South Carolina Electric Cooperatives' On-Bill Financing Loan Program

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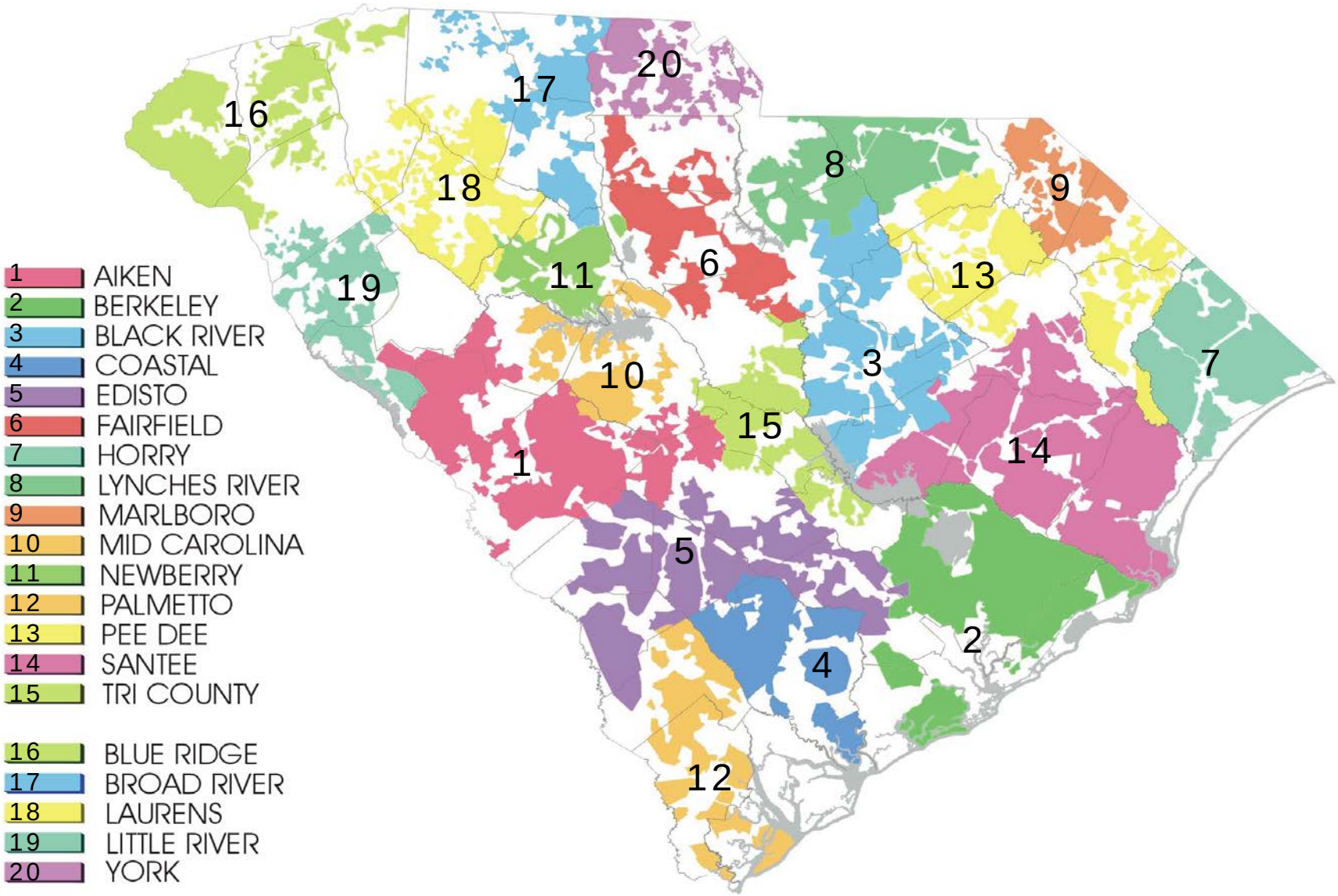
Overview

- S.C. Electric Co-ops and their Challenges
- On-Bill Financing (“OBF”)
- Help My House (“HMH”) Background
- Performance of the HMH Homes
- HMH Spawns New OBF Programs
- Business Case
- Could HMH Be Scaled Up?
- Participant Survey
- Conclusions and Recommendations

S.C. Electric Cooperatives



Challenges

S.C. cooperative members are

Affected by poverty

- $27,580 — S.C. average personal disposable income
  - Approximately 20% below the national average

S.C. cooperative members are

Affected by climate

- Winter
  - Electricity is primary form of heating
  - 80% of cooperative homes use electricity as primary form of heating
- Summer
  - S.C. ranks 7th in cooling degree days per year

S.C. cooperative members are

Impacted by housing stock

- 24% of electric co-op homes in S.C. are manufactured homes
  - Three times higher than the national average

S.C. cooperative members are

Affected by coal-based generation

- More than 80% of S.C. cooperative electricity is generated from the burning of coal
  - Average system cost of $750 per KW
  - Replacement Natural Gas - $3,000 per KW
  - Replacement Nuclear - $5,000 per KW

