Webinar Series: Energy Efficiency and Conservation Loan Program

With Experts from Electric Cooperatives and the U.S. Departments of Agriculture and Energy
Webinar Series sneak peek:

Residential Energy Efficiency Deep Dive

**Part Two** – Thursday, Dec 18th 3:00 pm EST

> Focus area will depend on your votes!

Speakers include **Amy Bryan**, Jackson Electric Membership Corporation  
**Danielle Byrnett**, US Department of Energy

Register now! Part two: [https://www1.gotomeeting.com/register/244353121](https://www1.gotomeeting.com/register/244353121)
Webinar #3 of 6: Residential Energy Efficiency Part One

**Gerard Moore**, Acting Deputy Assistant Administrator of the Electric Program in USDA’s Rural Utilities Service

**Gary Stooksbury**, CEO of Aiken Electric Cooperative

**Lindsey Smith**, Electric Cooperatives of South Carolina

**Danielle Byrnett**, Better Buildings Residential Programs, U.S. Department of Energy

Energy Efficiency and Conservation Loan Program (EECLP)

Rural Utilities Service
Electric Program
US Department of Agriculture
The Energy Efficiency and Conservation Loan Program

➢ Rural Utilities Service published the Final Rule for the Energy Efficiency and Conservation Loan Program on December 5, 2013 which implements Section 6101 of the 2008 Farm Bill.

➢ Section 6101 expands the ability of the electric program to make loans for energy efficiency activities.

➢ This regulation is an added subpart to an existing regulation (new “subpart H” to 7 CFR 1710).

➢ The regulation allows new financing opportunities for RUS borrowers to provide energy efficiency activities to businesses and homeowners in rural America.

➢ Eligible EE programs can be developed and implemented by an eligible borrower for its service territory.

➢ Eligible investments and activities include; building weatherization, HVAC upgrades, ground source heat pumps, lighting, small scale renewable generation, energy audits, soft costs, etc.
The Energy Efficiency and Conservation Loan Program – cont...

- A typical borrower’s energy efficiency program might have the utility relending the funds to the consumer for EE upgrades to homes, businesses or industry.

- Utilities may charge an interest rate to the consumer for the EE loan.

- Many EE programs feature on-bill repayment directly to the utility.

- Loans to RUS borrowers may have terms for up to 30 years in some cases.

- RUS will ask potential borrowers for a business plan and quality assurance plan to support the loan application.

- Potential borrowers should reach out to GFRs and/or headquarters personnel for guidance on submitting an application.
Who can borrow under EECLP?

1-An entity in the **business of providing** direct or indirect retail electric service to consumers in rural areas.

2-An entity in the **business of providing wholesale electric supply to distribution entities** providing service to consumers in rural areas.

3-An entity in the business of **providing transmission service to distribution or generation entities** providing services to consumers in rural areas.

*The entity shall provide the applicable service using **self-owned or controlled assets** under a **published tariff** that the entity and any associated regulatory agency may adjust.*
For Additional Information

Please visit our website at: [http://www.rurdev.usda.gov/UEP_EECLP.html](http://www.rurdev.usda.gov/UEP_EECLP.html)

Or Gerard.moore@wdc.usda.gov  202-720-6285

- For more information on the Final Rule, you may download the following information here:
  - Press Release
  - Final Rule
  - Background PowerPoint Presentation
  - Presentation
  - Toolkit

- Current Electric Program Borrowers should reach out to the Electric Program General Field Representatives for additional information and how to apply.
Energy Efficiency Retrofits and On-bill Financing for Existing Homes: A Replicable Model for Electric Cooperatives

December 11, 2014

Gary Stooksbury, CEO
Aiken Electric Cooperative (S.C.)

Lindsey Smith
The Electric Cooperatives of South Carolina
Number of Active Accounts 45,986
Number of Employees 146
Miles of Line 5,368
Consumers per mile 8.6
Average Monthly KWH per member 1,717

Counties served: Aiken, Barnwell, Calhoun, Edgefield, Greenwood, Lexington, McCormick, Orangeburg and Saluda

Gary Stooksbury, CEO
BARBARA RASOR LOWERED HER ENERGY COSTS BY 40 PERCENT
# AEC Help My House Program Progress as of December 10, 2014

<table>
<thead>
<tr>
<th>Members Contacted</th>
<th>Initial Audits Completed</th>
<th>Approved for Bids</th>
<th>Homes with Winning bids</th>
<th>Loans Sent to Credit Union</th>
<th>Loans Signed by Member</th>
<th>Post Audits Approved</th>
<th>Contractors Paid</th>
</tr>
</thead>
<tbody>
<tr>
<td>449</td>
<td>235</td>
<td>222</td>
<td>168</td>
<td>167</td>
<td>166</td>
<td>161</td>
<td>158</td>
</tr>
</tbody>
</table>

Total Winning Bids ($)  
$1,626,327

Average Loan Per Home  
$9,681
SOUTH CAROLINA ELECTRIC COOPERATIVES

We don’t own generation...

