



# *Energy Efficiency Programs in Rural North Carolina*

*Star Hodge  
State Energy Program Manager*



# *Why Rural Programs are Important*

- North Carolina is a rural state
- 80 of our 100 counties are outside of major metropolitan areas
- Approximately 2.2 million people live in rural North Carolina
- Most beautiful natural resources are found in rural North Carolina

# *EE Outreach Activities in Rural North Carolina*

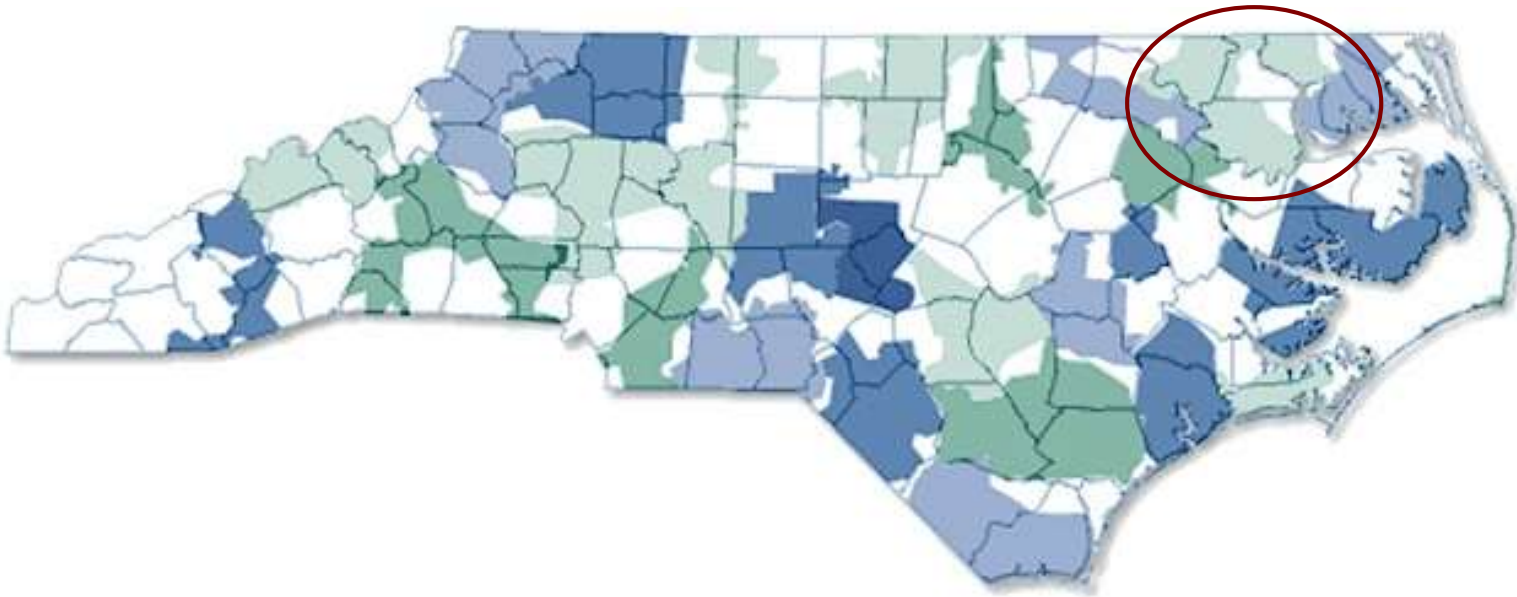
- Community Focused Partnerships
- Grant Funds and Rebates
- Revolving Loan Funds
- On-Bill Financing
- Loan Loss Reserve Fund

# *On – Bill Financing*

# *Electric Cooperatives in NC invest in local economic development – On-Bill Financing*

- 2.5 million North Carolinians are served by an electric co-op
- 93 of the 100 counties are served by an co-op

