LOW INCOME PROGRAM DESIGN

How Redding found success by NOT reinventing the wheel

Nathan Aronson, Redding Electric Utility

THE CHALLENGE

The City wanted to develop a weatherization program for low-income customers, and was facing typical program barriers.

- Health and Safety
- Income Qualification
- Enrollment
- Contractor Training
- Staffing limitations
- Uncharted territory
- Time constraints

THE SOLUTION

- Leverage existing low-income programs: CSD, LIHEAP, and PG&E Energy Savings Assistance (ESA) Program
- Where REU is funding the measure, adjust the policies to meet our goals.

KEY TAKEAWAYS

- Able to deploy cheaper, better, and faster than we could have ourselves
- Local control allows flexibility that makes leveraging work
- Program is more cost-effective than initially expected

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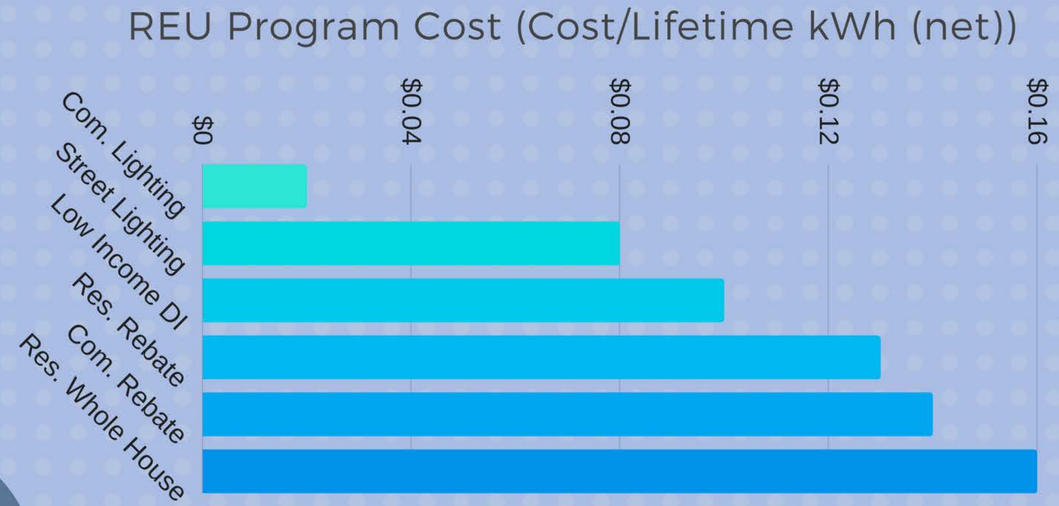
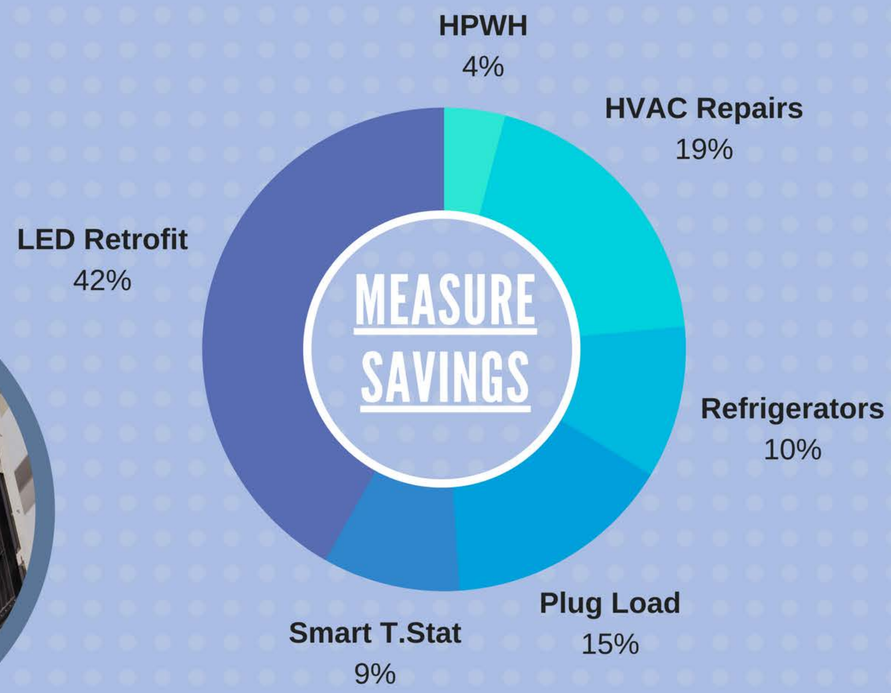
RESULTS





Total Homes Served:	320
Total Customers Touched	755
Avg. Expenditure Per Home:	$660
Avg. 1st year Savings Per Home:	$101

