S.C. Electric Cooperatives' Energy Efficiency Initiatives

February 19, 2015

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The Electric Cooperatives of South Carolina

Co-op Energy Efficiency Initiatives

- Help My House
  - Residential energy audits and retrofits
    - 414 comprehensive audits
    - 283 homes retrofitted
- Manufactured Homes Study
  - Central has replaced 200 heating and air conditioning units, 200 roofs, performed weatherization measures on 79 customers, and provided 400 energy efficient appliances (2 appliances each) to 200 customers.
  - CEPCI provided power monitors to a group of 300 homes.
  - Manufactured home customers that were not selected for upgrades were selected to serve as a control group.
  - Monitored 30 customers in the HVAC replacement group, 30 customers in the roof replacement group, 30 customers in the appliance replacement group, and 29 customers in both the weatherization group and control group for M&V and energy savings analysis.
  - 70 mobile homes with solar thermal water heating
- Do The Light Switch
  - 1.8 million CFLs distributed to cooperative members
- Demand Side Management
  - 120,000 hot water heater switches
    - Peak shifting = less need for generation

Home Energy Efficiency Loans and On-Bill Financing: An Alternative to New Generation

Loan Program Pilot

How the Process Works

HMH Pilot Background

- Central established 2010 efficiency goals
  - 10% reduction in residential energy use from 2010 to 2020
  - Reduce wholesale residential power purchase costs
  - Maintain or improve member satisfaction
- Central partnered with ECSC to design pilot program
- Since 2010, federal legislation to enable more financing of efficiency has made progress
- Pilot Program kicks off, accesses USDA financing

On-Bill Financing (OBF)

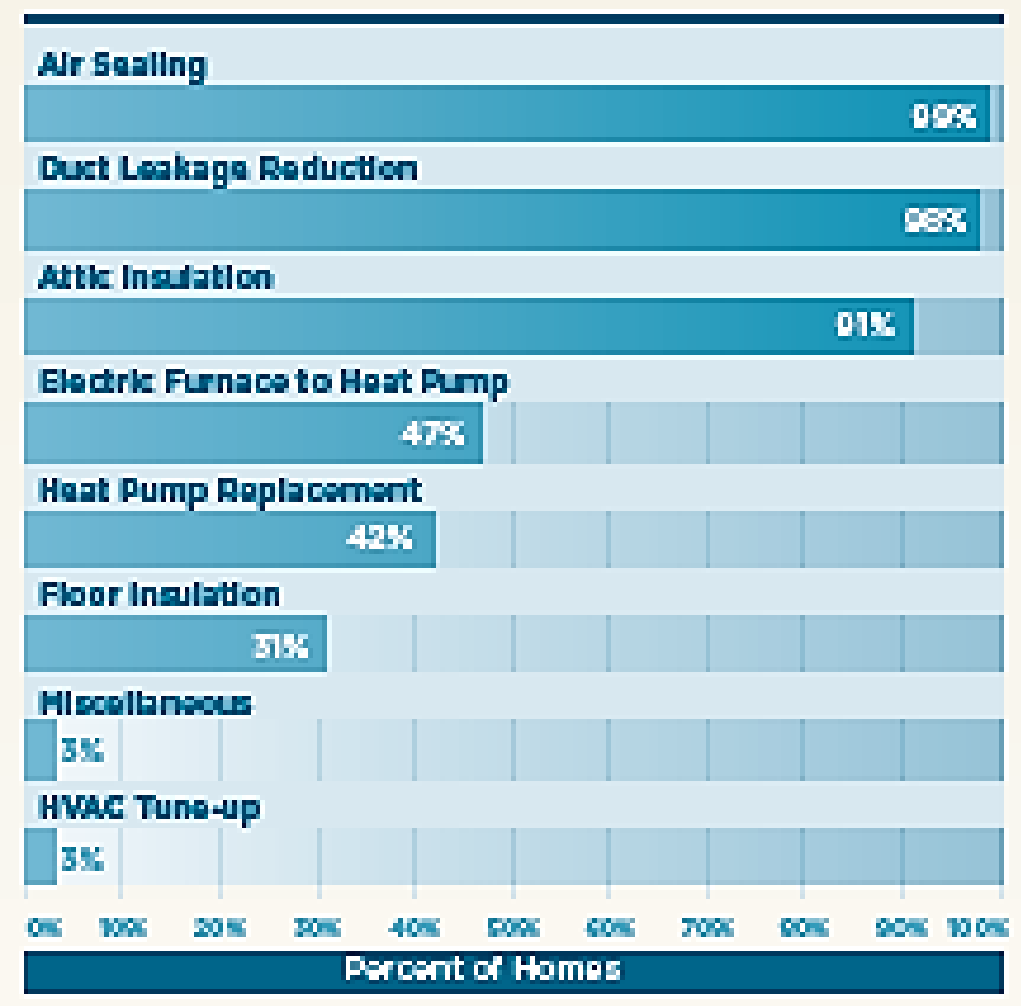
- Allows co-op members to finance energy efficiency measures with low-interest loans
- Loans are re-paid on monthly utility bills
- Enables those without cash for efficiency retrofit
- 2010 OBF Law in SC ties loan to meter
  - Power can be shut off for lack of payment
  - Loan stays with home if home sold
  - These provisions eliminate need for credit check