Roanoke Electric

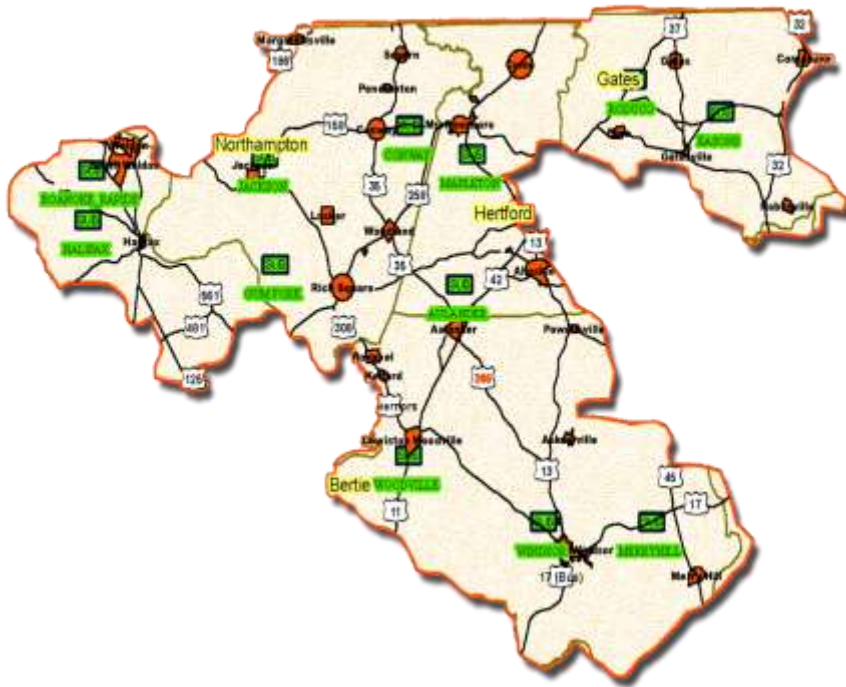


Source: NC Electric Membership Cooperative



Roanoke Electric Cooperative

Your Touchstone Energy® Partner 

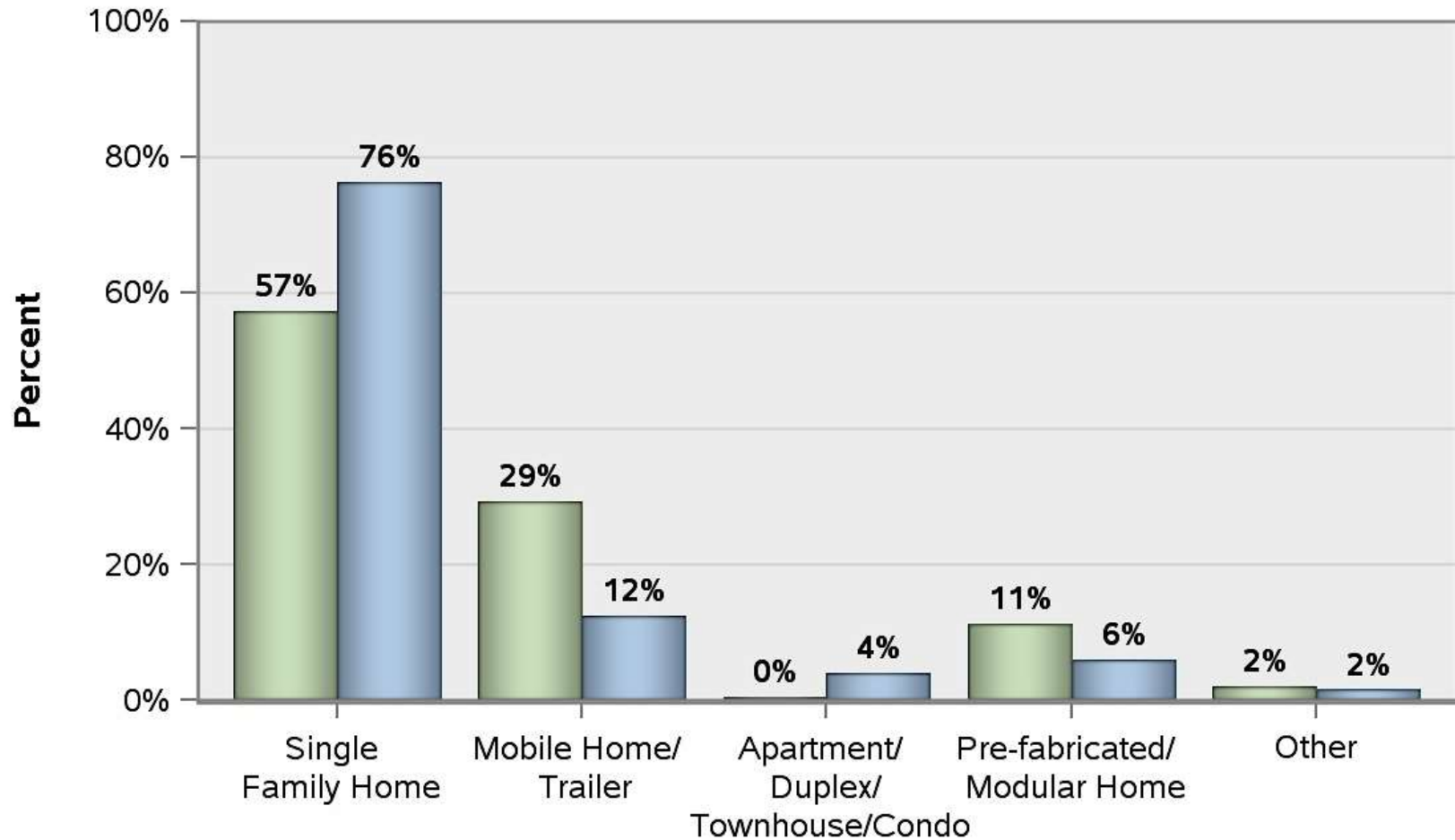


- 1,500 square mile service area
- 2,210 miles of line
