

Webinar Series:

# Energy Efficiency and Conservation Loan Program

With Experts from Electric Cooperatives and  
the U.S. Departments of Agriculture and Energy



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# Webinar Series sneak peek:

## **Residential Energy Efficiency Deep Dive**

**Part One** – Thursday, Dec 11<sup>th</sup> 3:00 pm EST

**Part Two** – Thursday, Dec 18<sup>th</sup> 3:00 pm EST

Speakers include **Gary Stooksbury**, CEO of Aiken Energy  
**Lindsey Smith**, Electric Cooperatives of South Carolina  
**Danielle Byrnett**, US Department of Energy

Register now! Part one: <https://www1.gotomeeting.com/register/900957873>

Part two: <https://www1.gotomeeting.com/register/244353121>



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# Webinar #2 of 6: **Quality Assurance and Evaluation, Monitoring & Verification**

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

**Alan Shedd**, Director of Energy Programs at Touchstone Energy Cooperatives

**Pat Keegan**, CEO of Collaborative Efficiency

**Michael Li**, Senior Policy Advisor, Office of Energy Efficiency and Renewable Energy, US Department of Energy

**Odette Mucha**, Senior Coordinator for Stakeholder Engagement, Office of Energy Efficiency and Renewable Energy, US Department of Energy



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# **Energy Efficiency and Conservation Loan Program (EECLP)**

Gerard Moore  
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.

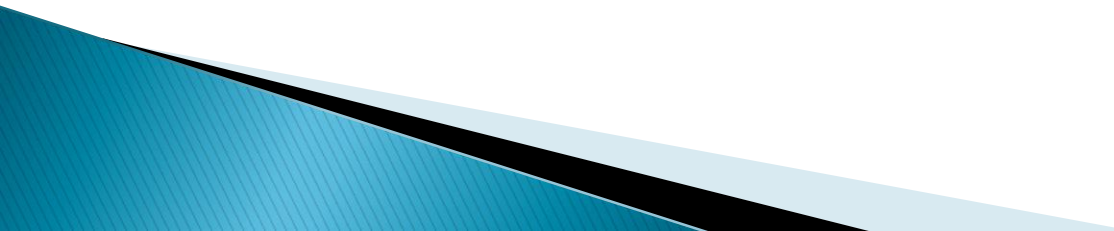
2-An entity in the **business of providing wholesale electric supply to distribution entities** providing service to consumers in rural areas.

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.*

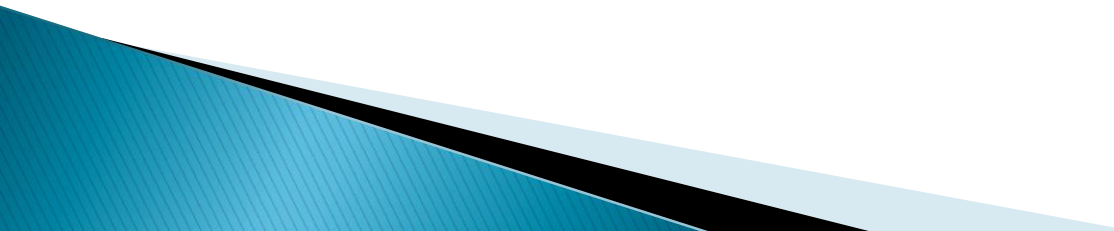


# *An Overview of the QA Plan*

- ▶ A global perspective on the borrower's energy efficiency plan.
  - ▶ Energy efficiency upgrades should be identified in aggregate.
  - ▶ The approval by RUS and its employees of an energy efficiency borrower's quality assurance plan is solely for the benefit of RUS.
  - ▶ Approval of the quality assurance plan does not constitute an RUS endorsement.
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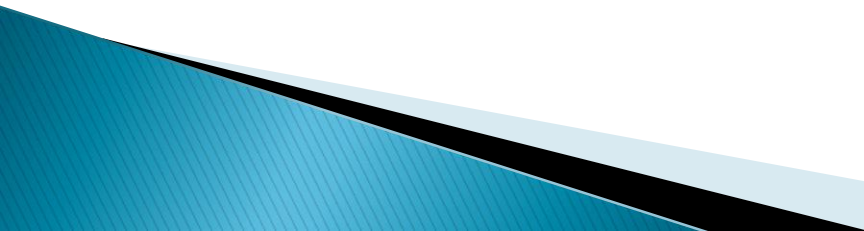


