

Moderate Income Comprehensive Energy Efficiency Program Evaluation

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Introduction

- 2004-05 Moderate Income Attic Insulation Program was implemented in California
- Goal was to reach 6000 customers and install 331000 m² of attic insulation and 51600 energy efficiency measures
- CPUC defines moderate-income as less than 400% of Federal Poverty Guidelines
- Program served customers with annual incomes from 175-400% of US Federal Poverty Guidelines or \$23400 (1) to \$101400 (6)

Overview

- US has 114 million residential units and 45% have “moderate” annual household incomes less than \$40000/yr (US EIA 2009)
- Annual US energy use of moderate income households is 5 EJ or 43% of total residential (45% heating, 8% cooling, 19% water heating, and 28% lights/refrig/misc)
- Potential energy savings are 25-75% depending on end use (Rufo 2002)

Income Limitations

- 3 of 4 moderate income households did not meet income eligibility requirements
- Rejected low-income families might not receive efficiency services for decades
- Should equity considerations exclude customers because they are too poor?
- If all low and moderate income customers were eligible, then more customers would save energy and reduce utility bills

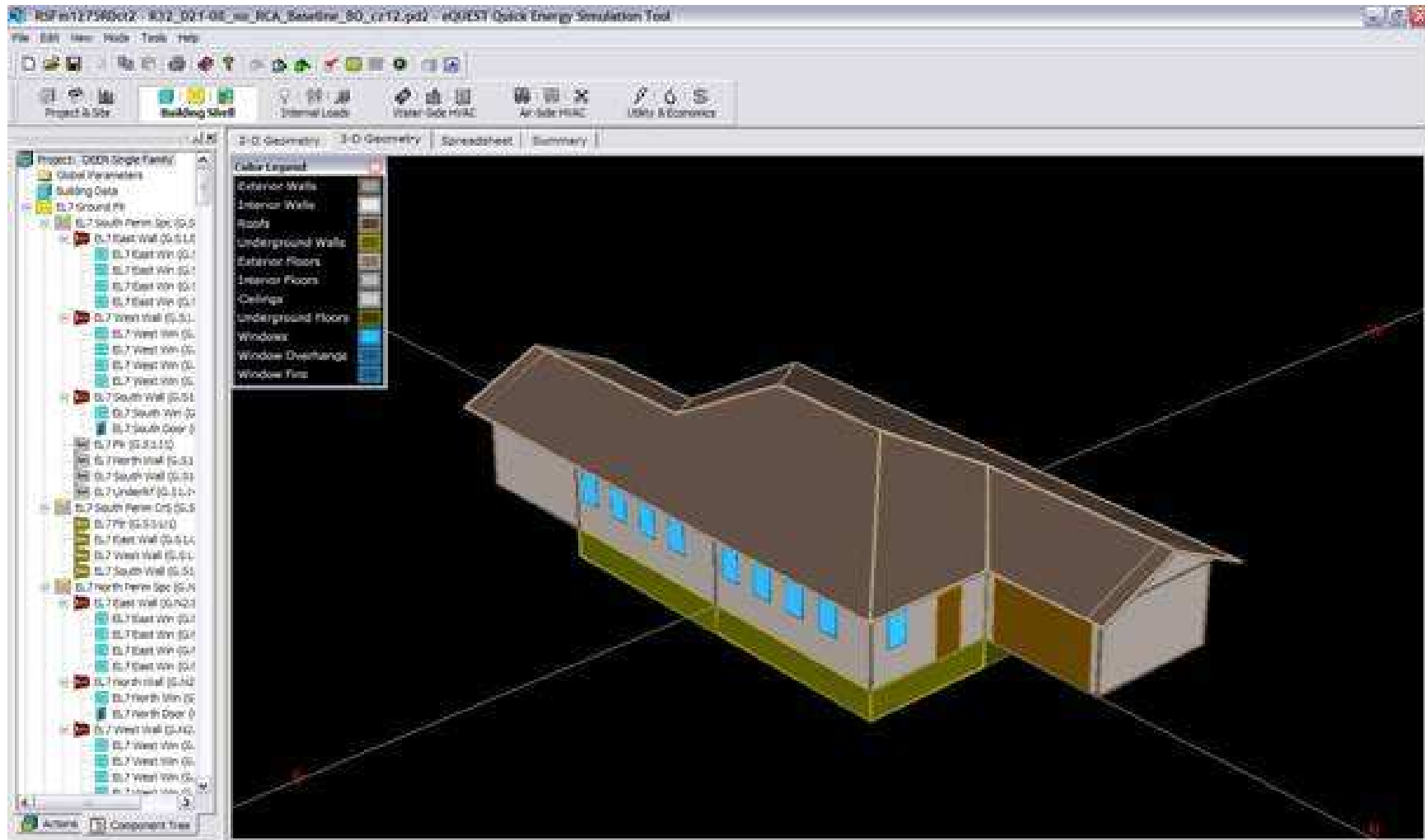
Energy Efficiency Measures

- R-30 attic insulation
- Air conditioning tune-up
- Duct sealing
- Energy Star[®] programmable thermostat
- Energy Star[®] CFL and torchieres
- WaterSense[®] showerhead and aerators
- R-8 water heater tank insulation
- R-4 water heater pipe insulation

Evaluation Approach

- Evaluation based on IPMVP
- 158 sites selected for inspections: 1763 measures and 8488 m² of attic insulation
- Light loggers on 1244 fixtures at 69 sites
- Load impacts based on electric and gas billing data and calibrated simulations for 58 sites
- Process evaluations conducted with 70 participants and 68 non-participants

eQUEST Simulation Model



Results

- Average billing data cooling savings are 982 ± 361 kWh/yr-site (12.7% greater than ex ante) and heat savings are 10 ± 2 GJ/yr-site (10% less than ex ante)
- Average simulation cooling savings are 943 ± 78 kWh/yr-site (8.2% greater than ex ante) and heating savings are 11 ± 1 GJ/yr-site (7.7% greater than ex ante)
- Coefficient of variation is 0.11 to 1.65

Conclusions

- 50% of participants received attic insulation or 6 times more than 9% average for LIEE
- Average cost \$600-1200/home including administration and evaluation
- 1st-yr net savings are 7 GWh (128%), 3 MW, and 60 TJ (92%)
- Lifecycle 67 GWh (101%) and 960 TJ (84%) – lower EUL reduced realization rate
- 85% of participants were satisfied and 97% of non-participants wanted to participate

Thank you!



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