- \$39 million operating revenue
- \$84 million asset value
- 52 employees
- 14,700 meters
  - ✓ 95% residential
  - ✓ 5% commercial/industrial



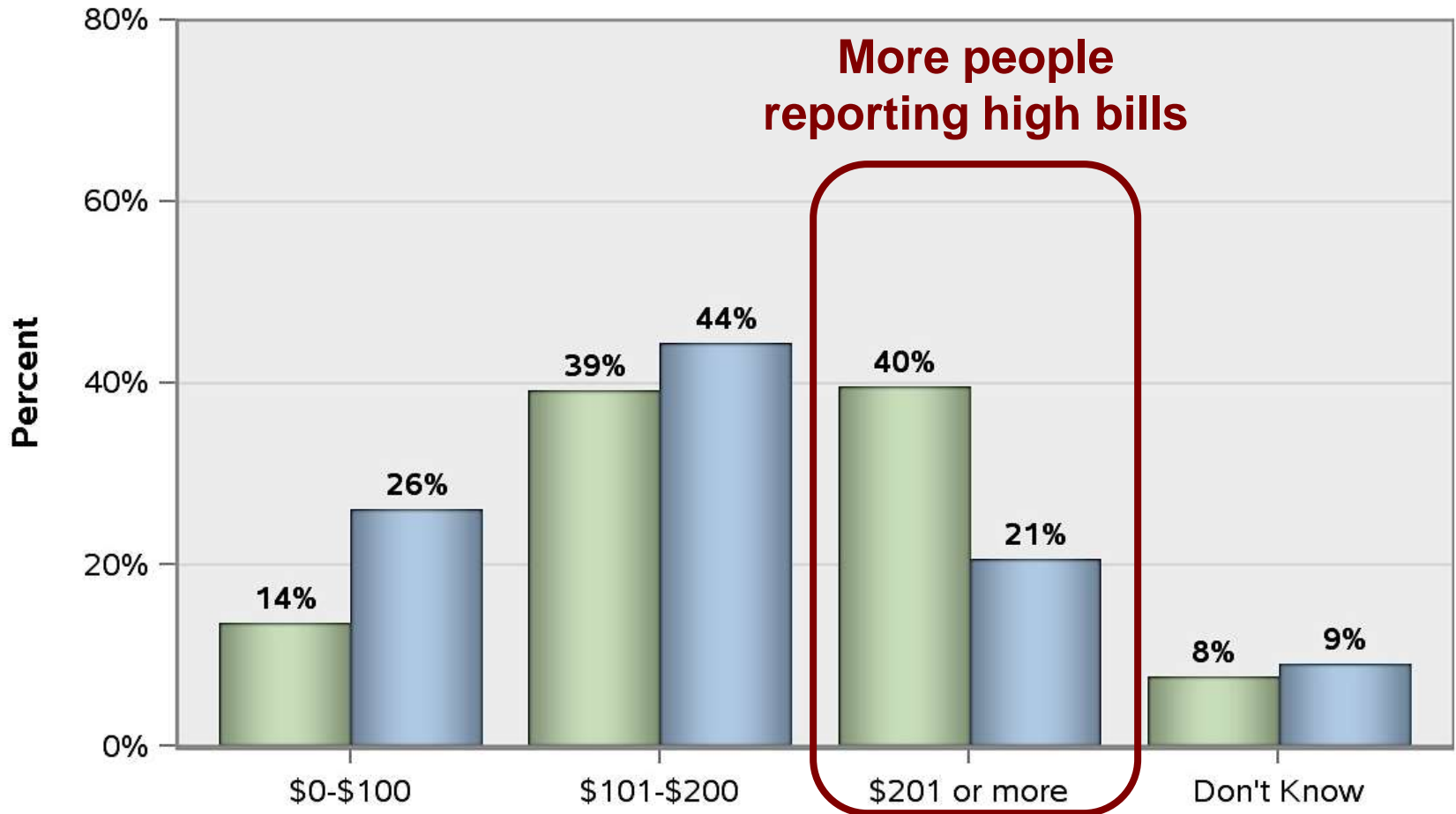
# Best Description of Your Home Cooperative Difference Survey

