### South Carolina Electric Cooperatives’ On-Bill Financing Loan Program

**July 24, 2013**

<table>
<thead>
<tr>
<th>Name</th>
<th>Position</th>
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</thead>
<tbody>
<tr>
<td>Rep. James Clyburn</td>
<td>Electric Cooperatives of South Carolina</td>
</tr>
<tr>
<td>Mike Couick</td>
<td>Central Electric Power Cooperative</td>
</tr>
<tr>
<td>Mike Smith</td>
<td>National Rural Electric Cooperatives Association</td>
</tr>
<tr>
<td>Julie Barkemeyer</td>
<td></td>
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</tbody>
</table>
Help My HOUSE!
Shape Up Your Home for Energy Savings

MIKE COUICK
The Electric Cooperatives of South Carolina
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

1. Aiken
2. Berkeley
3. Black River
4. Coastal
5. Edisto
6. Fairfield
7. Horry
8. Lynch's River
9. Marlboro
10. Mid Carolina
11. Newberry
12. Palmetto
13. Pee Dee
14. Santee
15. Tri County
16. Blue Ridge
17. Broad River
18. Laurens
19. Little River
20. York
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.

**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

<table>
<thead>
<tr>
<th>% of Generation</th>
<th>U.S.</th>
<th>SCPSA</th>
<th>Duke</th>
<th>S.C. Cooperatives</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hydro</td>
<td>7%</td>
<td>1%</td>
<td>4%</td>
<td>1%</td>
</tr>
<tr>
<td>Coal</td>
<td>52%</td>
<td>58%</td>
<td>46%</td>
<td>58%</td>
</tr>
<tr>
<td>NatG, Oil</td>
<td>16%</td>
<td>31%</td>
<td>2%</td>
<td>31%</td>
</tr>
<tr>
<td>Nuclear</td>
<td>21%</td>
<td>9%</td>
<td>48%</td>
<td>9%</td>
</tr>
<tr>
<td>Renewables</td>
<td>4%</td>
<td>&lt;1%</td>
<td>&lt;1%</td>
<td>&lt;1%</td>
</tr>
<tr>
<td>CCS</td>
<td>0%</td>
<td>0%</td>
<td>0%</td>
<td>0%</td>
</tr>
<tr>
<td>DSM/Efficiencies</td>
<td>0%</td>
<td>&lt;1%</td>
<td>&lt;1%</td>
<td>&lt;1%</td>
</tr>
</tbody>
</table>
## Costs to build nuclear plants to replace coal as a fuel source

<table>
<thead>
<tr>
<th>Year</th>
<th>Capacity (megawatts)</th>
<th>Capital Expenditure</th>
<th>Reduction in Carbon Dioxide (% of total)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2025</td>
<td>404 MW</td>
<td>$2,020,000,000</td>
<td>46.6%</td>
</tr>
<tr>
<td>2030</td>
<td>1,200 MW</td>
<td>$6,100,000,000</td>
<td>100%</td>
</tr>
</tbody>
</table>

1 Assumption: All CO₂ 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.

## Costs to build natural gas plants to replace coal as a fuel source

<table>
<thead>
<tr>
<th>Year</th>
<th>Capacity (megawatts)</th>
<th>Capital Expenditure</th>
<th>Reduction in Carbon Dioxide (% of total)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2025</td>
<td>404 MW</td>
<td>$1,050,000,000</td>
<td>18.6%</td>
</tr>
<tr>
<td>2030</td>
<td>1,200 MW</td>
<td>$3,230,000,000</td>
<td>40%</td>
</tr>
</tbody>
</table>

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 CO₂ 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

<table>
<thead>
<tr>
<th>Aiken Electric</th>
<th>Palmetto Electric</th>
</tr>
</thead>
<tbody>
<tr>
<td>Black River Electric</td>
<td>Pee Dee Electric</td>
</tr>
<tr>
<td>Broad River Electric</td>
<td>Santee Electric</td>
</tr>
<tr>
<td>Horry Electric</td>
<td>Tri-County Electric</td>
</tr>
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</table>

*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

5. Carton Donofrio Partners
   - Surveys, marketing support
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?

<table>
<thead>
<tr>
<th>Response</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>A lot more</td>
<td>76%</td>
</tr>
<tr>
<td>Somewhat</td>
<td>13%</td>
</tr>
<tr>
<td>About the same</td>
<td>11%</td>
</tr>
<tr>
<td>Satisfied with Post-Repair Electric Bills?</td>
<td></td>
</tr>
<tr>
<td>-----------------------------------------</td>
<td>---</td>
</tr>
<tr>
<td>Very satisfied</td>
<td>69%</td>
</tr>
<tr>
<td>Somewhat</td>
<td>20%</td>
</tr>
<tr>
<td>Neutral</td>
<td>0%</td>
</tr>
<tr>
<td>Somewhat not</td>
<td>7%</td>
</tr>
<tr>
<td>Very unsatisfied</td>
<td>4%</td>
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</tbody>
</table>
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