energy efficiency needs. This program will remain open in FY 2023.
3. **Residential Online Rebates** – Alameda residents have been able to participate in residential energy efficiency rebates using a simple web application since March 2016. In the first quarter (Q1) of FY 2022, AMP approved 31 applications. Rebates were available for light emitting diode (LED) bulbs, LED fixtures, electric clothes dryers, heat pump water heaters, and electric vehicle (EV) chargers. Starting in Q2 of FY 2022, AMP launched a new rebate portal and an e-Commerce online marketplace. The marketplace was a resource for customers to research, purchase, and compare energy efficient products for their homes or small businesses. The new marketplace also offered downstream rebates for customers. The marketplace remained open until February 2023 when the rebate portal and processing was transitioned to in house operation.
4. **EAP Plus** – In October 2019, AMP launched a residential direct-install program, called EAP Plus, targeting income-qualified residents living in single and multi-family homes. Eligible customers received no-cost energy efficiency upgrades, including LED bulbs, LED fixtures, refrigerators, advanced power strips, low-flow shower heads, and various weatherization measures. In FY 2022, the program served 60 customers. The program will remain open in FY 2023.

AMP's program offerings also included a few non-residential programs that did not attract customers during FY 2022. Customers did not participate in rebate programs for non-residential new construction, commercial kitchen, and HVAC this year. These programs will remain open to AMP's non-residential customers during FY 2023. AMP keeps these programs available because participation is variable and depends on the overall financial climate, emerging technology, and construction. To overcome participation barriers, AMP will be offering no-cost commercial kitchen audits and increase marketing and promotion of these programs.

### **Energy Efficiency Results – FY 2022**

Energy efficiency can be measured and reported as either gross or net savings, and both have a role in valuing the performance of an energy efficiency program. Gross savings generally include all savings claimed by a program, regardless of the reason for participation in the program. In contrast, net savings tend to exclude some savings due to reasons such as "free ridership," where the customer would have taken the same action promoted by the program even if there was no program, or "spillover," where customers implement measures not incentivized by the program.

A consistent approach is needed for collectively tracking energy efficiency program savings at the state level. For the purposes of regulatory compliance reporting, all municipal utilities are required

to provide both gross- and net-savings estimates to the CEC. The use of stipulated net-to-gross factors is the simplest approach to developing net-savings estimates and, per the CEC, should continue to be used as the default method in the E3 reporting tool.

AMP’s program resulted in net savings of 802 megawatt-hours (MWh) in FY 2022. The target, set in March 2021 as part of the AB 2021 10-year energy efficiency targets, was 1,251 MWh. The energy savings represent 0.25 percent of FY 2022 energy sales. Table 1 shows a summary of the FY 2022 energy efficiency by sector in kWh.

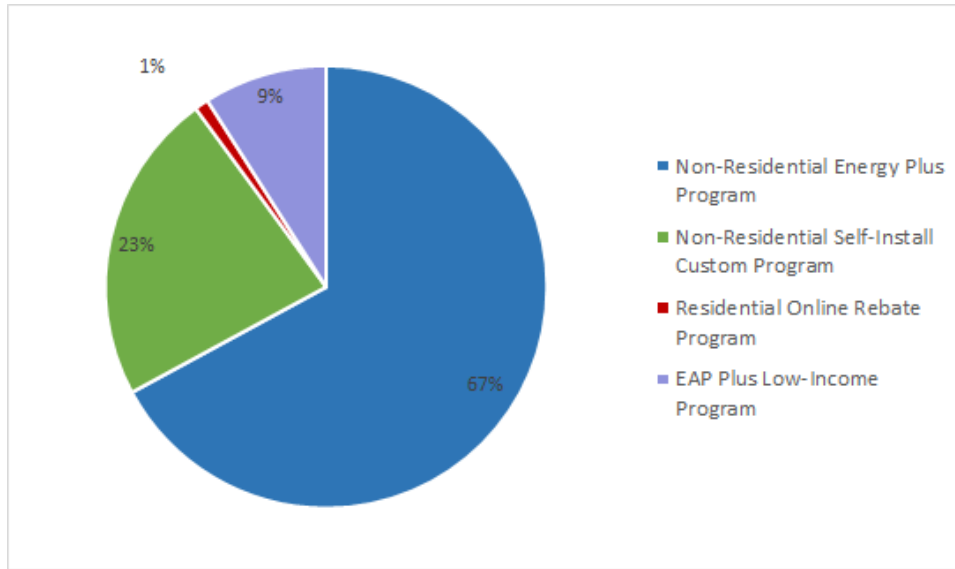
**Table 1: Summary of Fiscal Year (FY) 2022 Energy Efficiency Targets, Actuals, and Percentage of Energy Sales**

<b>Sector</b>	<b>Target (kWh)</b>	<b>Gross Annual Energy Savings (kWh)</b>	<b>Actual Net Savings (kWh)</b>	<b>FY 2022 Energy Sales (kWh)</b>	<b>Percent of FY 2022 Energy Sales</b>
Residential	32,000	103,144	80,680	130,229,000	0.06%
Non-Residential	1,219,000	757,690	721,372	194,479,000	0.37%
<b>Total</b>	<b>1,251,000</b>	<b>860,834</b>	<b>802,052</b>	<b>326,708,000</b>	<b>0.25%</b>

**Savings by Category and Program**

AMP’s residential and non-residential programs contributed valuable electricity savings in FY 2022. 67 percent of the net savings, 538,170 kWh, were attributed to non-residential Energy Plus and Custom programs. 10 percent of the net savings, 91,537 kWh, were attributed to residential programs. Only one percent of net savings were attributed from the residential rebate platform because SB 1037 only accounts for reporting on energy efficiency. A majority of residential rebates administered were for electrification purposes and not energy efficiency; electrification conversions are not accounted for in calculating annual kWh savings for customer programs. A majority of the residential savings, 90,446 kWh, were attributed to the EAP Plus program for income-qualified customers.

Figure 1, Percent Savings by Program, highlights the contribution by program and the importance of non-residential upgrades to AMP’s energy efficiency portfolio.



**Figure 1: Percent Savings by Program**

**Program Savings and Costs**

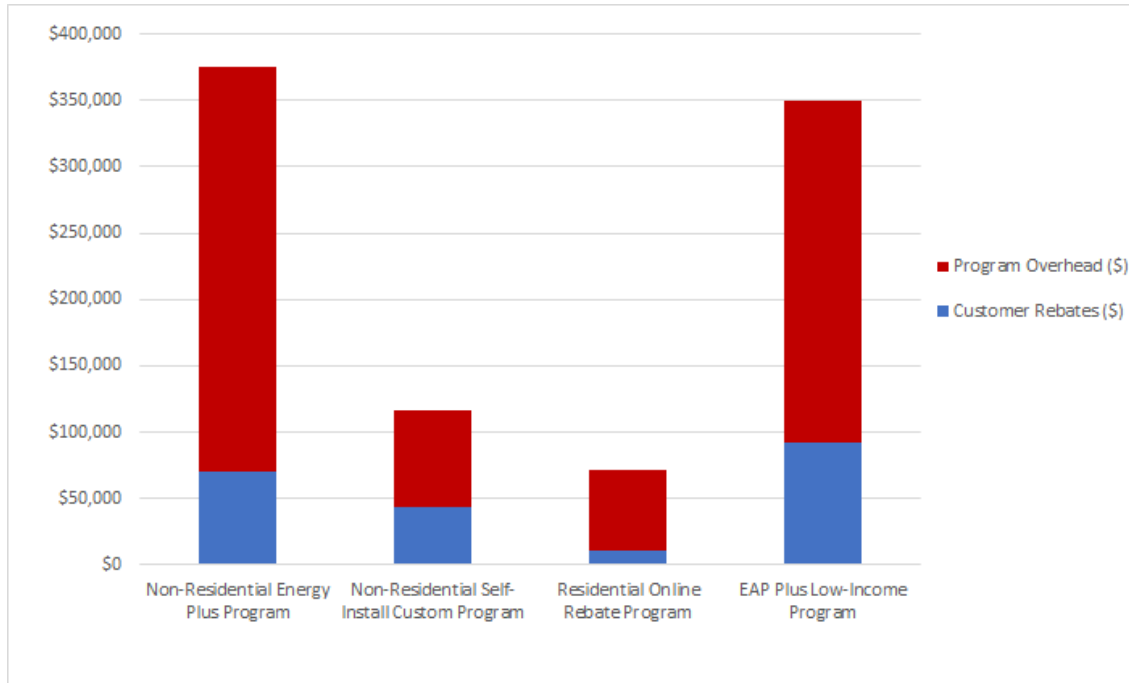
AMP’s energy efficiency programs cost \$912,940 in FY 2022. The program cost includes customer rebates and program overhead.