■ Roanoke Electric ■ National Benchmark



# Average Monthly Electric Bill Cooperative Difference Survey

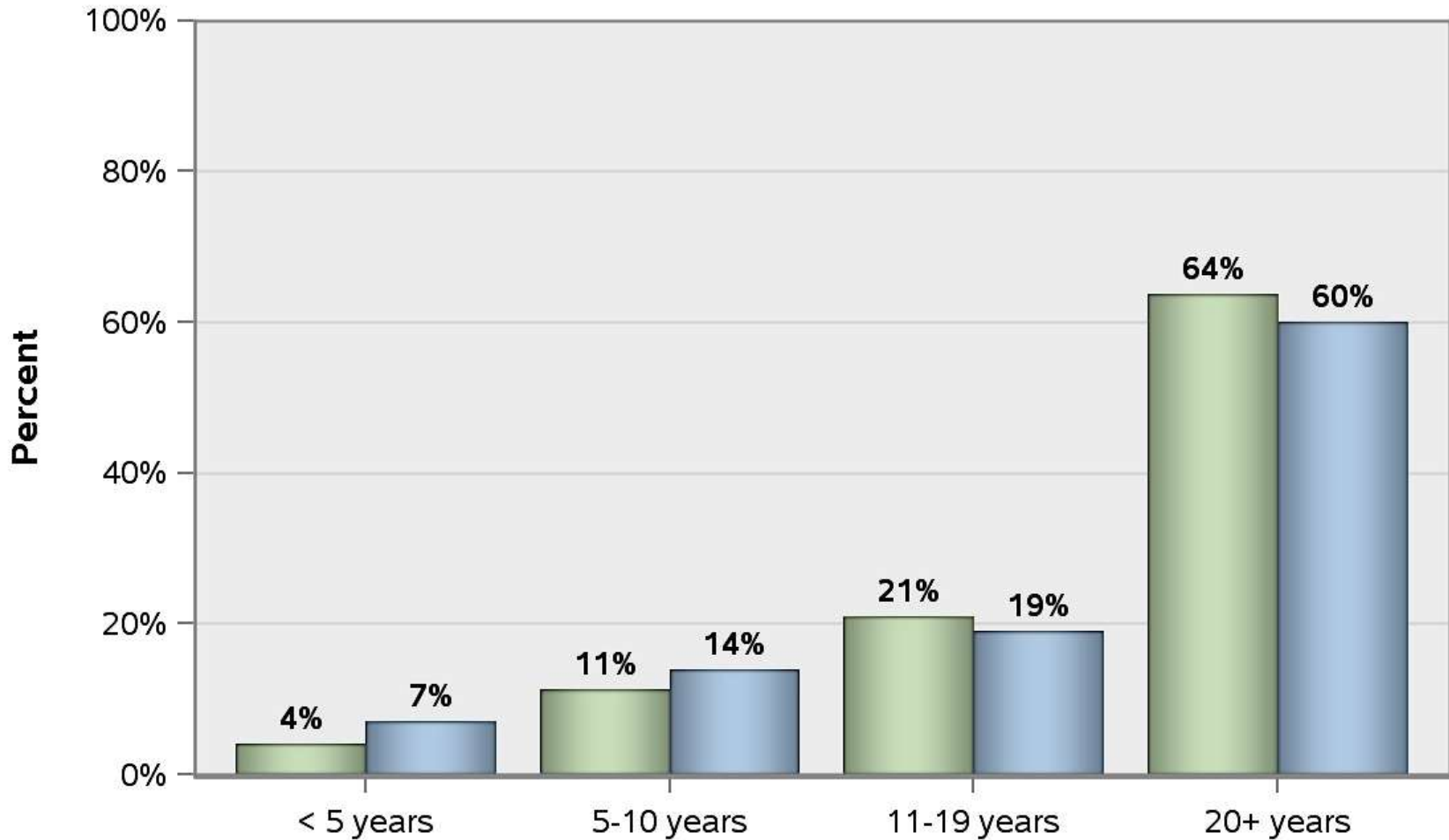
■ Roanoke Electric ■ National Benchmark





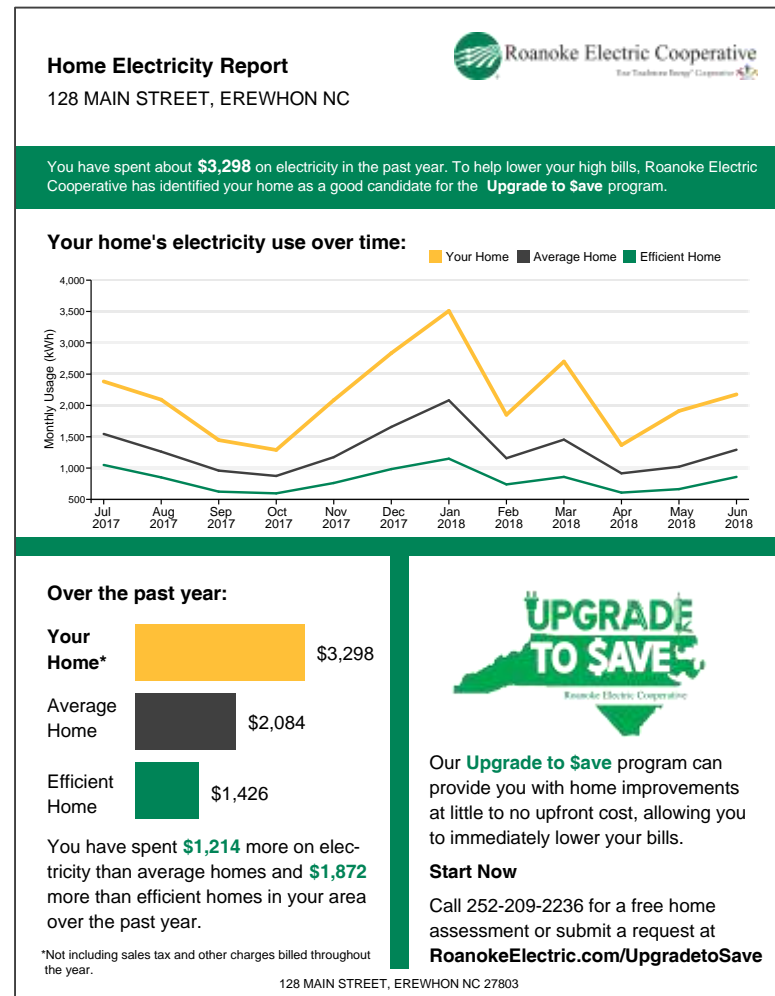
# Age of Home Cooperative Difference Survey

■ Roanoke Electric ■ National Benchmark



# Example Homeowner Outreach

- Homes with high energy use receive program enrollment information and a personalized home energy reports
- Homes with high electric heating requirements and high coincident peak contribution receive an additional personalized report



