

Achieving Energy Efficiency in Existing Multifamily Buildings

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ASSOCIATION FOR

ENERGY AFFORDABILITY INC.

Association for Energy Affordability (AEA) is a nation wide nonprofit organization based out of New York. AEA focuses primarily on **multifamily housing, particularly low income developments.**

The California office is the technical implementer of several existing multifamily energy efficiency upgrade programs across the state. AEA also provides existing and new building energy consulting services for T24, TCAC, and green certifications.

Long building and equipment lifetimes, prolong the damage that inefficient equipment does to the environment. **But what incentive is there to do better?**

Governmental organizations have sought to balance the owner costs and social costs by setting funds aside specifically for **energy efficiency** projects.

Energy Efficiency Programs - BAMBE

Bay Area Multifamily Building Enhancement Program

- Run by the Association of Bay Area Governments and administered by StopWaste
- Ratepayer funded
- Serves the 9 counties that make up the San Francisco Bay Area
- Requires at least 15% in whole building energy reduction and “core” measures
- Includes cold water savings (toilets) towards 15% requirement
- Incentive of \$750/unit



Energy Efficiency Programs - MCE

Marin Clean Energy Multifamily Energy Efficiency Program

- Administered by Marin Clean Energy (MCE) – the first community choice aggregation program in California
- Ratepayer funded
- Available to all of **MCE's service territory**
 - Marin county, Napa county, Benicia, El Cerrito, Lafayette, Richmond, San Pablo, Walnut Creek
- **No minimum required work scope**
- Incentive based on a **point system** – no minimum and no cap (rebate cannot exceed 80% of project cost)
- Free direct install of LED bulbs and low flows for tenants



Energy Efficiency Programs - LIWP

Low Income Weatherization Program

- Administered by the department of Community Services and Development (CSD)
- Cap and trade funded
- Available to communities within an identified **disadvantaged communities** throughout the state
- Requires at least **15% in whole building energy reduction**
- **Incentive based on metric tons of CO2 avoided**
- Provides additional **incentive for PV installations**



Program Overview

	BayREN	MCE	LIWP
Program Cycle	January to December	January to December	May to February (Round 2)
Incentive	\$750/unit max	No limit (up to 80% project costs covered)	No limit (up to 100% project costs covered)
Minimum Savings Requirement	15% whole building*	None	15% whole building*
Measure Type Requirements	3 measures – 2 must be core*	None	None yet
Other	None	Free direct install	Offers PV incentive

Energy Efficiency by Design

Whole Building Perspectives for Deeper Energy Efficiency

- Programs structured to encourage owners to do more than just “low hanging fruit”
 - BAMBE requires “core” measures
 - MCE incentive structure gives more rebate per measure if several measures are bundled together
 - LIWP allows co-leveraging of external funds
 - Offers more cost coverage on projects, but in turn requires a higher energy savings threshold

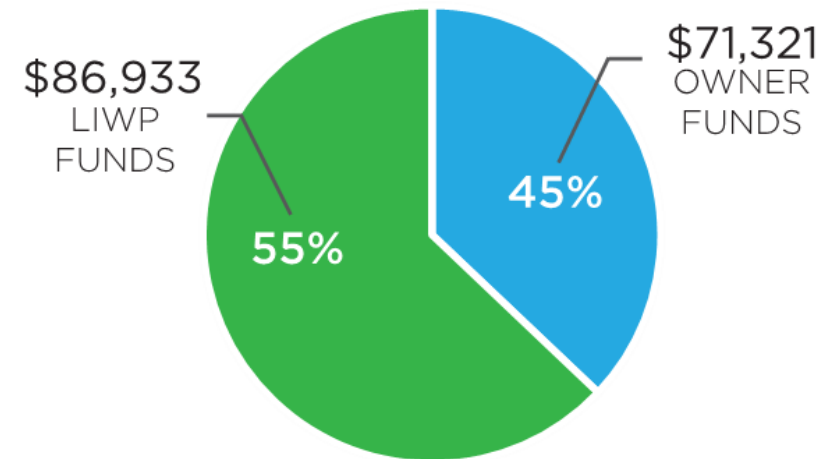
Energy Efficiency by Design

Case Study – Views @ 270 Apartments (owned by Hollywood Community Housing Corporation)

- Previously only had access to direct install programs by the local utilities
- Scope included: Low flow showerheads and aerators, LED lighting upgrades, condensing hot water boiler, temperature controlled recirculation controls, high efficiency laundry washers, and high efficiency toilets (LADWP)

Metrics

- 18.2% reduction in energy use
- 322.5 MTCO₂e reduced



Energy Efficiency by Design

Electrification through LIWP

- Does not need to pass the three prong test to incentivize fuel switching because funding comes from CARB rather than CPUC
- Incentivizes energy efficiency first, then PV
- Persuaded several projects to install heat pump water heaters

Energy Efficiency by Design

Case Study – 205 Jones Street (owned by Mercy Housing)

- Fuel switch from a central gas hot water heater to Sanden heat pump water heaters
- Lower recovery rate of heat pump water heaters required the inclusion of several units along with large **hot water storage** to ensure tenants received enough hot water
- Estimated to save 26.15 MT of CO₂e - that's equivalent to 5 passenger cars taken off the road for one year!



Beyond Energy Efficiency

Workforce Development

- Under LIWP, PV contractors must hire at least one student/graduate of a job training program and provide Job Training Opportunities (JTO) hours
- Triangle Courts
 - 201 kW system installed
 - 61 job trainees who received almost 900 hours of training



Beyond Energy Efficiency

Tenant Benefits

- LIWP provides **higher incentives** for work that directly benefits the tenants
- PV incentive often covers entire common area load, as well as a portion of the tenant load – reducing utility bill for low income tenants
- MCE offers a **free direct install** of low flows and LED light bulbs
- BayREN requirements also motivate owners to choose measures that would be beneficial to their residents

Challenges

Three prong test

- Makes it almost impossible to incentivize fuel switching measures using rate payer funds

Unregulated fuel types

- Can only incentivize natural gas and electricity measures; otherwise seen as increasing load

Designer and contractor education

- New technologies and conservative estimates lead to oversizing of equipment

Looking Forward

Lessons from the Past - Monitoring

- Monitoring existing DHW to size new construction as part of an EPIC grant
- Benchmarking projects pre- and post- energy efficiency retrofit

Demand Response

- Heat pump water heaters
- Electric vehicles

Thank you!

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