Generation Mix

Difficult transition to a carbon-constrained economy

% of Generation	U.S.	SCPSA	Duke	S.C. Cooperatives
Hydro	7%	1%	4%	1%
Coal	52%	58%	46%	58%
NatG, Oil	16%	31%	2%	31%
Nuclear	21%	9%	48%	9%
Renewables	4%	<1%	<1%	<1%
CCS	0%	0%	0%	0%
DSM/Efficiencies	0%	<1%	<1%	<1%

Costs to build nuclear plants to replace coal as a fuel source[1]

Year	Capacity (megawatts)	Capital Expenditure	Reduction in Carbon Dioxide (% of total)
2025	404 MW	$2,020,000,000	46.6%
2030	1,200 MW	$6,100,000,000	100%

Costs to build natural gas plants to replace coal as a fuel source[2]

2025	404 MW	$1,050,000,000	18.6%
2030	1,200 MW	$3,230,000,000	40%

[1] Assumption: All CO_2 emissions that are not covered by allowances are to be eliminated based on $5,000 per kW installed cost for nuclear generation. Does not include costs of fuel.

[2] Assumption: All coal is to be replaced by natural gas based on $2,599 per kW installed cost. Cost of fuel is not included. Does not eliminate CO_2 emissions, but reduces it by 40%.

Barriers to Entry

Why consumers don't invest in energy efficiency

- Inconvenience
- Lack of Information
- Lack of Financing
- Incentive

The Help My House Pilot was set up in part to determine how to overcome these barriers.

Solutions

On-Bill Financing (OBF)

- Allows co-op members to finance energy efficiency measures with low-interest loans
- Loans are repaid on monthly utility bills
- Enables those without cash to make prescribed efficiency upgrades

On-Bill Financing (OBF)

- 2010 Law in S.C. ties loan to meter
  - Power can be shut off for lack of payment
  - Loan stays with home if home is sold
  - These provisions eliminate need for credit check

HMH Pilot Background

- Central Electric 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 Electric partnered with ECSC (co-ops' state association) to design pilot program
- Since 2010, progress with federal legislation to enable more financing of efficiency
- Pilot Program kicks off, accesses USDA financing

Key Partners

1. Participating Co-ops

Aiken Electric	Palmetto Electric
Black River Electric	Pee Dee Electric
Broad River Electric	Santee Electric
Horry Electric	Tri-County Electric

Co-ops played different roles

Key Partners

2. Environmental and Energy Study Institute
   - Assisted with program design, outreach

3. Doris Duke Charitable Foundation
   - Grant supported EESI's work

4. Ecova
   - Program planning, management

ecova™

5. Carton Donofrio Partners
   - Surveys, marketing support

CARTON DONOFRIO PARTNERS, INC.

Goals of Help My House

- Determine how to overcome barriers to implementation of energy efficiency improvements

- Establish a functional model for OBF
  - Will members participate?
  - Viable source of loan funds
  - Centralized support function
  - Co-ops playing different roles

- Determine cost-effectiveness
  - To the participant. Savings enough to cover loan payments?
  - To co-ops. Demand savings? Load factor?
  - Long term resource. Cost/kWh

- Determine member satisfaction

Participant Survey Results

Satisfaction with Co-op

96% same or higher

Are you more comfortable?

A lot more	76%
Somewhat	13%
About the same	11%

Satisfied with Post-Repair Electric Bills?

Very satisfied	69%
Somewhat	20%
Neutral	0%
Somewhat not	7%
Very unsatisfied	4%

Case Study

Teri and John Norsworthy's Home

Summerton, S.C.

Santee Electric

Site built home, 1979
Size: 2013 sq. ft.
3 bedrooms

Energy efficiency measures:
New heat pump,
duct sealing, air sealing,
attic insulation

Loan amount: $6,540

Conclusions

- The average home in the HMH Pilot
  - Electricity use dropped by one-third (about 11,000 kWh/yr)
  - Savings exceeded 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 (4 active programs, 1 more preparing to launch)

Conclusions

- HMH showcased some advantages of co-ops working together
- Central Electric's support function helped keep program consistent
- The HMH pilot does not prove how many homes in S.C. are good candidates for OBF
- The HMH pilot was a research program and is not a sustainable model for an ongoing program

Conclusions

The Business Case for OBF

- Short Term
  - Participant and member satisfaction positive
  - Load factor impacts minimal
  - Lost revenue would be small, even for a long term aggressive program
- Long Term
  - When more power is needed, energy efficiency from OBF likely to cost less than 2 cents/kWh

Recommendations

Co-ops should…

- Consider offering full-scale OBF programs
- Collaborate to reduce program costs, improve quality
- Identify a centralized support function
- Support emergency replacements for heat pumps and water heaters
- Deploy load control devices
- Consider adding renewables and energy storage
- Look to their affiliates, organizations and associations for help facilitating the development of business plans for interested co-ops