# *Efficiency upgrades can lower bills*



Insulation



Duct Sealing



Air Sealing



Heat Pump Upgrades



Water Heater Wraps



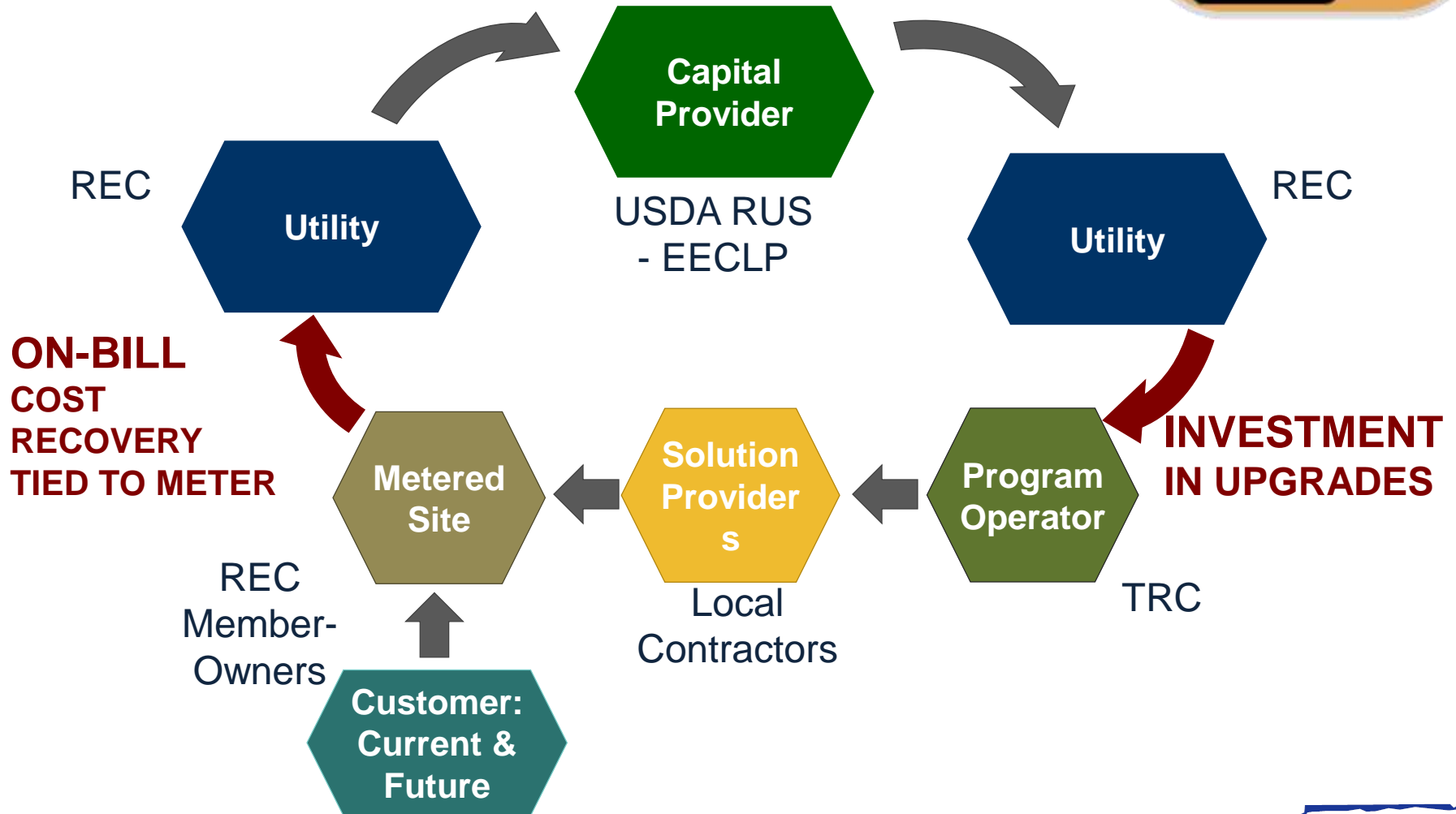
LED



## *Initial loan offer wasn't enough get to “Yes”...*

- Offered cost effective upgrades and on-bill financing...
- Yet major barriers remained:
  - Creditworthiness
  - Renter eligibility
  - Disinterest in additional debt
- Sought a solution that would be *more inclusive* and generate *more value* for *more members*

# Opt-In Tariffed Approach



Based on the Pay As You Save<sup>®</sup> system developed by EEI.



