La Buena Esperanza Housing Cooperative: Opportunities for Electricity Cost Reductions

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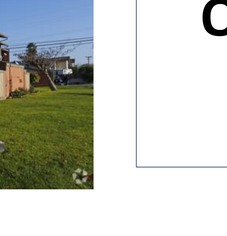
Applied Biological Systems Technology 289A, Spring 2017

Project Overview

- La Buena Esperanza (LBE) is a resident-owned housing co-operative in King City, CA, including 40 two- to four-bedroom apartments and a common lounge area.
- Although residents do not have air conditioning, energy costs – particularly electricity costs – are a significant concern for the community.
- This project identified and analyzed several low- and no-cost opportunities to reduce energy consumption, including lighting upgrades, the installation of solar photovoltaics, and election into alternative energy rate structures such as PG&E's CARE program.
- Findings indicate strong savings potential from enrollment in CARE, an income-qualified discounted electricity rate, and replacement of incandescent lighting with LED bulbs. Solar is not cost-effective under current circumstances.

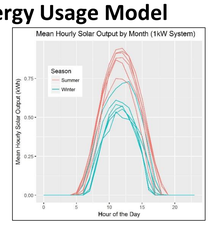
Energy Analysis Methodology Overview

On-Site Energy Audit



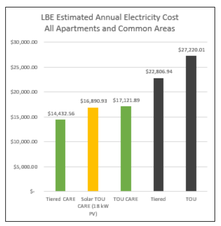
Energy Usage Model

Energy Usage Billing Data Collection



Solar PV Model

Interviews and Surveys

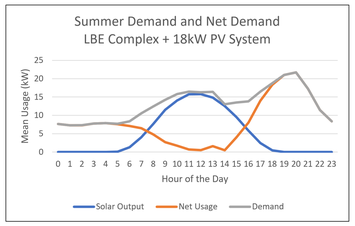


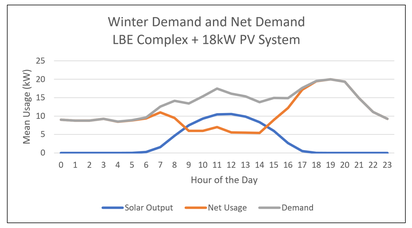
Financial Model

Key Findings:

- Electricity demand is relatively low and consistent across seasons.
- Apartments and common area demand peak in the evening.
- Lighting and plug-loads estimated as major drivers of overall demand and primary drivers of evening peak demand.

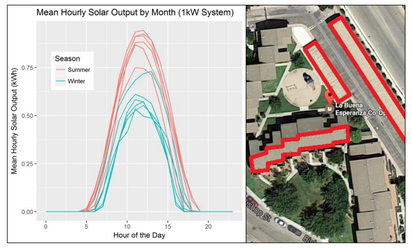
Rooftop Solar Photovoltaics



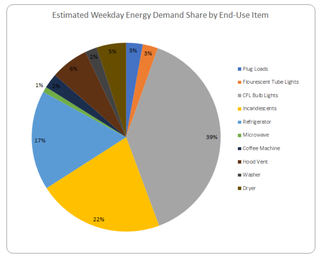


Solar and Time-of-Use:

- Current net metering policy requires transition to less favorable Time-of-Use (TOU) rates
- Consequently, solar is only cost-effective with currently unavailable incentives.
- As default rates transition to TOU in 2019, a solar lease becomes cost-effective around $.14/kWh.



LED Bulb Replacement



LED Bulbs

- Incandescent and Compact Fluorescent (CFL) lighting is estimated to represent 64% of LBE residents' electrical consumption.
- LED bulbs are a low-cost, effective way to reduce electricity consumption.
- Bulb replacement is cost-effective without rebates; however, rebates and incentive programs may be available to fund lighting retrofit
- Savings from replacements range from 1.3-2.2 kWh per day per unit
- This yields 500-800 kWh of savings a year, or up to $100 per unit per year.

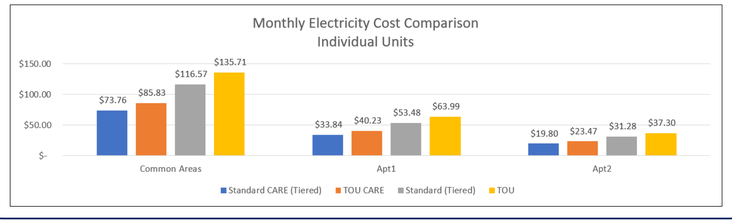
Alternative Electricity Rates

Time-of-Use CARE Rates:

- Time-of-Use CARE rates have a neutral or negative impact on bill totals.
- Tiered CARE rates are preferred as long as usage remains relatively low.

Low-Income Discounts:

- Estimated $40-50 monthly savings available from enrolling account which covers property manager unit and common area in CARE.
- All other residents surveyed were enrolled in CARE, but may not be representative of general resident population.

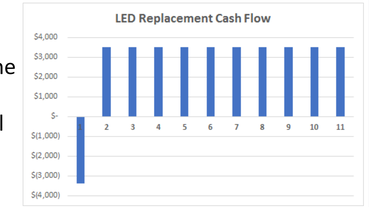


Financial Analysis

LED Bulbs

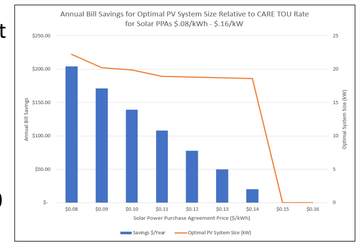
- LED bulbs require very little upfront investment, yet yield significant energy savings.
- LED lightbulbs last 15 times longer than traditional light bulbs.
- Payback period is less than 1 year (0.97 years)
- The Internal Rate of Return is 103.3%
- When we utilize an interest rate of 15%, the Net Present Value is $12,357.
- Common areas lighting can save additional $370 for the entire complex.

# of Bulb Replacements	848
Cost per LED bulb	$4
Total Cost	$3,392
Savings per year (Current CARE rate)	$3,508
Interest rate	15%
LED lifespan	10 years



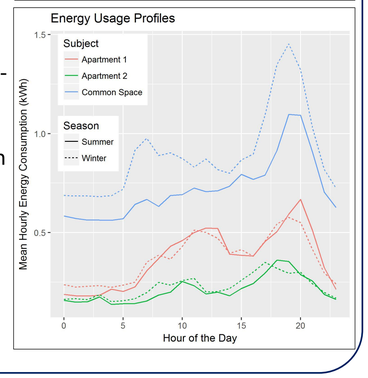
Solar

- Rooftop solar is not advisable under current circumstances due to the mandatory transition to Time-of-Use rates.
- However, with future rate changes solar may be cost-effective at a $0.14/kWh solar lease.
- LBE energy demand could support an 18-20 kW photovoltaic system.



Alternative Rates

- LBE's usage profile is not favorable for Time-of-Use rates due to high evening peak demand.
- Many LBE residents are currently enrolled in CARE, an income-qualified rate discount program.
- Full enrollment of eligible households could offer additional savings. Enrollment of the LBE property manager / common area meter, which is eligible, would save $40-50 per month in electricity costs.



Conclusions

LED Bulbs:

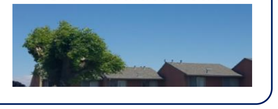
- Cost-effective immediately.
- Recommendation: Pursue.

CARE Program:

- Cost-effective immediately.
- Recommendation: Pursue

Rooftop Solar:

- May be cost-effective in the future, but not today.
- Recommendation: No Immediate Action



Further Information

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