Program overhead includes program management fees, third party administer fees, and the cost for AMP staff. For FY 2022, staff overhead was split evenly between residential and non-residential programs. Program costs are listed in Table 2, below. Staff’s time is already fully included in the costs for the other programs.

**Table 2: kWh Savings and Program Cost**

<b>Program</b>	<b>Gross Annual Energy Savings (kWh)</b>	<b>Net Annual Energy Savings (kWh)</b>	<b>Customer Rebates (\$)</b>	<b>Program Overhead (\$)</b>	<b>Total Utility Cost (\$)</b>
Non-Residential Energy Plus Program	566,495	538,170	70,625	304,568	375,193
Non-Residential Self-Install Custom Program	191,195	183,203	43,975	72,709	116,684
Residential Online Rebate Program	12,698	8,183	11,180	60,742	71,922
EAP Plus Low-Income Program	90,446	72,497	91,791	257,351	349,142
<b>Portfolio Total</b>	<b>860,834</b>	<b>802,052</b>	<b>217,571</b>	<b>695,369</b>	<b>912,940</b>

The total utility cost, or sum of the customer rebates and program overhead, is shown for AMP’s programs in Figure 2.



**Figure 2: Total Utility Cost by Program**

### Net-to-Gross Ratio

Net-energy savings are what remain after the gross savings have been reduced to account for the following factors:

- Equipment failure
- Equipment that was not installed or removed before the end of its lifetime
- Free riders — defined as customers who would have installed the measure without the utility incentive

The model used to calculate the results has pre-set net-to-gross (NTG) ratios for programs and measures commonly used by publicly owned utilities in California and is set using the Database for Energy Efficiency Resources (DEER).

Past measurement and verification studies of AMP’s programs correlate with staff’s assumptions that these NTG ratios are often too conservative for AMP’s programs, which often require a full pre-install inspection, additional photos of the product, or are managed by a direct-install contractor. Staff has updated the NTG ratios used so they are more reflective of AMP’s programs.

Table 3 details the default NTG ratios from highest to lowest and the AMP updates. Four programs, highlighted in grey, have been updated to AMP’s custom NTG ratio.

**Table 3: Database for Energy Efficiency Resources (DEER) Net-to-Gross (NTG) Ratios and Alameda Municipal Power’s (AMP) NTG Ratios**

<b>Program</b>	<b>DEER NTG</b>	<b>AMP NTG</b>
Energy Plus Program Lighting	80%	95%
Energy Plus Program Refrigeration	60%	95%
Electric Dryer Online Rebate	60%	60%
LED Fixture Online Rebate	54%	85%
LED Bulbs Online Rebate	54%	85%
Decorative String Lights Online Rebate	54%	54%
Heat Pump Water Heater	60%	60%
Non-Residential Custom Program	80%	80%
EAP Plus Low-Income Program	81%	81%

AMP’s NTG ratio from 54 percent to 85 percent for residential LEDs purchased using the online rebate platform remains unchanged from last year. The residential LED programs were studied as part of the 2019 evaluation, measurement, and verification (EM&V) review. This study reported a 103 percent installation rate and substantiated AMP’s claimed-savings figures. While the change in NTG ratio for these programs has less of an overall effect toward AMP’s savings, it is more reflective of how AMP views customer participation in its programs.

The non-residential direct-install program NTG ratios were changed from 80 percent to 95 percent for Energy Plus lighting and from 60 percent to 95 percent for Energy Plus refrigeration programs. Generally, non-residential customers who participate in a direct-install program are approached directly by AMP or by a contractor’s representative and were not necessarily seeking to do these upgrades. These upgrades are typically full LED fixture retrofits that cannot be easily removed or wholesale changes to the refrigeration and other systems. In contrast, residential customers tend to seek out energy efficiency upgrades to replace a broken appliance such as a dryer.

**Avoided Costs and Total Resource Costs**

Avoided energy costs are used as a means of calculating the cost effectiveness of energy efficiency programs. The “negawatt,” or energy that is not needed because it was displaced by behavior change or a new technology, comes at a price. The price of energy efficiency is compared to the price of the energy that is “avoided.”

Total Resource Cost (TRC) is the cost-effectiveness test currently preferred by the CEC. Generally, a value greater than one has been associated with a successful program, meaning that the kilowatt-hour saved is less expensive than procuring power. The TRC does not include societal benefits, such as lower levels of greenhouse gases (GHGs) or a reduction in night-sky light pollution associated with highly directional LED streetlights.

As mentioned earlier, a new E3 reporting tool was created in FY 2018. The E3 reporting tool includes updated avoided cost assumptions. The avoided cost assumptions used in AMP’s report are PG&E avoided-cost calculations based on AMP’s climate zone.

AMP is committed to serving both residential and non-residential customers. Residential programs

require higher administration costs for a lower return on energy savings. In addition, they have a lower NTG ratio than non-residential programs, so even less of their savings is realized in the final portfolio.

Table 4 shows the TRC by program from highest to lowest.

**Table 4: Total Resource Cost (TRC) by Program**

<b>Program</b>	<b>TRC</b>
Non-Residential Energy Plus Program	1.3
Non-Residential Self-Install Custom Program	1.0
Residential Online Rebate Program	0.2
EAP Plus Low-Income Program	0.3
<b>Portfolio</b>	<b>0.9</b>

**Program Costs and Historical Comparison**

AMP’s total cost to acquire the savings, including overhead for FY 2022, was \$695,369. The total utility cost for energy efficiency for FY 2022 was \$0.11 per kWh, displayed in Table 5, includes power generation, transmission, distribution, and environmental factors.

**Table 5: Historical Program Expenses and Utility Costs**

<b>Fiscal Year</b>	<b>Rebates to Customers</b>	<b>Program Overhead</b>	<b>Total Cost to Utility</b>	<b>Net Savings (MWh/year)</b>	<b>Utility Cost per kWh</b>	<b>Total Resource Cost Test (TRC)</b>
2010	\$115,465	\$463,603	\$579,068	1,326	\$0.05	1.8
2011	\$224,026	\$429,790	\$653,816	1,433	\$0.06	1.5
2012	\$427,182	\$455,312	\$882,494	2,527	\$0.03	2.3
2013	\$532,584	\$548,199	\$1,080,783	3,076	\$0.04	1.6
2014	\$124,271	\$626,277	\$750,548	941	\$0.14	0.8
2015	\$488,329	\$688,256	\$1,176,585	2,391	\$0.10	1.3
2016	\$532,761	\$931,070	\$1,463,831	4,197	\$0.06	1.4
2017	\$382,174	\$722,110	\$1,104,284	2,295	\$0.07	0.8
2018	\$298,254	\$577,382	\$875,637	1,362	\$0.06	1.2
2019	\$527,651	\$934,053	\$1,461,704	2,312	\$0.06	1.5
2020	\$327,523	\$674,449	\$1,001,971	1,027	\$0.09	1.1
2021	\$514,534	\$509,052	\$1,023,586	1,293	\$0.08	1.4
2022	\$217,571	\$695,369	\$912,940	802	\$0.11	0.9



### **Analysis and Conclusions – FY 2022**

Overall, the costs and energy savings fluctuate from year to year depending on the following:

- The timing of programs and customer projects
- The cost-effectiveness and reliability of energy efficiency technologies
- AMP’s budget
- Building codes
- Appliance standards
- California state policies

The net annual energy savings of 802,052 kWh for FY 2022 is about 64 percent of the target goal of 1,251 MWh—which was approved at the March 2021 Board meeting. Net annual savings for FY 22 were impacted by two main factors, the Energy Plus program ending in December of 2021, which provided the bulk of these savings, and a majority of residential rebates going toward electrification which is not accounted for in this report. AMP is currently exploring other channels and services to provide similar programs for non-residential customers in FY 2022 and working to develop a methodology to capture energy efficiency savings for electrification projects in the future.

Evaluation, Measurement and Verification is conducted in alternating years and was last conducted in FY 2022 for the non-residential self-install and low-income residential programs. The most recent EM&V report, by CADMUS, is available [here](#).

### **FINANCIAL IMPACT**

AMP contracted with Energy Services Group, ESG, to complete the energy efficiency data analysis. These funds were accounted for in the FY 2022 budget. Consulting services for the development of the Measure Quantification Methodology and the E3 software tool were funded by the NCPA member-services budget.