# *Harnessing the Business*



Members contact REC seeking assistance with cost savings.

Roanoke EC, through The Roanoke Center, identifies the best efficiency upgrades for investment.

Contractor installs upgrades at no upfront cost to member, with quality assurance oversight from The Roanoke Center.

Utility recovers its costs for the upgrades with a fixed charge on the bill that is less than the estimated savings.

# *Where to Invest*

## • **Pass**

- Savings are sufficient for the utility to recover its investment within 10 years through a tariff capped at 75% of estimated savings
- 25% of estimated savings stay with member
- Purchase of EE Credits capped at \$.02/kWh for total savings

## • **Co-Pay**

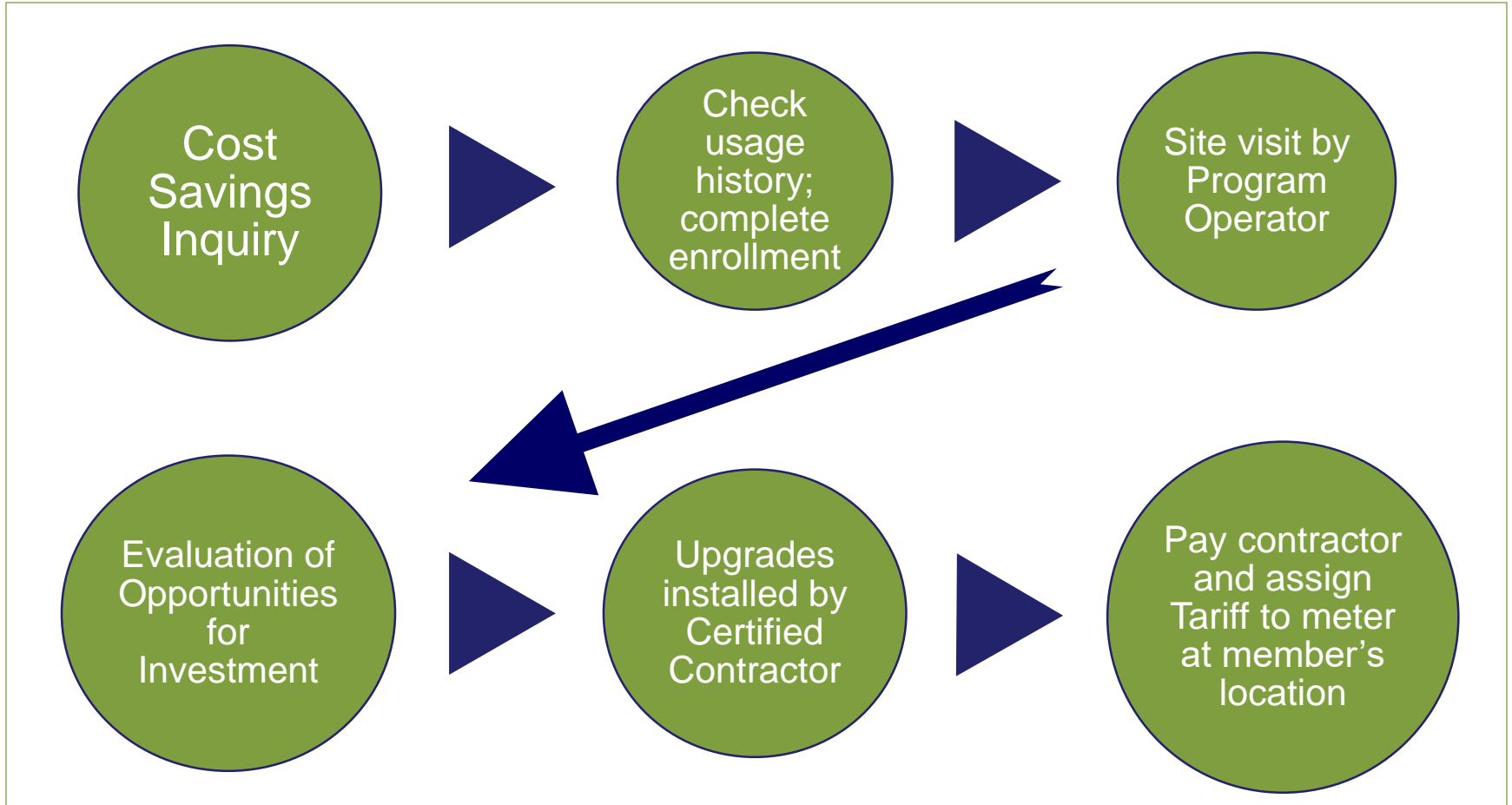
- Amount needed from member (if any) in order to make the investment  
Pass