# *What a QA Plan should have?*

- ▶ How the borrower will use qualified energy managers or professional engineers to evaluate the program activities and investments
  - ▶ Energy audits shall be performed for EE investments involving the building envelope at an Ultimate Recipient premises
  - ▶ Energy audits must be performed by certified energy auditors
  - ▶ Follow up audits shall be performed within one year after installation on a sample of investments made to confirm whether efficiency improvement expectations are being met.
  - ▶ Where applicable, program evaluation activities should use DOE's Uniform Methods Project protocols for determining energy savings.
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# *Energy Audits*

## *(for EECLP Purposes)*

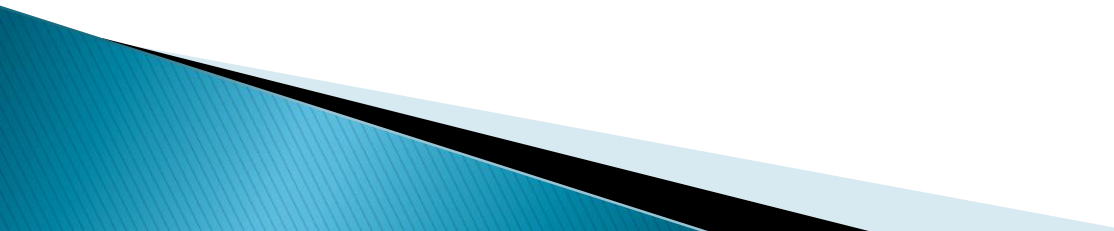
- ▶ Is an inspection & analysis of energy flows in a building, process, or system with the goal of identifying opportunities to enhance energy efficiency.
  - ▶ It should result in an objective standard-based technical report containing recommendations for improving the energy efficiency.
  - ▶ The report should include an analysis of the estimated benefits and costs of pursuing each recommendation and the simple payback period.
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# *Qualified Energy Auditor in the EECLP*

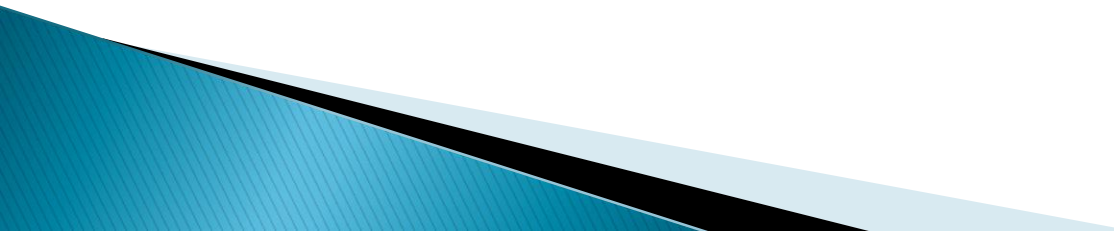
(for commercial and industrial energy efficiency improvements)

- ▶ An individual possessing a current commercial or industrial energy auditor certification from a national, industry-recognized organization
- ▶ A Licensed Professional Engineer in the State in which the audit is conducted with at least 1 year experience and who has completed at least two similar type Energy Audits;
- ▶ An individual with a 4-year engineering or architectural degree with at least 3 years experience and who has completed at least 5 similar type Energy Audits
- ▶ An individual with an energy auditor certification recognized by DOE's Better Buildings Workforce Guidelines. (Beginning in 2015).

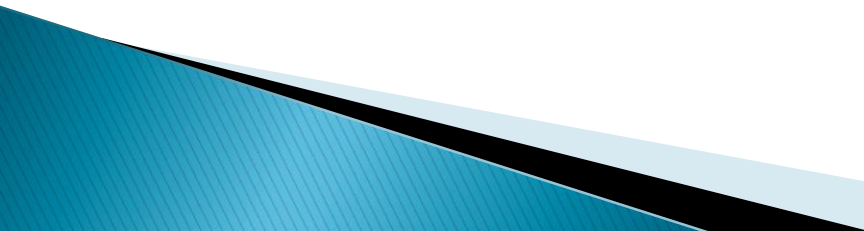
# *Qualified Energy Auditor in the EECLP (for residential EE improvements)*