HMH Pilot Process

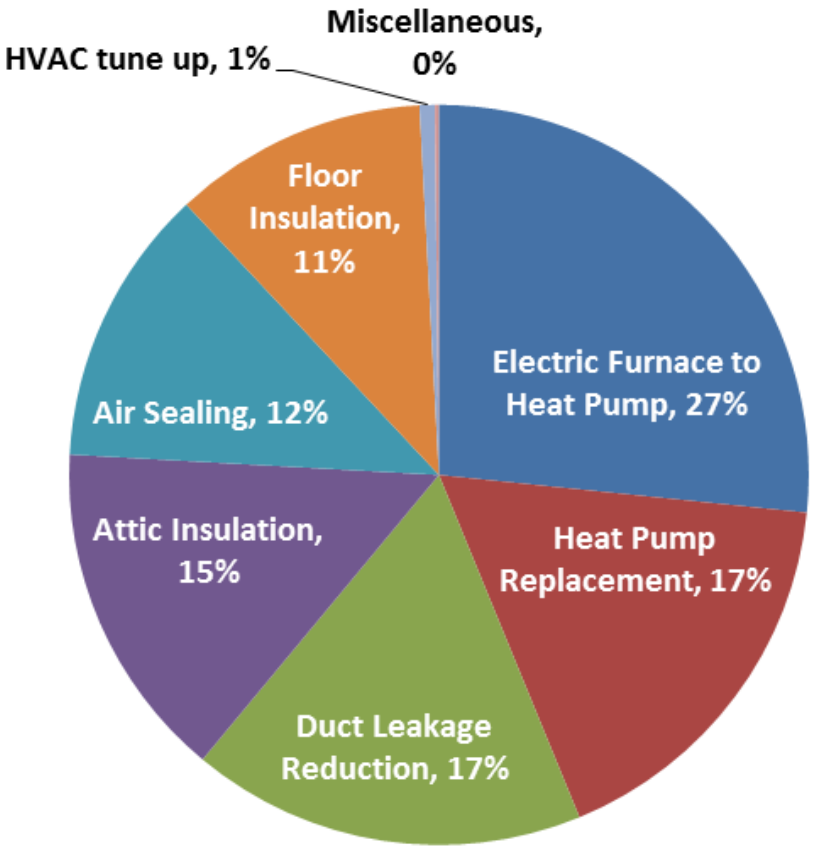
1.	**Participant Selection**
2.	**Visual Audit**
3.	**Comprehensive Audit**
4.	**Loan Approval & Contractor Selection**
5.	**Measure Installation**
6.	**Final Inspection & Project Approval**