## • **No Go**

- Assessment doesn't identify savings that are cost effective enough to warrant investment
- Assessment identifies major repairs needed first



# Path to Investment & Returns



# *Actual Results for Initial Participants*

Sample of over 75 homes	
Average cost of upgrades	\$7,135.00
Average buy-down for EE Credits	\$350.00
Average monthly savings per site	\$105.00
Average monthly tariff	\$64.00
Average monthly savings for member	\$41.00
% of savings kept by member during cost recovery (Target: 25%)	39%

# *Results*



- \$1 million of investment in the first year
- Better buildings
- Jobs and workforce development
- Lower costs for the utility
- Lower bills for the participants
- Higher customer satisfaction

## *Request: Reaching beyond Efficiency Upgrades*

- Found good investments in the majority of the houses evaluated for cost effective upgrades.
- The #1 reason for *decline* to invest: The house is unlikely to be fit for service for the life of upgrades. Major repairs needed.
- REC seeking experts who can help us explore options to address this chronic problem in a systemic way – including developing better housing stock in our service area.

# *Financing Investments with Financing from the Energy Efficiency & Conservation Loan Program*



**Roanoke Electric Cooperative**



**Upgrade to Save Using PAYS<sup>®</sup>**



**Up to \$5 Billion**  
available annually  
at Treasury rates

**\$6 Million**  
Investment  
program

**~\$7,000**  
in upgrades  
per participant

*Pay As You Save<sup>®</sup> and PAYS<sup>®</sup> are trademarks of Energy Efficiency Institute, Inc.*



## *Bill Size & Member-Owner Satisfaction*

Avg. Monthly Bill Amount	Roanoke EC		Quarterly Benchmark	
	Percent of Responses	Average Rating	Percent of Responses	Average Rating
<b>TOTAL</b>	<b>100%</b>	<b>8.05</b>	<b>100%</b>	<b>8.72</b>
\$100 or less	12%	9.21	25%	8.98
\$101 to \$200	28%	8.65	42%	8.80
\$201 or more	53%	7.37	22%	8.19
Don't Know	6%	8.87	9%	8.96

# *Loan Loss Reserve*



# *Energy Solutions Reserve Fund*

- Created by NC Sustainable Energy Association (NCSEA) to support utility investment in energy efficiency or renewable energy programs.
- By partnering with NCSEA, utilities have access to our ESRF when needed, reducing their overall financial risk.
- The ESRF eliminates design barriers and restrictions that commonly exist with other reserve funds. The fund supports a variety of distributed energy technologies, serves multiple sectors and is available to utilities across the nation.
- The ESRF will have a large impact on rural energy burden by helping utilities identify inefficient homes and supporting energy services for thousands of residents who need them the most.
- Benefits of the ESRF: 1) Aligns values of customer and utility; 2) Can be offered in any state and multiple customer sectors; 3) Helps utilities expand energy services to customers; and 4) Helps reduce greenhouse gas (GHG) emissions.
- Through this fund, NCSEA is committed to supporting more than \$20 million in utility energy projects.
- NCSEA signed up Arkansas' [Ouachita Electric Cooperative](#) in March 2018 as the first ESRF subscriber and is currently adding additional utility subscribers.

# *Contact Information*

Star Hodge

NC Department of Environmental Quality

(919) 707-9240

[Star.hodge@ncdenr.gov](mailto:Star.hodge@ncdenr.gov)

Special thanks to:

North Carolina Sustainable Energy Association

Roanoke Electric Cooperative

ResiSpeak