- ▶ The individual shall meet one of the following:
    1. workforce qualification requirements of the Home Performance with Energy Star Program (Section 3 of the Home Performance with Energy Star Sponsor Guide)
    2. possessing a current residential energy auditor or building analyst certification from a national, industry-recognized organization.
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## *QA Plan EE Programs with Single System Upgrades*

- ▶ If the EE measure involves upgrades to a single system, the new system must be designed and installed by certified and insured professionals acceptable to the utility.
  - ▶ Industry or manufacturer standard performance tests indicating that the installed system is meeting its designed performance parameters. –  
When Applicable-
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# *QA Plan when the EE Program Involves Independent Contractors*

- ▶ The utility shall monitor the work done by the contractors and confirm that the contractors are performing quality work.
  - ▶ The utility should remove substandard contractors from their recommended lists if the subcontractors fail to perform at a satisfactory level.
  - ▶ Contractors not hired by the utility may not act as agents of the utility in performing work financed with the EECLP.
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## *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](mailto: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.

# Quality Assurance

## for Co-op Energy Efficiency Programs

December 4, 2014

Patrick Keegan

Alan Shedd



Touchstone Energy<sup>®</sup> Cooperatives  
*The power of human connections<sup>®</sup>*



*Purpose of presentation: Gain understanding of the importance of QA and some QA tools*

## Outline

- QA in the EECLP regulation
- Why QA is essential
- Elements of QA in EE Programs
  - Program design decisions
  - Energy audits
  - Contractors, training, inspections
  - Program evaluation



# Importance of QA

- QA Plan is required part of EECLP Application
- It's a “global perspective”
- Some key provisions of the QA Plan
  - Use qualified people
  - Conduct energy audits
  - Do some follow-up audits 1 year after project
  - Do standard performance tests
  - Follow industry standards



# Why QA is Essential

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- QA = Assuring quality for your members
- A co-op loan program requires high standards
- EE programs not created equally
- Reasons for QA in EE programs
  - To assure savings are realized
  - Member satisfaction, comfort, health & safety
  - Co-op reputation
  - Contractor management



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# Some Important Elements of QA

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- Program design decisions
- Energy audits
- Contractor recruitment and management
- Auditor and contractor training
- Post-project inspections
- Program Evaluations



# Energy Audits

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- Range in complexity, expense
- Depends on goals, and goals can vary
- The audit can involve more than on-site
  - Analysis of energy usage
  - Modeling with building simulation software
  - Audit report
- Tools
- Qualifications of the auditor
- Cost of the audit

# Contractor Recruitment and Management

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- Depends on project nature and scope
- Distribution co-op vs. statewide or G&T
- Local contractor network and trade allies
- Preferred contractor list
- Where do you find people?
- Cooperative principle 6 - cooperation among cooperatives



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# Auditor and Contractor Training

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- Training is key
- Level depends on project. Many types:
  - 1/2 day program orientation
  - BPI Building Analyst
  - HERS Rater
  - CEM
  - HVAC certification
  - Solar
- Follow-up is needed!



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# Post-Project Inspections

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- Standards. How do you know it's been done right?
- Frequency. How many do you inspect?
- What to look for
- Member satisfaction



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# Program Evaluation

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- Program review
- Process evaluation
- Impact evaluation

# For More Information

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[pkeegan@collaborativeefficiency.com](mailto:pkeegan@collaborativeefficiency.com)



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[alan.shedd@nreca.coop](mailto:alan.shedd@nreca.coop)



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- EESI  
The Environmental and Energy Study Institute has funding and experts to help co-ops pursue on-bill financing  
John-Michael Cross: [jmccross@eesi.org](mailto:jmccross@eesi.org)



**EESI**  
Environmental and  
Energy Study Institute



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# Introduction to Evaluation, Monitoring & Verification (EM&V)