Measures

Percent of homes with each measure



Percent of savings from each measure



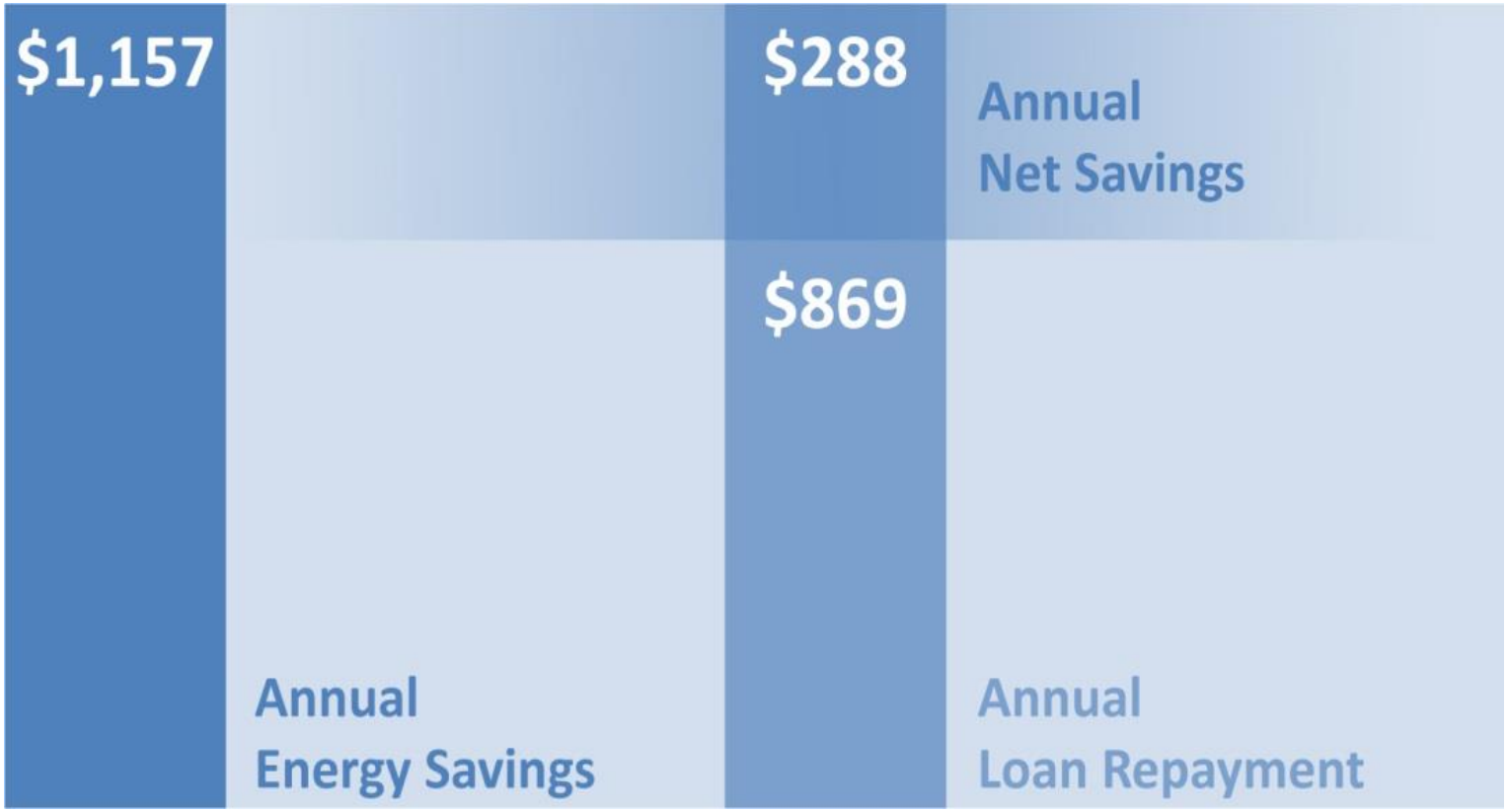
Measured Results Close to Predicted

	Predicted	Actual
Annual kWh Savings	11,593 kWh	10,809 kWh
Annual $ Savings	$1,285	$1,157
Project Costs	$7,684	$7,684
Project Simple Payback	6.0 years	6.6 years

1 MWh saved = 1 ton avoided CO2 emissions

All values are per home averages for a typical meteorological year.

Annual Savings: Average HMH Home



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HMH Spawns New OBF Programs

- Four co-ops are moving ahead
  - Aiken Electric
  - Black River Electric
  - Santee Electric
  - York Electric
- One other SC co-op expected to launch its own OBF program
  - Lynches River

Lending Capital: REDLG

- $1 million cap
- 0% interest
- S.C. model (HMH) recognized at USDA-RUS
- Application template established by Central, Aiken
- Application assistance from ECSC/Central/KW Savings

Rural Energy Savings Program Act

- Loans to qualified consumers:
  - Up to 3% interest rate (for loan loss reserve and operating costs);
  - Repaid within 10 years;
  - Must be for improvements that are fixtures in the home
  - Repaid through charges added to consumer's electric bill;
  - Energy audits to determine effectiveness/impact of loans.

Results

- The average home in the HMH Pilot
  - Electricity use dropped by one-third (about 11,000 kWh/yr)
  - Savings > loan repayment
  - Total bill dropped
- Coincident peak savings also dropped about one-third
- Load factor unchanged, would have improved with load control switches
- Homes became more comfortable
- Participants were extremely satisfied with the program and their co-ops
- HMH has spawned ongoing OBF (3 active programs, 2 more moving in that direction)

Conclusions

- HMH showcased some advantages of co-ops working together
- Central support function helped keep program consistent
- The HMH pilot does not prove how many homes in SC are good candidates for OBF

Could HMH Be Scaled Up?

- HMH homes were not selected randomly, so the results cannot be extrapolated across the state
- HMH targeted high energy use homes because these homes were more likely to need thousands of dollars of efficiency work
- We can compare the HMH homes to data from all the homes in SC co-ops by looking at appliance survey

Recommendations

- Co-ops should consider offering OBF full programs
- Co-ops should collaborate to reduce program costs, improve quality
- Identify a centralized support function
- Support emergency replacements for heat pumps and water heaters (400,000 out of 650,000 co-op served homes)
- Deploy load control devices
- Consider adding renewables and energy storage
- Central, ECSC and KW Savings should facilitate the development of business plans for interested co-ops