...We’re Super Consumers!
OUR PROVIDERS’ GENERATION MIX

S.C. Co-op Generation Sources

Coal: 64%
Natural Gas & Oil: 20%
Nuclear: 13%
Hydro: 3%
Other Renewables: 1%

2013 (Energy)
24% live in manufactured housing (3X the national average)

50% more likely to live below the poverty line

In some months, many may spend 60-80% of income on energy

The state ranks 7th in cooling degree days per year

80% use electricity as primary form of heating
A TALE OF TWO PROGRAMS

Loan Pilot
• 2011-2012
• 8 co-ops, 125 homes
• Main Purpose: test EE vs. building new generation
• RUS and G&T funding

Working Programs
• 2012- Present
• 4 co-ops, 282 homes (so far)
• Purpose: Member service
• Mix of co-op and RUS dollars for lending capital
GOALS OF THE HMH PILOT

- 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
HMH Pilot Background

- Central Electric established 2010 efficiency goals
  - 10% reduction in residential energy use by 2020
  - Reduce wholesale residential power purchase costs
  - Maintain or improve member satisfaction
- Central Electric partnered with ECSC to design pilot program
- Since 2010, progress with federal legislation to enable more financing of efficiency
- Pilot Program kicks off, accesses USDA financing
ON-BILL FINANCING (OBF) — A TARIFF

- 2010 South Carolina state law (Section 58-37-50) allowed co-ops to move forward
  - Loans are tied to the 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
ON-BILL FINANCING (OBF) — A TARIFF

• Allows co-op members to finance energy efficiency measures with low-interest loans

• Loans are repaid on monthly utility bills

• Enables those without sufficient cash in hand to make prescribed and long-awaited efficiency upgrades
PROGRAM #1: THE PILOT
2011-2012
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>
</tbody>
</table>

2. Central Electric Power Cooperative
   - Purchases wholesale power and distributes it to the state’s co-ops

3. Electric Cooperatives of South Carolina
   - Co-ops’ state-wide trade association
4. **Environmental and Energy Study Institute**
   - Assisted with program design, outreach, evaluation

5. **Doris Duke Charitable Foundation**
   - Grant supported EESI’s work

6. **Ecova**
   - Program planning, management
HMH PILOT STRUCTURE AND PROCESS

CENTRAL

KW SAVINGS

CO-OP

ACCOUNT REP

BPI AUDITOR

EE TRAINED CONTRACTOR

CONSUMER-MEMBER
Available services include:

- Total program management
- Energy Audits
- Contractor management
- Loan review and processing (Credit Union)
- Member support and communications
- Post-retrofit problem resolution
- Member-contractor mediations
<table>
<thead>
<tr>
<th></th>
<th><strong>HMH PILOT PROCESS</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Participant Selection</td>
</tr>
<tr>
<td>2.</td>
<td>Visual Audit</td>
</tr>
<tr>
<td>3.</td>
<td>Comprehensive BPI Audit</td>
</tr>
<tr>
<td>4.</td>
<td>Loan Approval &amp; Contractor Selection</td>
</tr>
<tr>
<td>5.</td>
<td>Measure Installation</td>
</tr>
<tr>
<td>6.</td>
<td>Final Inspection &amp; Project Approval</td>
</tr>
</tbody>
</table>
# Measures

## Percent of homes with each measure

<table>
<thead>
<tr>
<th>Measure</th>
<th>Percent of Homes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Air Sealing</td>
<td>99%</td>
</tr>
<tr>
<td>Duct Leakage Reduction</td>
<td>98%</td>
</tr>
<tr>
<td>Attic Insulation</td>
<td>91%</td>
</tr>
<tr>
<td>Electric Furnace to Heat Pump</td>
<td>47%</td>
</tr>
<tr>
<td>Heat Pump Replacement</td>
<td>42%</td>
</tr>
<tr>
<td>Floor Insulation</td>
<td>31%</td>
</tr>
<tr>
<td>Miscellaneous</td>
<td>3%</td>
</tr>
<tr>
<td>HVAC Tune-up</td>
<td>3%</td>
</tr>
</tbody>
</table>

## Percent of savings from each measure

- Electric Furnace to Heat Pump: 27%
- Heat Pump Replacement: 17%
- Duct Leakage Reduction: 17%
- Attic Insulation: 15%
- Floor Insulation: 11%
- Air Sealing: 12%
- HVAC tune up: 1%
- Miscellaneous: 0%
Measured Results Close to Predicted