### **NEXT STEPS**

Exhibits A and B will be submitted to NCPA and incorporated into the final report from CMUA, NCPA, and SCPPA, and will be sent to the CEC.

### **LINK TO KEY RESULT AREAS AND GOALS**

Sustainability, Strategy 2, Tactic 2: AMP will support opportunities in the electrification of the transportation system and buildings to reduce GHG emissions.

### **EXHIBITS**

- A. FY 2022 Energy Efficiency Summary Report
- B. FY 2022 AMP SB 1037 Narrative Report

**EXHIBIT A**

Summary by Measure		Resource Savings Summary										Cost of Efficiency	
Measure	Units Installed	Gross Peak Savings (kW)	Gross Annual Savings (kWh)	Gross Lifecycle Energy Savings (kWh)	Net Peak Savings (kW)	Net Annual Energy Savings (kWh)	Net Lifecycle Energy Savings (kWh)	Net Lifecycle Gas Savings (Therms)	Net Lifecycle GHG Reductions (Tons)	Net Lifecycle Combined Energy Savings (MMBtu)	Utility (\$/kWh)	Total Resource (\$/kWh)	
Commercial Lighting Direct Install Program FY22 - Exterior	1	0	386,843	5,028,953	0	367,500	4,777,505	0	2,078	16,289	0.068	0.075	
Commercial Lighting Direct Install Program FY22 - Interior	1	32	179,652	2,874,438	31	170,670	2,730,716	0	875	9,310	0.071	0.182	
Commercial Lighting Self-Install Program FY22 - Exterior	1	0	13,193	171,503	0	12,533	162,928	0	71	556	0.069	0.132	
Commercial Lighting Self-Install Program FY22 - Interior	1	57	178,003	2,848,046	54	169,103	2,705,643	0	867	9,225	0.057	0.123	
Electric Clothes Dyer; Washing Machine next tier	2	0	734	12,478	0	440	7,487	0	3	26	0.668	0.610	
ENERGY STAR clothes washer, electric hot water, electric dryer	2	0	568	6,816	0	176	2,113	0	1	7	0.683	0.689	
ENERGY STAR Electric Dryer	65	0	5,395	91,715	0	3,237	55,029	0	16	188	0.705	0.654	
ENERGY STAR HP water heater 50 gal. located in garage/basement	2	0	3,008	33,088	0	1,805	19,853	0	8	68	1.181	1.206	
ENERGY STAR Smart Thermostat Online Rebate - FY22	1	0	393	6,288	0	314	5,030	0	2	17	2.078	2.078	
Res LED Bulb Online Rebate Program FY22	1	0	2,418	38,688	0	2,055	32,885	0	12	112	0.626	0.626	
Res LED Fixtures Online Rebate Program FY22	1	0	182	2,912	0	155	2,475	0	1	8	0.692	0.692	
<b>Energy Efficiency Subtotal</b>	<b>78</b>	<b>89</b>	<b>770,388</b>	<b>11,114,924</b>	<b>85</b>	<b>727,988</b>	<b>10,501,664</b>	<b>0</b>	<b>3,932</b>	<b>35,806</b>	<b>0.075</b>	<b>0.124</b>	
4 Foot T8/T12 to LED 1-bulb WITH Ballast (high usage)	32	0	2,656	42,496	0	1,434	22,948	0	8	78	0.542	0.460	
Energy Star Refrigerator: Top Freezer without ice 18-cu-ft. - Alameda	17	0	850	12,750	0	595	8,925	0	3	30	3.850	3.850	
Faucet Aerators - 0.5 GPM Electric	6	0	288	3,168	0	173	1,901	0	1	6	0.336	0.336	
LED Bulb Rebate - Screw-In	961	272	46,128	738,048	231	39,209	627,341	0	223	2,139	0.388	0.388	
LED Fixtures Rebate - Exterior	24	0	2,616	41,856	0	2,616	41,856	0	15	143	0.443	0.443	
LED Fixtures Rebate - Indoor	298	80	19,072	305,152	68	16,211	259,379	0	92	884	0.541	0.541	
Low Flow Showerhead - 2.0 GPM Electric	1	0	64	704	0	38	422	0	0	1	0.422	0.422	
Low Flow Showerhead with Thermo-valve Electric	2	0	430	4,730	0	258	2,838	0	1	10	0.375	0.375	
Plug-in LED Night Light	16	0	469	7,501	0	253	4,050	0	1	14	0.384	0.384	
Refrigerator recycling	17	0	10,472	62,832	0	7,330	43,982	0	15	150	0.390	0.390	
Smart Power Strip - Alameda	34	7	7,208	64,872	4	4,325	38,923	0	13	133	0.533	0.533	
Weatherization FY22	1	0	193	4,057	0	54	1,136	0	1	4	2.946	2.946	
<b>Low-Income Subtotal</b>	<b>1,409</b>	<b>360</b>	<b>90,446</b>	<b>1,288,166</b>	<b>304</b>	<b>72,497</b>	<b>1,053,702</b>	<b>0</b>	<b>373</b>	<b>3,593</b>	<b>0.469</b>	<b>0.467</b>	
<b>EE and Low Income Subtotal</b>	<b>1,487</b>	<b>449</b>	<b>860,834</b>	<b>12,403,090</b>	<b>389</b>	<b>800,485</b>	<b>11,555,367</b>	<b>0</b>	<b>4,306</b>	<b>39,398</b>	<b>0.110</b>	<b>0.155</b>	
<b>C&amp;S, T&amp;D and Electrification Subtotal</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0.000</b>	<b>0.000</b>	
<b>Utility Total</b>	<b>1,487</b>	<b>449</b>	<b>860,834</b>	<b>12,403,090</b>	<b>389</b>	<b>800,485</b>	<b>11,555,367</b>	<b>0</b>	<b>4,306</b>	<b>39,398</b>	<b>0.110</b>	<b>0.155</b>	