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WHAT WE DIDN'T DO

DEVELOP INSTALLATION STANDARDS

CSD LIWP STANDARDS
FOR
ELECTRONICALLY COMMUTATED BLOWER MOTOR – DRAFT

Category	Criteria
1. MEASURE	1.1. High-efficiency brushless electronically commutated motor (ECM) installed to replace the existing direct drive Permanent Split Capacity (PSC) blower motor in a central A/C system. 1.2. This measure is classified as an Enhanced Measure NOT requiring an energy audit. 1.3. The following requirements are in addition to all applicable requirements found in the General Installation Guidelines.
2. LICENSING	2.1. This measure requires a C-20 Warm-Air Heating, Ventilating, and Air-Conditioning Contractor license for purposes of the LIWP program.
3. FEASIBILITY CRITERIA	3.1. Install this measure when (all of the following shall apply): a. The dwelling has a functional central refrigerated cooling system (A/C or heat pump) with a direct drive PSC blower motor. b. The dwelling is located in Climate Zones 9 – 15. 3.2. Do NOT install this measure when: a. Existing central A/C unit: - Is inaccessible, is non-operational, or is in need of service or repair (other than simple blower motor replacement) - Has a hazardous condition that cannot feasibly be corrected. - Has a defective or excessively-leaky plenum or duct system that cannot feasibly be repaired or sealed. - Is on a recall list (e.g., Consumer Product Safety Commission: https://www.cpsc.gov/Recalls). - Will be replaced. b. Air handler cabinet is too narrow to provide clearance for the new motor. c. Replacement blower motor requires special mounting hardware/bracket that cannot feasibly be installed.
4. ADDITIONAL ASSESSMENT CRITERIA	4.1. Horsepower (HP) Rating: a. Record the HP rating of the existing motor and the A/C capacity in tons. b. Specify an EMC that can provide the HP rating that most closely matches that of the existing motor, using the following table as a guide. 4.2. Determine if filter is cleanable or is to be replaced, with costs included as part of this measure.
5. MINIMUM INSTALLATION GUIDELINES	5.1. Measure shall be installed in accordance with manufacturer's instructions and specifications, local building code and LIWP CAS protocols. 5.2. Pre-Installation a. Measure static pressure in the supply plenum with the PSC motor running in cooling mode. 5.3. Motor Installation a. Install the ECM using specified mounting hardware (e.g., bellyband, spacers, bracket). - If new holes must be drilled, securely bolt the motor in those locations (not with sheet metal screws). - Center motor in the blower housing, and position wiring harness. - Secure the blower wheel locking bolt to flat side of the motor shaft. 5.4. Electrical a. Select ECM speed in cooling mode that produces the same static pressure in the supply plenum that the PSC motor did. b. Place a completed ECM wiring label/sticker near the existing wiring diagram. 5.5. Air filters are to be cleaned or replaced per assessment decision.
6. POST-INSTALLATION GUIDELINES	6.1. Operational Checks a. Measure shall be tested after installation and shall function properly in accordance with manufacturer's specifications.
7. MATERIAL SPECIFICATIONS	7.1. Motor Type a. Variable speed ECM appropriate for use as an HVAC replacement direct drive blower motor. b. UL or CSA-recognized component. c. ECM capable of providing the horsepower that matches the HVAC system. 7.2. Accessories (When Required) a. Digital Programmer - For installation of ECMs that require programming. - Compatible with the motors it will be used to program. b. Motor Mounting Devices - Commercially available replacement mounting hardware. - Compatible with the ECM being installed.
8. WARRANTY	8.1. Manufacturer Warranty – 2 years

Motor HP	HVAC A/C Tons	Furnace kBtuh
1/5 to 1/2	1.5 to 3	40 to 95
1/2 to 1	3.5 to 5	100 to 150

PROVIDE TRAINING

- Lead Safe Weatherization
- Combustion Safety Testing
- Duct Leakage/Blower Door
- Energy Auditing

WE ALSO DIDN'T...

- Build a database, but we specified detailed reports
- Require specific background checks, but we do require HIS and valid PG&E badge to obtain an REU badge.
- Go out to bid

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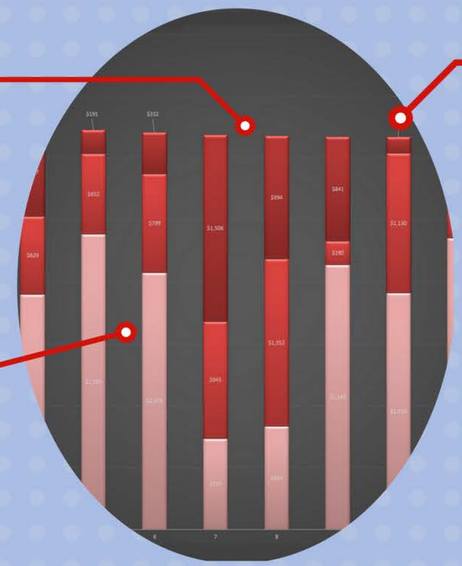
GOING FORWARD

INCREASE PROGRAM IMPACTS BY UTILIZING BILLING DATA FOR TARGETING

#1: High Heating and Cooling

#2: High Cooling

#3 High non-cooling/non-heating



INTEGRATE PROCESSES WITH CSD AND PG&E

Currently working on co-funding strategy for measures that save electricity and gas:

- LIHEAP - leverage funding based on electric/gas monetary savings
- ESA Program - REU provide fixed incentives to contractor for ESA measures that save gas and electricity

CONCLUSION

Electric utilities can leverage existing programs to make a huge impact in their low income community with limited resources.

QUESTIONS?

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