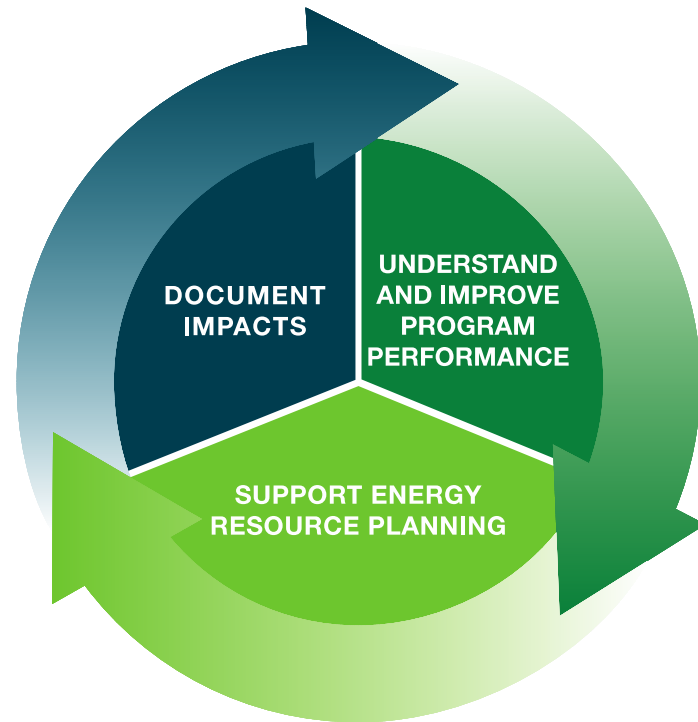
December 3, 2014



Michael Li  
Michael.Li@ee.doe.gov

# Why Evaluate?

- **Document impacts:** Document the energy savings of projects and programs in order to determine how well they have met their goals; e.g., has there been a good use of the invested money and time? **Provide PROOF** of the effectiveness of energy management.
- **Resource Planning:** To support energy resource planning by understanding the historical and future resource contributions of energy efficiency as compared to other energy resources. **Provide data** to support efficiency as a reliable resource.
- **Understand why the effects occurred:** Identify ways to improve current and future projects and programs as well as select future projects. “You can’t manage what you don’t measure” and “Things that are measured tend to improve”.



**EVALUATION SUPPORTS SUCCESSFUL  
EFFICIENCY PROGRAMS**

# Types of Evaluation

- Impact Evaluation - assessments that determine and document the direct and indirect benefits of an energy efficiency program. Program benefits, or impacts, can include energy and demand savings and non-energy benefits.
- Process Evaluation - documents program operations and identify and recommend improvements that are likely to increase the program's efficiency or effectiveness for acquiring energy efficiency resources
- Market Evaluation - assessments of structure or functioning of a market, the behavior of market participants, and/or market changes that result from one or more program efforts

# Impact Evaluation Basics

# Impact Evaluation Results

- **Gross Savings** - The change in energy consumption and/or demand that results directly from program-promoted actions taken by program participants regardless of why they participated
- **Net Savings** - Refers to the portion of gross savings that is attributable to a particular program. Attributing changes to one cause (i.e., a particular program) or another can be quite complex
- **Non-Energy Benefits (NEBs)** - Identifiable non-energy impacts associated with program implementation
  - Some examples include: avoided emissions and environmental benefits, productivity improvements, jobs created and local economic development, reduced utility customer disconnects, higher comfort and convenience.

SEE Action Impact Evaluation Guide Webinar - Steven Schiller - December 2012

# Types of Savings

- **Energy Savings:** Reduction in electricity use in kilowatt-hours or in fossil fuel use in thermal unit(s).
- **Claimed Savings:** Values reported by an implementer or administrator, using their own staff and/or an evaluation consulting firm, after the subject energy efficiency activities have been completed; also called *tracking estimates, reported savings*
- **Evaluated Savings:** Savings estimates reported by an independent, third-party evaluator after the subject energy efficiency activities have been implemented and an impact evaluation has been completed; also called ex post, or more appropriately, *ex post evaluated savings*.