Summary by Measure	Cost Test Ratios					Measure Costs						Avoided Costs		Net Benefit (\$)					
Measure	PAC	TRC	PCT	RIM	MTRC	Utility Incentives (\$)	Customer Incentives (\$)	Program Overhead (\$)	Free Rider Costs (\$)	NTG Adjusted Participant Cost (\$)	Gross Participant (\$)	Lifecycle Resource Costs (\$)	Avoided Bill Savings (\$)	PAC	TRC	PCT	RIM	MTRC	
Commercial Lighting Direct Install																			
Program FY22 - Exterior	2.26	2.07	14.31	0.58	2.08	\$29,305	\$29,305	\$210,163	\$1,465	\$50,191	\$52,832	\$541,848	\$726,504	\$302,380	\$280,029	\$702,977	-\$387,799	\$281,494	
Commercial Lighting Direct Install																			
Program FY22 - Interior	1.79	0.70	1.69	0.47	0.70	\$41,320	\$41,320	\$94,405	\$2,066	\$252,072	\$265,339	\$243,398	\$407,752	\$107,673	-\$105,145	\$183,733	-\$279,691	-\$103,079	
Commercial Lighting Self-Install																			
Program FY22 - Exterior	2.25	1.17	2.52	0.58	1.18	\$3,034	\$3,034	\$5,175	\$152	\$10,491	\$11,043	\$18,479	\$24,776	\$10,270	\$2,662	\$16,767	-\$13,268	\$2,813	
Commercial Lighting Self-Install																			
Program FY22 - Interior	2.22	1.03	2.57	0.49	1.04	\$40,941	\$40,941	\$67,534	\$2,047	\$164,648	\$173,314	\$241,163	\$404,008	\$132,689	\$6,934	\$271,635	-\$251,119	\$8,981	
Electric Clothes Dyer, Washing Machine next tier	0.21	0.23		0.16	0.25	\$500	\$500	\$2,954	\$200	\$0	\$0	\$730	\$2,058	-\$2,724	-\$2,424	\$2,558	-\$3,959	-\$2,224	
ENERGY STAR clothes washer, electric hot water, electric dryer	0.18	0.18	4.42	0.13	0.22	\$300	\$300	\$772	\$207	\$102	\$330	\$191	\$1,158	-\$881	-\$891	\$1,128	-\$1,240	-\$684	
ENERGY STAR Electric Dryer	0.19	0.20	6.65	0.14	0.23	\$6,500	\$6,500	\$20,302	\$2,600	\$1,950	\$3,250	\$5,017	\$15,123	-\$21,785	-\$19,835	\$18,373	-\$30,859	-\$17,235	
ENERGY STAR HP water heater 50 gal. located in garage/basement	0.21	0.20	2.39	0.17	0.22	\$3,000	\$3,000	\$14,630	\$1,200	\$2,172	\$3,620	\$3,616	\$5,639	-\$14,014	-\$14,386	\$5,019	-\$17,398	-\$13,186	
ENERGY STAR Smart Thermostat																			
Online Rebate - FY22	0.24	0.24	6.22	0.22	0.24	\$200	\$200	\$7,131	\$40	\$160	\$200	\$1,762	\$1,044	-\$5,569	-\$5,569	\$1,044	-\$6,404	-\$5,529	
Res LED Bulb Online Rebate Program FY22	0.24	0.24	13.21	0.17	0.24	\$526	\$526	\$13,905	\$79	\$447	\$526	\$3,436	\$6,426	-\$10,995	-\$10,995	\$6,426	-\$16,457	-\$10,916	
Res LED Fixtures Online Rebate																			
Program FY22	0.22	0.22	4.14	0.16	0.22	\$154	\$154	\$1,047	\$23	\$131	\$154	\$259	\$484	-\$942	-\$942	\$484	-\$1,353	-\$919	
Energy Efficiency Subtotal	1.88	1.14	3.37	0.51	1.15	\$125,780	\$125,780	\$438,018	\$10,079	\$482,364	\$510,608	\$1,059,900	\$1,594,972	\$496,101	\$129,438	\$1,210,144	-\$1,009,546	\$139,517	
4 Foot T8/T12 to LED 1-bulb WITH Ballast (high usage)	0.28	0.32	13.89	0.19	0.40	\$3,168	\$3,168	\$5,552	\$1,457	\$397	\$736	\$2,398	\$7,058	-\$6,322	-\$5,008	\$9,490	-\$10,133	-\$3,551	
Energy Star Refrigerator: Top Freezer without ice 18-cu-ft. - Alameda	0.04	0.04	1.10	0.04	0.06	\$22,015	\$22,015	\$2,459	\$6,605	\$15,411	\$22,015	\$1,062	\$2,132	-\$23,412	-\$23,412	\$2,132	-\$24,904	-\$16,807	
Faucet Aerators - 0.5 GPM Electric	0.36	0.36	7.95	0.22	0.39	\$78	\$78	\$403	\$31	\$47	\$78	\$174	\$540	-\$307	-\$307	\$540	-\$630	-\$275	
LED Bulb Rebate - Screw-In	0.38	0.38	7.39	0.24	0.39	\$19,172	\$19,172	\$151,769	\$2,876	\$16,296	\$19,172	\$65,557	\$122,582	-\$105,383	-\$105,383	\$122,582	-\$209,578	-\$102,507	
LED Fixtures Rebate - Exterior	0.34	0.34	3.42	0.22	0.34	\$2,868	\$2,868	\$10,126	\$0	\$2,868	\$2,868	\$4,374	\$6,952	-\$8,620	-\$8,620	\$6,952	-\$15,572	-\$8,620	
LED Fixtures Rebate - Indoor	0.28	0.28	2.42	0.19	0.29	\$35,611	\$35,611	\$62,750	\$5,342	\$30,269	\$35,611	\$27,105	\$50,682	-\$71,256	-\$71,256	\$50,682	-\$114,336	-\$65,914	
Low Flow Showerhead - 2.0 GPM Electric	0.29	0.29	3.70	0.19	0.33	\$45	\$45	\$90	\$18	\$27	\$45	\$39	\$120	-\$95	-\$95	\$120	-\$167	-\$78	
Low Flow Showerhead with Thermo-valve Electric	0.32	0.32	5.05	0.20	0.36	\$199	\$199	\$601	\$80	\$119	\$199	\$260	\$806	-\$541	-\$541	\$806	-\$1,024	-\$461	
Plug-in LED Night Light	0.39	0.39	12.14	0.24	0.41	\$112	\$112	\$980	\$51	\$60	\$112	\$423	\$1,246	-\$668	-\$668	\$1,246	-\$1,341	-\$617	
Refrigerator recycling	0.39	0.39	9.14	0.25	0.40	\$1,275	\$1,275	\$11,828	\$383	\$893	\$1,275	\$5,109	\$10,381	-\$7,994	-\$7,994	\$10,381	-\$15,261	-\$7,611	
Smart Power Strip - Alameda	0.29	0.29	3.18	0.21	0.34	\$5,083	\$5,083	\$10,794	\$2,033	\$3,050	\$5,083	\$4,663	\$11,059	-\$11,215	-\$11,215	\$11,059	-\$17,850	-\$9,182	
Weatherization FY22	0.17	0.17	1.30	0.16	0.62	\$2,166	\$2,166	\$0	\$1,560	\$606	\$2,166	\$376	\$647	-\$1,790	-\$1,790	\$647	-\$1,971	-\$215	
Low-Income Subtotal	0.32	0.32	3.42	0.21	0.34	\$91,791	\$91,791	\$257,351	\$20,434	\$70,043	\$89,359	\$111,540	\$214,206	-\$237,601	-\$236,288	\$216,638	-\$412,767	-\$215,853	
EE and Low Income Subtotal	1.28	0.92	3.38	0.45	0.94	\$217,571	\$217,571	\$695,369	\$30,513	\$552,407	\$599,967	\$1,171,440	\$1,809,177	\$258,500	-\$106,849	\$1,426,781	-\$1,422,313	-\$76,336	
C&S, T&D and Electrification Subtotal						\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0						
Utility Total	1.28	0.92	3.38	0.45	0.94	\$217,571	\$217,571	\$695,369	\$30,513	\$552,407	\$599,967	\$1,171,440	\$1,809,177	\$258,500	-\$106,849	\$1,426,781	-\$1,422,313	-\$76,336	

Summary by Program	Resource Savings Summary										Cost of Efficiency	
Program	Units Installed	Gross Peak Savings (kW)	Gross Annual Savings (kWh)	Gross Lifecycle Energy Savings (kWh)	Net Peak Savings (kW)	Net Annual Energy Savings (kWh)	Net Lifecycle Energy Savings (kWh)	Net Lifecycle Gas Savings (Therms)	Net Lifecycle GHG Reductions (Tons)	Net Lifecycle Combined Energy Savings (MMBtu)	Utility (\$/kWh)	Total Resource (\$/kWh)
Commercial Direct Install	2	32	566,495	7,903,391	31	538,170	7,508,221	0	2,953	25,599	0.069	0.113
Non-Residential	2	57	191,195	3,019,549	54	181,636	2,868,571	0	938	9,780	0.058	0.124
Residential	74	0	12,698	191,985	0	8,183	124,872	0	42	426	0.817	0.796
Energy Efficiency Subtotal	78	89	770,388	11,114,924	85	727,988	10,501,664	0	3,932	35,806	0.075	0.124
Low-Income Residential	1,409	360	90,446	1,288,166	304	72,497	1,053,702	0	373	3,593	0.469	0.467
Low-Income Subtotal	1,409	360	90,446	1,288,166	304	72,497	1,053,702	0	373	3,593	0.469	0.467
EE and Low Income Subtotal	1,487	449	860,834	12,403,090	389	800,485	11,555,367	0	4,306	39,398	0.110	0.155
C&S, T&D and Electrification Subtotal	0	0	0	0	0	0	0	0	0	0	0.000	0.000
Utility Total	1,487	449	860,834	12,403,090	389	800,485	11,555,367	0	4,306	39,398	0.110	0.155