<table>
<thead>
<tr>
<th></th>
<th>Predicted</th>
<th>Actual</th>
</tr>
</thead>
<tbody>
<tr>
<td>Annual kWh Savings</td>
<td>11,593 kWh</td>
<td>10,809 kWh</td>
</tr>
<tr>
<td>Annual $ Savings</td>
<td>$1,285</td>
<td>$1,157</td>
</tr>
<tr>
<td>Project Costs</td>
<td>$7,684</td>
<td>$7,684</td>
</tr>
<tr>
<td>Project Simple Payback</td>
<td>6.0 years</td>
<td>6.6 years</td>
</tr>
</tbody>
</table>

All values are per home averages for a typical meteorological year.
## Annual Savings: Average HMH Home

<table>
<thead>
<tr>
<th>Annual Energy Savings</th>
<th>Annual Net Savings</th>
</tr>
</thead>
<tbody>
<tr>
<td>$1,157</td>
<td>$288</td>
</tr>
<tr>
<td>$869</td>
<td></td>
</tr>
</tbody>
</table>

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

Average Summer Day Load Shape

Average Winter Day Load Shape

Kilowatts

Hour

Pre-Project  Post-Project

Pre-Project  Post-Project
PARTICIPANT SURVEY RESULTS
SATISFACTION WITH CO-OP

96% same or higher
<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>
</tbody>
</table>
SATISFIED WITH POST-REPAIR ELECTRIC BILLS?

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

Monthly bills
$150 to $200 lower!
Pilot Conclusions

• The average home in the HMH Pilot
  – Electricity use dropped by 34% (about 11,000 kWh/yr)
  – Savings exceeded loan repayment by $288/yr
• 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)
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**
  - EE targets in EPA’s proposed 111(d) rules
  - Energy efficiency is cheaper than new generation - likely less than 2 cents/kWh
  - Broader economic benefits: good for contractors and other local businesses; supply chain
PROGRAM #2: WORKING PROGRAMS

2012-PRESENT

HelpMyHOUSE!
Shape Up Your Home for Energy Savings
Program Standards

Quality Controls
Bookend comprehensive audits of each home per the SC statute.

Oversight of Loan Processing
Loan documents either drafted by KW Savings or drafted by the co-op and sent to KW Savings for review before distribution to homeowners.

Data Collection
Location of homes, list of installed measures, costs, work and audit results, ongoing energy usage, and any other data required by KW Savings Co.

Shared Business Plan
Each cooperative must submit an acceptable written business plan before implementing the program, including any proposed differences from the pilot model.
## Working Programs Progress

<table>
<thead>
<tr>
<th>Co-ops</th>
<th>Homes/Loans Completed</th>
</tr>
</thead>
<tbody>
<tr>
<td>Aiken Electric</td>
<td>158</td>
</tr>
<tr>
<td>Black River Electric</td>
<td>35</td>
</tr>
<tr>
<td>*Little River Electric</td>
<td>n/a</td>
</tr>
<tr>
<td>Santee Electric</td>
<td>79</td>
</tr>
<tr>
<td>*York Electric</td>
<td>10</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>282</strong></td>
</tr>
</tbody>
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Lindsey Smith
The Electric Cooperatives of South Carolina
Questions?

Email us at SE@ee.doe.gov
Residential Energy Efficiency Program Resources
Danielle Sass Byrnett
U.S. Department of Energy
Agenda

- Current partners
- DOE Residential Energy Efficiency Resources for You
  - Better Buildings Residential Program Solution Center
  - Home Performance with ENERGY STAR
  - Home Energy Score
  - Better Buildings Residential Network
    - Poll: What do you want to hear more about (on next Thursday’s webinar)?
DOE Partners Have Completed >1 million Home Upgrades

- Better Buildings Neighborhood Program (2010 - 2013)
- Home Performance with ENERGY STAR (2001 - present)
- Operating in urban, suburban, and rural environments

Market Rate 2010-2013 (BBNP):
- 22-26% avg. energy savings
- >$730M est. lifetime energy cost savings
- >$740M contractor invoices
DOE Residential Energy Efficiency Resources for You
Working Together to Expand Energy Efficiency in Existing Homes

http://energy.gov/eere/better-buildings-residential
The Solution Center helps residential energy efficiency programs and partners:
- Minimize trial and error to achieve success
- Plan, operate, and evaluate their programs
- Access a living repository of examples, lessons, and resources

energy.gov/rpsc
Six Program Components

- **Market Position & Business Model:** Understand the market for energy efficiency products and services and your organization’s role in it.