# Deemed Savings

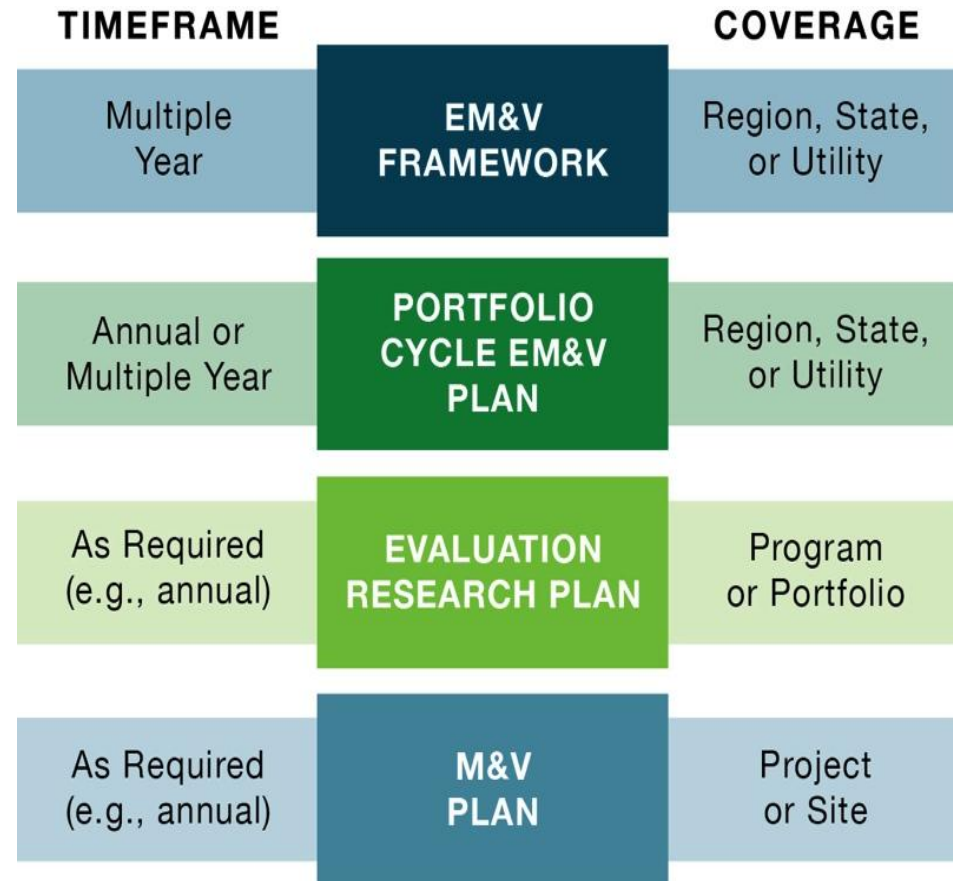
- An estimate of energy or demand savings for a single unit of an installed energy efficiency measure that (1) has been developed from data sources and analytical methods that are widely considered acceptable for the measure and purpose, and (2) is applicable to the situation being evaluated.

Also, Stipulated Savings Value:

- Individual parameters or calculation methods can also be deemed

# Structure for Defining Evaluation Activities

- **EM&V Framework** – Primary document that lays out top level structure. *This is perhaps the principle document that all stakeholders can focus on and provide high level input.*
- **Annual Plans** – Indicates major evaluation activities that will be conducted during the evaluation cycle
- **Evaluation Research Plans** – Created for the major EM&V activities
- **Site Specific M&V Plans** – For custom project sites that are analyzed and inspected





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## Key Resources:

- SEE Action Energy Efficiency Program Impact Evaluation Guide
- Uniform Methods Project
- EPA EM&V Webinar Series

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[www.seeaction.energy.gov](http://www.seeaction.energy.gov)

# Questions

Email us at [SE@ee.doe.gov](mailto:SE@ee.doe.gov)

# Thank you!

Join us for the rest of the webinar series:

- ▶ **Residential Energy Efficiency Deep Dive, Part One** – Thursday, Dec 11<sup>th</sup> 3:00pmET  
EECLP can offer eligible borrowers the financial resources to help establish a sustainable energy efficiency program.  
➡ Speakers include **Gary Stooksbury CEO of Aiken Energy** and **Lindsey Smith of Electric Cooperatives of South Carolina**  
Register here: <https://www1.gotomeeting.com/register/900957873>
- ▶ **Residential Energy Efficiency Deep Dive, Part Two** – Thursday, Dec 18<sup>th</sup> 3:00pmET  
EECLP can offer eligible borrowers the financial resources to help establish a sustainable energy efficiency program. Register here: <https://www1.gotomeeting.com/register/244353121>
- ▶ **On-Bill Financing** – Thursday, Jan 8<sup>th</sup> 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>
- ▶ **Solar Program Overview** – Thursday, Jan 22<sup>nd</sup> 3:00pmET  
EECLP can help enable roof-top solar systems in the service territory of eligible borrowers.  
Register here: <https://www1.gotomeeting.com/register/493276257>



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