Summary by Program	Cost Test Ratios					Measure Costs						Avoided Costs		Net Benefit (\$)				
Program	PAC	TRC	PCT	RIM	MTRC	Utility Incentives (\$)	Customer Incentives (\$)	Program Overhead (\$)	Free Rider Costs (\$)	NTG Adjusted Participant Cost (\$)	Gross Participant (\$)	Lifecycle Avoided Resource Costs (\$)	Lifecycle Bill Savings (\$)	PAC	TRC	PCT	RIM	MTRC
Commercial Direct Install	2.09	1.29	3.79	0.54	1.29	\$70,625	\$70,625	\$304,568	\$3,531	\$302,262	\$318,171	\$785,246	\$1,134,256	\$410,053	\$174,885	\$886,710	-\$667,490	\$178,416
Non-Residential	2.23	1.04	2.56	0.50	1.05	\$43,975	\$43,975	\$72,709	\$2,199	\$175,139	\$184,357	\$259,642	\$428,784	\$142,958	\$9,596	\$288,402	-\$264,386	\$11,794
Residential	0.21	0.21	5.34	0.16	0.23	\$11,180	\$11,180	\$60,742	\$4,349	\$4,963	\$8,080	\$15,011	\$31,932	-\$56,910	-\$55,042	\$35,032	-\$77,670	-\$50,693
Energy Efficiency Subtotal	1.88	1.14	3.37	0.51	1.15	\$125,780	\$125,780	\$438,018	\$10,079	\$482,364	\$510,608	\$1,059,900	\$1,594,972	\$496,101	\$129,438	\$1,210,144	-\$1,009,546	\$139,517
Low-Income Residential	0.32	0.32	3.42	0.21	0.34	\$91,791	\$91,791	\$257,351	\$20,434	\$70,043	\$89,359	\$111,540	\$214,206	-\$237,601	-\$236,288	\$216,638	-\$412,767	-\$215,853
Low-Income Subtotal	0.32	0.32	3.42	0.21	0.34	\$91,791	\$91,791	\$257,351	\$20,434	\$70,043	\$89,359	\$111,540	\$214,206	-\$237,601	-\$236,288	\$216,638	-\$412,767	-\$215,853
EE and Low Income Subtotal	1.28	0.92	3.38	0.45	0.94	\$217,571	\$217,571	\$695,369	\$30,513	\$552,407	\$599,967	\$1,171,440	\$1,809,177	\$258,500	-\$106,849	\$1,426,781	-\$1,422,313	-\$76,336
C&S, T&D and Electrification Subtotal						\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0					
Utility Total	1.28	0.92	3.38	0.45	0.94	\$217,571	\$217,571	\$695,369	\$30,513	\$552,407	\$599,967	\$1,171,440	\$1,809,177	\$258,500	-\$106,849	\$1,426,781	-\$1,422,313	-\$76,336

Summary by End Use	Resource Savings Summary										Cost of Efficiency	
End Use	Units Installed	Gross Peak Savings (kW)	Gross Annual Savings (kWh)	Gross Lifecycle Energy Savings (kWh)	Net Peak Savings (kW)	Net Annual Energy Savings (kWh)	Net Lifecycle Energy Savings (kWh)	Net Lifecycle Gas Savings (Therms)	Net Lifecycle GHG Reductions (Tons)	Net Lifecycle Combined Energy Savings (MMBtu)	Utility (\$/kWh)	Total Resource (\$/kWh)
Appliance & Plug Loads	2	0	568	6,816	0	176	2,113	0	1	7	0.683	0.689
HVAC - Cooling	1	0	393	6,288	0	314	5,030	0	2	17	2.078	2.078
Lighting - Indoor	4	89	360,255	5,764,084	85	341,982	5,471,719	0	1,755	18,656	0.068	0.156
Lighting - Outdoor	2	0	400,035	5,200,456	0	380,033	4,940,433	0	2,149	16,844	0.068	0.077
Miscellaneous	67	0	6,129	104,193	0	3,677	62,516	0	19	213	0.701	0.649
Service & Domestic Hot Water	2	0	3,008	33,088	0	1,805	19,853	0	8	68	1.181	1.206
<b>Energy Efficiency Subtotal</b>	<b>78</b>	<b>89</b>	<b>770,388</b>	<b>11,114,924</b>	<b>85</b>	<b>727,988</b>	<b>10,501,664</b>	<b>0</b>	<b>3,932</b>	<b>35,806</b>	<b>0.075</b>	<b>0.124</b>
Appliance & Plug Loads	68	7	18,530	140,454	4	12,250	91,831	0	31	313	0.766	0.766
Building Envelope	1	0	193	4,057	0	54	1,136	0	1	4	2.946	2.946
Lighting - Indoor	1,307	352	68,325	1,093,197	300	57,107	913,718	0	325	3,115	0.435	0.433
Lighting - Outdoor	24	0	2,616	41,856	0	2,616	41,856	0	15	143	0.443	0.443
Service & Domestic Hot Water	9	0	782	8,602	0	469	5,161	0	2	18	0.365	0.365
<b>Low-Income Subtotal</b>	<b>1,409</b>	<b>360</b>	<b>90,446</b>	<b>1,288,166</b>	<b>304</b>	<b>72,497</b>	<b>1,053,702</b>	<b>0</b>	<b>373</b>	<b>3,593</b>	<b>0.469</b>	<b>0.467</b>
<b>EE and Low Income Subtotal</b>	<b>1,487</b>	<b>449</b>	<b>860,834</b>	<b>12,403,090</b>	<b>389</b>	<b>800,485</b>	<b>11,555,367</b>	<b>0</b>	<b>4,306</b>	<b>39,398</b>	<b>0.110</b>	<b>0.155</b>
C&S, T&D and Electrification Subtotal	0	0	0	0	0	0	0	0	0	0	0.000	0.000
<b>Utility Total</b>	<b>1,487</b>	<b>449</b>	<b>860,834</b>	<b>12,403,090</b>	<b>389</b>	<b>800,485</b>	<b>11,555,367</b>	<b>0</b>	<b>4,306</b>	<b>39,398</b>	<b>0.110</b>	<b>0.155</b>

Summary by End Use	Cost Test Ratios					Measure Costs						Avoided Costs		Net Benefit (\$)				
End Use	PAC	TRC	PCT	RIM	MTRC	Utility Incentives (\$)	Customer Incentives (\$)	Program Overhead (\$)	Free Rider Costs (\$)	NTG Adjusted Participant Cost (\$)	Gross Participant (\$)	Lifecycle Avoided Resource Costs (\$)	Lifecycle Bill Savings (\$)	PAC	TRC	PCT	RIM	MTRC
Appliance & Plug Loads	0.18	0.18	4.42	0.13	0.22	\$300	\$300	\$772	\$207	\$102	\$330	\$191	\$1,158	-\$881	-\$891	\$1,128	-\$1,240	-\$684
HVAC - Cooling	0.24	0.24	6.22	0.22	0.24	\$200	\$200	\$7,131	\$40	\$160	\$200	\$1,762	\$1,044	-\$5,569	-\$5,569	\$1,044	-\$6,404	-\$5,529
Lighting - Indoor	1.88	0.82	2.05	0.47	0.82	\$82,941	\$82,941	\$176,891	\$4,215	\$417,298	\$439,333	\$488,257	\$818,669	\$228,425	-\$110,148	\$462,277	-\$548,620	-\$105,933
Lighting - Outdoor	2.26	2.02	12.27	0.58	2.03	\$32,339	\$32,339	\$215,338	\$1,617	\$60,681	\$63,875	\$560,327	\$751,280	\$312,650	\$282,691	\$719,744	-\$401,066	\$284,308
Miscellaneous	0.19	0.21	7.44	0.14	0.23	\$7,000	\$7,000	\$23,257	\$2,800	\$1,950	\$3,250	\$5,748	\$17,180	-\$24,509	-\$22,259	\$20,930	-\$34,817	-\$19,459
Service & Domestic Hot Water	0.21	0.20	2.39	0.17	0.22	\$3,000	\$3,000	\$14,630	\$1,200	\$2,172	\$3,620	\$3,616	\$5,639	-\$14,014	-\$14,386	\$5,019	-\$17,398	-\$13,186
Energy Efficiency Subtotal	1.88	1.14	3.37	0.51	1.15	\$125,780	\$125,780	\$438,018	\$10,079	\$482,364	\$510,608	\$1,059,900	\$1,594,972	\$496,101	\$129,438	\$1,210,144	-\$1,009,546	\$139,517
Appliance & Plug Loads	0.20	0.20	1.83	0.16	0.24	\$28,373	\$28,373	\$25,081	\$9,020	\$19,353	\$28,373	\$10,834	\$23,573	-\$42,620	-\$42,620	\$23,573	-\$58,015	-\$33,600
Building Envelope	0.17	0.17	1.30	0.16	0.62	\$2,166	\$2,166	\$0	\$1,560	\$606	\$2,166	\$376	\$647	-\$1,790	-\$1,790	\$647	-\$1,971	-\$230
Lighting - Indoor	0.34	0.34	4.31	0.22	0.36	\$58,063	\$58,063	\$221,050	\$9,726	\$47,023	\$55,631	\$95,484	\$181,568	-\$183,629	-\$182,316	\$184,000	-\$335,388	-\$172,590
Lighting - Outdoor	0.34	0.34	3.42	0.22	0.34	\$2,868	\$2,868	\$10,126	\$0	\$2,868	\$2,868	\$4,374	\$6,952	-\$8,620	-\$8,620	\$6,952	-\$15,572	-\$8,620
Service & Domestic Hot Water	0.33	0.33	5.56	0.21	0.37	\$321	\$321	\$1,094	\$128	\$193	\$321	\$472	\$1,466	-\$943	-\$943	\$1,466	-\$1,822	-\$814
Low-Income Subtotal	0.32	0.32	3.42	0.21	0.34	\$91,791	\$91,791	\$257,351	\$20,434	\$70,043	\$89,359	\$111,540	\$214,206	-\$237,601	-\$236,288	\$216,638	-\$412,767	-\$215,853
EE and Low Income Subtotal	1.28	0.92	3.38	0.45	0.94	\$217,571	\$217,571	\$695,369	\$30,513	\$552,407	\$599,967	\$1,171,440	\$1,809,177	\$258,500	-\$106,849	\$1,426,781	-\$1,422,313	-\$76,336
C&S, T&D and Electrification Subtotal						\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0					
Utility Total	1.28	0.92	3.38	0.45	0.94	\$217,571	\$217,571	\$695,369	\$30,513	\$552,407	\$599,967	\$1,171,440	\$1,809,177	\$258,500	-\$106,849	\$1,426,781	-\$1,422,313	-\$76,336