- **Program Design & Customer Experience:** Create a customer-centric process that provides products and services that customers want.

- **Evaluation & Data Collection:** Develop effective data collection and evaluation strategies in order to understand the effects of your program.
Program Components (cont.)

- **Marketing & Outreach**: Spur demand for home energy upgrades and design offers to motivate customer action.

- **Financing**: Ensure that consumers have access to affordable financing that enable them to pay for energy upgrades.

- **Contractor Engagement & Workforce Development**: Design a program that provides value for contractors and support workforce training.
Energy efficiency: serving the cooperative consumer/owner

Rural Energy Savings Program (Help My House Loan Program) Pilot Project will test

- Consumer acceptance, experience and satisfaction
- Impact on energy consumption
- Impact on energy demand (peak)
- Program model and all processes (outreach, loans, payments, etc.)
- Contractor acceptance and compliance
Explore the Solution Center

More than 50 handbooks & hundreds of examples

Overview
Strategy Development
- Assess the Market
- Set Goals & Objectives
- Identify Partners
- Make Design Decisions
Planning
- Develop Implementation Plans
- Develop Evaluation Plans
Implementation
- Develop Resources
- Deliver Program
Evaluation
- Assess & Improve Processes
- Communicate Impacts

Users can find:
- Step-by-Step Guidance
- Tips for Success
- Examples
- Tools and Templates
- “My Favorites” Tagging
- Email Updates for New Content
- Opportunities to Feature Your Materials

Search by:
- Program Component
- Program Design Phase
- Organization or Program
- State or Territory
- Customer Income
- Neighborhood Type
- Building Sector
Home Performance with ENERGY STAR Program

Through local sponsors, offers whole-house solutions to high energy bills and homes with comfort problems

Since 2002:
• Over 350,000 homes upgraded
• ~50 Program Sponsors in 35 states
• Average energy savings per project: 28MMBTU
• Average homeowner energy bill savings of 20-25%

For more info: energystar.gov/hpwes
Home Performance with ENERGY STAR Program

- Managed by local sponsors who recruit home improvement contractors
- Participating contractors offer solutions to customers
- *HPwES turns energy saving recommendations into improved homes*

**Benefits of Sponsorship:**
- Access to ENERGY STAR branding & marketing resources
- Eligibility for awards and recognition
- Account manager & technical assistance
- Confidence in leveraging national platform

**Program Sponsors offer:**
- Whole house energy assessment
- A network of qualified home performance contractors to complete work in homes
- Independent review (verification and inspection) of contractor work
Home Energy Score Program

“MPG” for homes
- 1-10 score will show an existing home’s efficiency compared to other homes
- Identify improvements that will raise a home’s score and save money

Non-proprietary, transparent tool

Easy method for collecting and analyzing data

Low cost service
- Takes 15 minutes (if part of other effort); <1 hour standalone
- Does not replace a full energy audit or diagnostics
- No cost to participate

New Partners invited to join!
www.HomeEnergyScore.gov

Since 2012:
- 15,500+ homes scored
- 25 Home Energy Score program partners across the country
- Over 250 qualified assessors
Join the Better Buildings Residential Network

Connects energy efficiency programs and partners to share best practices to increase the number of homes that are energy efficient.

**Membership**: Open to organizations committed to accelerating the pace of existing residential upgrades.

**Benefits**:  
- **Peer Exchange Calls**  
  - Business Partners/Workforce  
  - Marketing and Outreach  
  - Evaluation & Data Collection  
  - Financing/Revenue Streams  
  - Moderate, Low-Income Markets  
  - Multifamily Residential Market  
  - Program Sustainability  
- **Tools, templates, & resources**  
- **Recognition**: media, materials  
- **Member generated initiatives**  
- **Programming for new staff**  
- **Newsletter updates on trends**

[betterbuildings.energy.gov/bbrn](betterbuildings.energy.gov/bbrn)
Thank you

Danielle Sass Byrnett
Danielle.Byrnett@ee.doe.gov

For more information:
energy.gov/eere/better-buildings-residential

Next webinar:
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3:00 – 4:00 PM ET
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Thank you!

Join us for the rest of the webinar series:

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  Register here: [https://www1.gotomeeting.com/register/244353121](https://www1.gotomeeting.com/register/244353121)

- **On-Bill Financing** – Thursday, Jan 8th 3:00pmET
  EECLP recognizes the benefits of on-bill financing and enables this option for eligible borrowers. Register here: [https://www1.gotomeeting.com/register/230715008](https://www1.gotomeeting.com/register/230715008)

- **Solar Program Overview** – Thursday, Jan 22nd 3:00pmET
  EECLP can help enable roof-top solar systems in the service territory of