Summary by Building Type	Resource Savings Summary										Cost of Efficiency	
Building Type	Units Installed	Gross Peak Savings (kW)	Gross Annual Savings (kWh)	Gross Lifecycle Energy Savings (kWh)	Net Peak Savings (kW)	Net Annual Energy Savings (kWh)	Net Lifecycle Energy Savings (kWh)	Net Lifecycle Gas Savings (Therms)	Net Lifecycle GHG Reductions (Tons)	Net Lifecycle Combined Energy Savings (MMBtu)	Utility (\$/kWh)	Total Resource (\$/kWh)
All	4	89	757,690	10,922,939	85	719,806	10,376,792	0	3,891	35,380	0.066	0.116
Residential	74	0	12,698	191,985	0	8,183	124,872	0	42	426	0.817	0.796
Energy Efficiency Subtotal	78	89	770,388	11,114,924	85	727,988	10,501,664	0	3,932	35,806	0.075	0.124
All	17	0	10,472	62,832	0	7,330	43,982	0	15	150	0.390	0.390
Residential	1,366	360	78,342	1,203,982	304	64,102	995,633	0	354	3,395	0.443	0.441
Residential - Multi-Family	9	0	782	8,602	0	469	5,161	0	2	18	0.365	0.365
Residential - Single-Family	17	0	850	12,750	0	595	8,925	0	3	30	3.850	3.850
Low-Income Subtotal	1,409	360	90,446	1,288,166	304	72,497	1,053,702	0	373	3,593	0.469	0.467
EE and Low Income Subtotal	1,487	449	860,834	12,403,090	389	800,485	11,555,367	0	4,306	39,398	0.110	0.155
C&S, T&D and Electrification Subtotal	0	0	0	0	0	0	0	0	0	0	0.000	0.000
Utility Total	1,487	449	860,834	12,403,090	389	800,485	11,555,367	0	4,306	39,398	0.110	0.155



Summary by Building Type	Cost Test Ratios					Measure Costs						Avoided Costs		Net Benefit (\$)				
Building Type	PAC	TRC	PCT	RIM	MTRC	Utility Incentives (\$)	Customer Incentives (\$)	Program Overhead (\$)	Free Rider Costs (\$)	NTG Adjusted Participant Cost (\$)	Gross Participant (\$)	Lifecycle Avoided Resource Costs (\$)	Lifecycle Bill Savings (\$)	PAC	TRC	PCT	RIM	MTRC
All	2.12	1.21	3.34	0.53	1.22	\$114,600	\$114,600	\$377,277	\$5,730	\$477,401	\$502,528	\$1,044,888	\$1,563,040	\$553,012	\$184,480	\$1,175,112	-\$931,876	\$190,210
Residential	0.21	0.21	5.34	0.16	0.23	\$11,180	\$11,180	\$60,742	\$4,349	\$4,963	\$8,080	\$15,011	\$31,932	-\$56,910	-\$55,042	\$35,032	-\$77,670	-\$50,693
Energy Efficiency Subtotal	1.88	1.14	3.37	0.51	1.15	\$125,780	\$125,780	\$438,018	\$10,079	\$482,364	\$510,608	\$1,059,900	\$1,594,972	\$496,101	\$129,438	\$1,210,144	-\$1,009,546	\$139,517
All	0.39	0.39	9.14	0.25	0.40	\$1,275	\$1,275	\$11,828	\$383	\$893	\$1,275	\$5,109	\$10,381	-\$7,994	-\$7,994	\$10,381	-\$15,261	-\$7,611
Residential	0.34	0.34	4.08	0.22	0.35	\$68,180	\$68,180	\$241,971	\$13,319	\$53,548	\$65,748	\$104,897	\$200,226	-\$205,253	-\$203,940	\$202,658	-\$370,781	-\$190,621
Residential - Multi-Family	0.33	0.33	5.56	0.21	0.37	\$321	\$321	\$1,094	\$128	\$193	\$321	\$472	\$1,466	-\$943	-\$943	\$1,466	-\$1,822	-\$814
Residential - Single-Family	0.04	0.04	1.10	0.04	0.06	\$22,015	\$22,015	\$2,459	\$6,605	\$15,411	\$22,015	\$1,062	\$2,132	-\$23,412	-\$23,412	\$2,132	-\$24,904	-\$16,807
Low-Income Subtotal	0.32	0.32	3.42	0.21	0.34	\$91,791	\$91,791	\$257,351	\$20,434	\$70,043	\$89,359	\$111,540	\$214,206	-\$237,601	-\$236,288	\$216,638	-\$412,767	-\$215,853
EE and Low Income Subtotal	1.28	0.92	3.38	0.45	0.94	\$217,571	\$217,571	\$695,369	\$30,513	\$552,407	\$599,967	\$1,171,440	\$1,809,177	\$258,500	-\$106,849	\$1,426,781	-\$1,422,313	-\$76,336
C&S, T&D and Electrification Subtotal						\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0					
Utility Total	1.28	0.92	3.38	0.45	0.94	\$217,571	\$217,571	\$695,369	\$30,513	\$552,407	\$599,967	\$1,171,440	\$1,809,177	\$258,500	-\$106,849	\$1,426,781	-\$1,422,313	-\$76,336

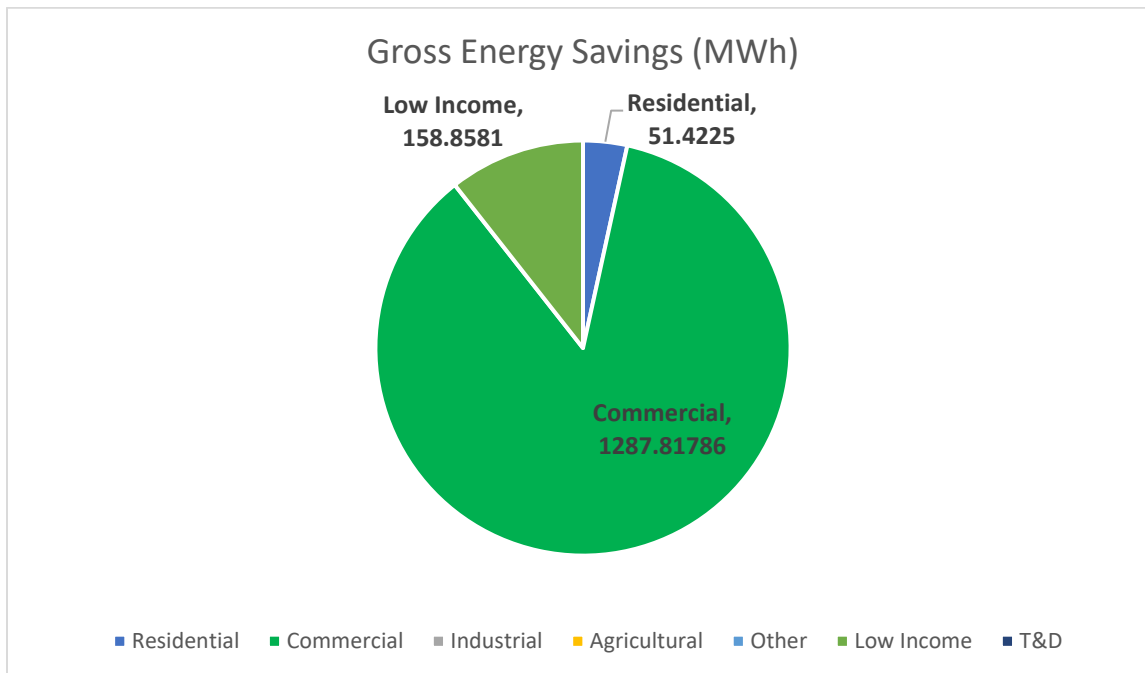
Summary by Sector	Resource Savings Summary										Cost of Efficiency	
Sector	Units Installed	Gross Peak Savings (kW)	Gross Annual Savings (kWh)	Gross Lifecycle Energy Savings (kWh)	Net Peak Savings (kW)	Net Annual Energy Savings (kWh)	Net Lifecycle Energy Savings (kWh)	Net Lifecycle Gas Savings (Therms)	Net Lifecycle GHG Reductions (Tons)	Net Lifecycle Combined Energy Savings (MMBtu)	Utility (\$/kWh)	Total Resource (\$/kWh)
Commercial	4	89	757,690	10,922,939	85	719,806	10,376,792	0	3,891	35,380	0.066	0.116
Residential	74	0	12,698	191,985	0	8,183	124,872	0	42	426	0.817	0.796
Energy Efficiency Subtotal	78	89	770,388	11,114,924	85	727,988	10,501,664	0	3,932	35,806	0.075	0.124
Residential	1,409	360	90,446	1,288,166	304	72,497	1,053,702	0	373	3,593	0.469	0.467
Low-Income Subtotal	1,409	360	90,446	1,288,166	304	72,497	1,053,702	0	373	3,593	0.469	0.467
EE and Low Income Subtotal	1,487	449	860,834	12,403,090	389	800,485	11,555,367	0	4,306	39,398	0.110	0.155
C&S, T&D and Electrification Subtotal	0	0	0	0	0	0	0	0	0	0	0.000	0.000
Utility Total	1,487	449	860,834	12,403,090	389	800,485	11,555,367	0	4,306	39,398	0.110	0.155

Summary by Sector		Cost Test Ratios					Measure Costs					Avoided Costs		Net Benefit (\$)				
Sector	PAC	TRC	PCT	RIM	MTRC	Utility Incentives (\$)	Customer Incentives (\$)	Program Overhead (\$)	Free Rider Costs (\$)	NTG Adjusted Participant Cost (\$)	Gross Participant (\$)	Lifecycle Avoided Resource Costs (\$)	Lifecycle Bill Savings (\$)	PAC	TRC	PCT	RIM	MTRC
Commercial	2.12	1.21	3.34	0.53	1.22	\$114,600	\$114,600	\$377,277	\$5,730	\$477,401	\$502,528	\$1,044,888	\$1,563,040	\$553,012	\$184,480	\$1,175,112	-\$931,876	\$190,210
Residential	0.21	0.21	5.34	0.16	0.23	\$11,180	\$11,180	\$60,742	\$4,349	\$4,963	\$8,080	\$15,011	\$31,932	-\$56,910	-\$55,042	\$35,032	-\$77,670	-\$50,693
Energy Efficiency Subtotal	1.88	1.14	3.37	0.51	1.15	\$125,780	\$125,780	\$438,018	\$10,079	\$482,364	\$510,608	\$1,059,900	\$1,594,972	\$496,101	\$129,438	\$1,210,144	-\$1,009,546	\$139,517
Residential	0.32	0.32	3.42	0.21	0.34	\$91,791	\$91,791	\$257,351	\$20,434	\$70,043	\$89,359	\$111,540	\$214,206	-\$237,601	-\$236,288	\$216,638	-\$412,767	-\$215,853
Low-Income Subtotal	0.32	0.32	3.42	0.21	0.34	\$91,791	\$91,791	\$257,351	\$20,434	\$70,043	\$89,359	\$111,540	\$214,206	-\$237,601	-\$236,288	\$216,638	-\$412,767	-\$215,853
EE and Low Income Subtotal	1.28	0.92	3.38	0.45	0.94	\$217,571	\$217,571	\$695,369	\$30,513	\$552,407	\$599,967	\$1,171,440	\$1,809,177	\$258,500	-\$106,849	\$1,426,781	-\$1,422,313	-\$76,336
C&S, T&D and Electrification Subtotal						\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0					
Utility Total	1.28	0.92	3.38	0.45	0.94	\$217,571	\$217,571	\$695,369	\$30,513	\$552,407	\$599,967	\$1,171,440	\$1,809,177	\$258,500	-\$106,849	\$1,426,781	-\$1,422,313	-\$76,336

**EXHIBIT B  
ALAMEDA**

***Alameda at a Glance***

- Climate Zone(s): 3
- Customers: 36,283
- Total annual retail sales (MWh): 326,708
- Annual Retail Revenue: \$ 60,993,707
- Annual energy efficiency expenditures for reporting year: \$912,939.85
- Gross annual savings from reporting year portfolio (MWh): 861



***Alameda Overview***

- Due to Alameda’s temperate climate and small amount of industry, the peak demand for electricity is in the winter (December and January) in the early evening. Alameda Municipal Power’s (AMP) electric load is relatively flat compared to most California utilities and there is little residential air conditioning.
- AMP has committed to spending its cap-and-trade and renewable energy credit (REC) funds to reduce greenhouse gas emissions in its service area.

**Major Program and Portfolio Changes**

FY 2022 savings included non-residential programs, a marketplace and rebate portal, and direct-install program for income-qualified residential customers.

### **Program and Portfolio Highlights**

In September 2021, AMP new rebate portal and an e-Commerce online marketplace available to all AMP customers. The marketplace offered instant rebates for LED lighting, thermostats, and other energy efficiency measures. For customer's convenience, AMP also offered online rebate submissions through the same marketplace portal for residential customers to apply for downstream rebates.

### **Commercial, Industrial & Agricultural Programs**

**Energy Plus Program:** The Energy Plus Program, which started in January 2016, is a non-residential direct-install lighting, refrigeration, heating, ventilation, and air conditioning (HVAC) program. This program is also available to local municipal customers doing energy efficiency upgrades. In FY 2022, five customers participated in lighting and refrigeration upgrades with low co-pay amounts, due to AMP's rebates. This program ended December 31, 2021.

**Non-Residential Self-Install Program:** This program, like Energy Plus, offers non-residential customers rebates for energy efficiency upgrades such as lighting, HVAC and refrigeration. In FY 2022, four customers participated in lighting upgrades with low co-pay amounts, due to AMP's rebates. AMP maintains this program as an umbrella commercial rebate program, after Energy Plus ended, to provide continuing support for commercial customer's energy efficiency needs. This program will remain open in FY 2023.

**Commercial Kitchen Rebate Program:** This program was introduced in the second half of FY 2021, targeting the growing restaurant and food service industry in the City of Alameda. The program offers rebates for energy efficiency such as solid doors for commercial refrigerators and freezers, glass doors for commercial refrigerator and freezers, commercial ice makers, and other energy efficiency commercial kitchen equipment. In FY 2022, there were no participants in the program. In FY 2022, AMP supplemented this program with no-cost in-person commercial kitchen audits, and free in-person or virtual webinars.

### **Residential Programs**

**Residential Online Rebates – Lighting and Appliances:** Alamedans have been able to participate in residential energy efficiency rebates using a simple web application since March 2016. In Q1 of FY 2022 AMP approved 31 applications. Rebates were available for LED bulbs, LED fixtures, electric clothes dryers, heat pump water heaters, and EV chargers. Starting in Q2 of FY 2022, AMP launched a new rebate portal and an e-Commerce online marketplace. The marketplace was a resource for customers to research, purchase, and compare energy efficient products for

their homes or small businesses. In addition, the new marketplace offered downstream rebates for customers. The marketplace remained open until February 2023.

EAP Plus – In October 2019, AMP launched a residential direct-install program, called EAP Plus, targeting income-qualified residents living in single and multi-family homes. Eligible customers received no-cost energy efficiency upgrades, including LED bulbs, LED fixtures, refrigerators, advanced power strips, low-flow shower heads and various weatherization measures. In FY 2022, the program served 60 customers. The program will remain open in FY 2023.

### **Complementary Programs**

- **Electric Vehicle (EV) Programs:** In the beginning of FY 2022 an EV Time-of-Use rate plan was introduced to replace the EV rate discount. 595 customers enrolled in AMP's TOU rate in FY2022.
- **Electric Vehicle (EV) Charger Rebate Electric Vehicle (EV) Rebates:** AMP offers up to \$800 rebate for residential customers who install level 2 chargers in their homes. For commercial customers, the rebate amount is up to \$33,000. During FY 2022, 216 residential customers participated in the program. During FY 2022, 216 residential customers had installed EV level 2 chargers. AMP also launched a new Used Electric Vehicle rebate program that incentivized customers to purchase a used EV. The rebate amount was for \$1,500 and if income qualified the rebate amount was \$2,000. In FY 2022, 58 customers participated in the Used EV program.
- **Low-Income Programs:** AMP continues to provide financial assistance to Alameda's low-income families through the EASE (Energy Assistance through Supportive Efforts) and EAP (Energy Assistance Program) programs. In FY 2022, EASE, an emergency relief program, helped 103 households receive a total of \$20,043.70 in electric-bill assistance. A maximum amount of \$200 is available per household within a three-year period through the EASE program. EAP provides a 25% monthly discount on the electric bill. A total of \$163,061.10 was allocated to 947 Alameda households in FY 2022. These programs are funded through the public purpose component of AMP's energy charge.
- **Heat Pump HVAC Rebate:** AMP developed a new Heat Pump HVAC rebate for residential and non-residential customers, launching FY2023. Additionally, AMP plans to launch webinars for EV charging, EV ownership, and residential and non-residential electrification.

### **Evaluation, Measurement & Verification Studies**

AMP completes an EM&V study every other year with a focus on the two previous years. The most recent EM&V report for FY 2020 – FY 2021, by ADM Associates. The EM&V report focused on impact and process evaluation for Energy Plus and EAP Plus. The study is available on the NCPA's website. AMP plans to complete the next study in FY 2024 that will cover non-

residential direct install and residential downstream rebates for FY 2020 and FY 2021 with a projected \$60,000 budget.

**Major Differences or Diversions from CA POU TRM for Energy Savings**

With a goal of getting the most accurate energy savings, AMP staff used a variety of sources. For the residential lighting energy savings, AMP used historical AMP customer program data, buoyed by a high realization rate in the FY 2019 EM&V report. The energy savings figures for the residential refrigerator/freezer, LED string lights, and heat pump water heaters were from the “Technical Resource Manual” (TRM 2017) for the California Municipal Utility Association (CMUA). The electric clothes dryer savings were from an Energy Star report.

Energy savings for non-residential programs were calculated using a hybrid of actual pre- and post-installation inspections and the TRM 2017. Customized lighting projects were fully calculated. Savings from the direct-install program, Energy Plus, used a combination of the TRM 2017 and full pre- and post-calculations.

**TABLE 1. Energy Efficiency Program Results by End Use**

Summary by End Use	Resource Savings Summary								Cost Test Results		
End Use	Gross Peak Savings (kW)	Gross Annual Savings (kWh)	Gross Lifecycle Energy Savings (kWh)	Net Peak Savings (kW)	Net Annual Energy Savings (kWh)	Net Lifecycle Energy Savings (kWh)	Net Lifecycle GHG Reductions (Tons)	Total Utility Cost	Utility (\$/kWh)	PAC	TRC
Appliance & Plug Loads	0	568	6,816	0	176	2,113	1	\$1,072	0.683	0.18	0.18
HVAC - Cooling	0	393	6,288	0	314	5,030	2	\$7,331	2.078	0.24	0.24
Lighting - Indoor	89	360,255	5,764,084	85	341,982	5,471,719	1,755	\$259,832	0.068	1.88	0.82
Lighting - Outdoor	0	400,035	5,200,456	0	380,033	4,940,433	2,149	\$247,676	0.068	2.26	2.02
Miscellaneous	0	6,129	104,193	0	3,677	62,516	19	\$30,257	0.701	0.19	0.21
Service & Domestic Hot Water	0	3,008	33,088	0	1,805	19,853	8	\$17,630	1.181	0.21	0.20
Energy Efficiency Subtotal	89	770,388	11,114,924	85	727,988	10,501,664	3,932	\$563,798	0.075	1.88	1.14
Appliance & Plug Loads	7	18,530	140,454	4	12,250	91,831	31	\$53,454	0.766	0.20	0.20
Building Envelope	0	193	4,057	0	54	1,136	1	\$2,166	2.946	0.17	0.17
Lighting - Indoor	352	68,325	1,093,197	300	57,107	913,718	325	\$279,113	0.435	0.34	0.34
Lighting - Outdoor	0	2,616	41,856	0	2,616	41,856	15	\$12,994	0.443	0.34	0.34
Service & Domestic Hot Water	0	782	8,602	0	469	5,161	2	\$1,415	0.365	0.33	0.33
Low-Income Subtotal	360	90,446	1,288,166	304	72,497	1,053,702	373	\$349,142	0.469	0.32	0.32
EE and Low Income Subtotal	449	860,834	12,403,090	389	800,485	11,555,367	4,306	\$912,940	0.110	1.28	0.92
C&S, T&D and Electrification Subtotal	0	0	0	0	0	0	0	\$0	0.000		
Utility Total	449	860,834	12,403,090	389	800,485	11,555,367	4,306	\$912,940	0.110	1.28	0.92



**TABLE 2. EnergyEfficiency Program Results by Sector**

Summary by Sector	Resource Savings Summary							Cost Test Results			
Sector	Gross Peak Savings (kW)	Gross Annual Savings (kWh)	Gross Lifecycle Energy Savings (kWh)	Net Peak Savings (kW)	Net Annual Energy Savings (kWh)	Net Lifecycle Energy Savings (kWh)	Net Lifecycle GHG Reductions (Tons)	Total Utility Cost	Utility (\$/kWh)	PAC	TRC
Commercial	89	757,690	10,922,939	85	719,806	10,376,792	3,891	\$491,877	0.066	2.12	1.21
Residential	0	12,698	191,985	0	8,183	124,872	42	\$71,922	0.817	0.21	0.21
Energy Efficiency Subtotal	89	770,388	11,114,924	85	727,988	10,501,664	3,932	\$563,798	0.075	1.88	1.14
Low-Income Subtotal	360	90,446	1,288,166	304	72,497	1,053,702	373	\$349,142	0.469	0.32	0.32
EE and Low Income Subtotal	449	860,834	12,403,090	389	800,485	11,555,367	4,306	\$912,940	0.110	1.28	0.92
C&S, T&D and Electrification Subtotal	0	0	0	0	0	0	0	\$0	0.000		
Utility Total	449	860,834	12,403,090	389	800,485	11,555,367	4,306	\$912,940	0.110	1.28	0.92

**TABLE 3. EnergyEfficiency Program Results by Building Type**

Summary by Building Type	Resource Savings Summary								Cost Test Results		
Building Type	Gross Peak Savings (kW)	Gross Annual Savings (kWh)	Gross Lifecycle Energy Savings (kWh)	Net Peak Savings (kW)	Net Annual Energy Savings (kWh)	Net Lifecycle Energy Savings (kWh)	Net Lifecycle GHG Reductions (Tons)	Total Utility Cost	Utility (\$/kWh)	PAC	TRC
All	89	757,690	10,922,939	85	719,806	10,376,792	3,891	\$491,876.53	0.066	2.12	1.21
Residential	0	12,698	191,985	0	8,183	124,872	42	\$71,921.80	0.817	0.21	0.21
Energy Efficiency Subtotal	89	770,388	11,114,924	85	727,988	10,501,664	3,932	\$563,798.33	0.075	1.88	1.14
All	0	10,472	62,832	0	7,330	43,982	15	\$13,102.65	0.390	0.39	0.39
Residential	360	78,342	1,203,982	304	64,102	995,633	354	\$310,150.33	0.443	0.34	0.34
Residential - Multi-Family	0	782	8,602	0	469	5,161	2	\$1,415.01	0.365	0.33	0.33
Residential - Single-Family	0	850	12,750	0	595	8,925	3	\$24,473.53	3.850	0.04	0.04
Low-Income Subtotal	360	90,446	1,288,166	304	72,497	1,053,702	373	\$349,141.52	0.469	0.32	0.32
EE and Low Income Subtotal	449	860,834	12,403,090	389	800,485	11,555,367	4,306	\$912,939.85	0.110	1.28	0.92
C&S, T&D and Electrification Subtotal	0	0	0	0	0	0	0	\$0.00	0.000		
Utility Total	449	860,834	12,403,090	389	800,485	11,555,367	4,306	\$912,939.85	0.110	1.28	0.92