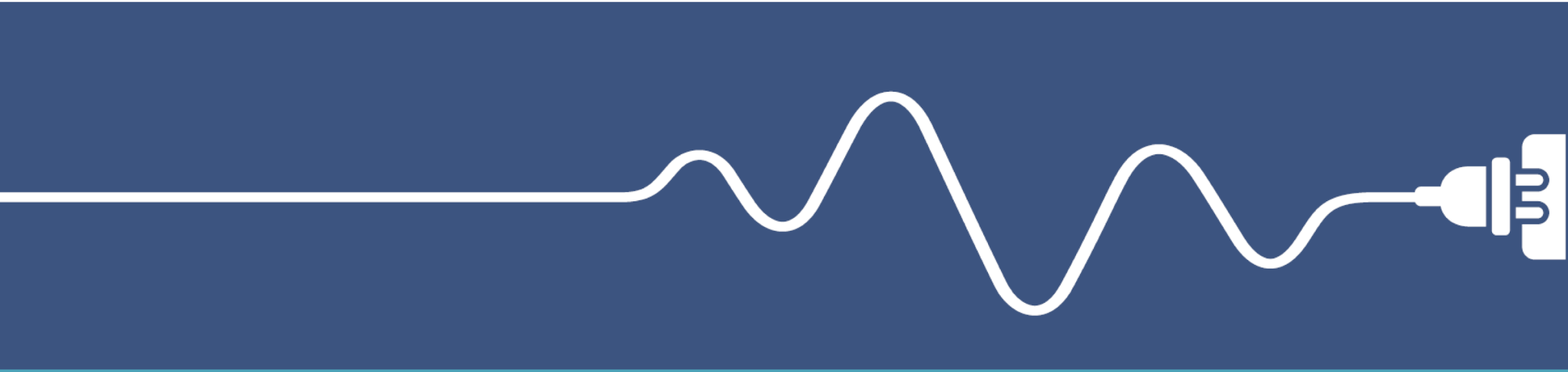
COOPERATIVE
LEADERSHIP NETWORK
Electric Directors for Local Power

WEBINAR SERIES: WHAT DO CO-OP LEADERS NEED TO KNOW?

EQUITABLE BENEFICIAL ELECTRIFICATION FOR RURAL ELECTRIC CO-OPS

ELECTRIFYING RESIDENTIAL SPACE AND WATER HEATING

MONDAY, MAY 20, 2019 | 3:00 - 4:30 PM EASTERN



WWW.CLN.COOP | CLN@CLN.COOP | @CLNCOOP

OUR MISSION

CLN helps electric cooperative board directors to advance consumer-centric utility innovations and best governance practices to better serve the energy and community needs of their members.

WHAT WE DO

Advancing consumer-centric utility innovations

Supporting governance best practices

Strengthening rural communities

ORGANIZATIONS INVOLVED IN THE REPORT

AGENDA

- Report highlights
- Inclusive On-Bill and USDA loan programs for co-ops
- Report Case studies
  - Orcas Light and Power Co-op (Washington)
  - Roanoke Electric Co-op (North Carolina)
  - Ouachita Electric Co-op (Arkansas)

What is Beneficial Electrification?

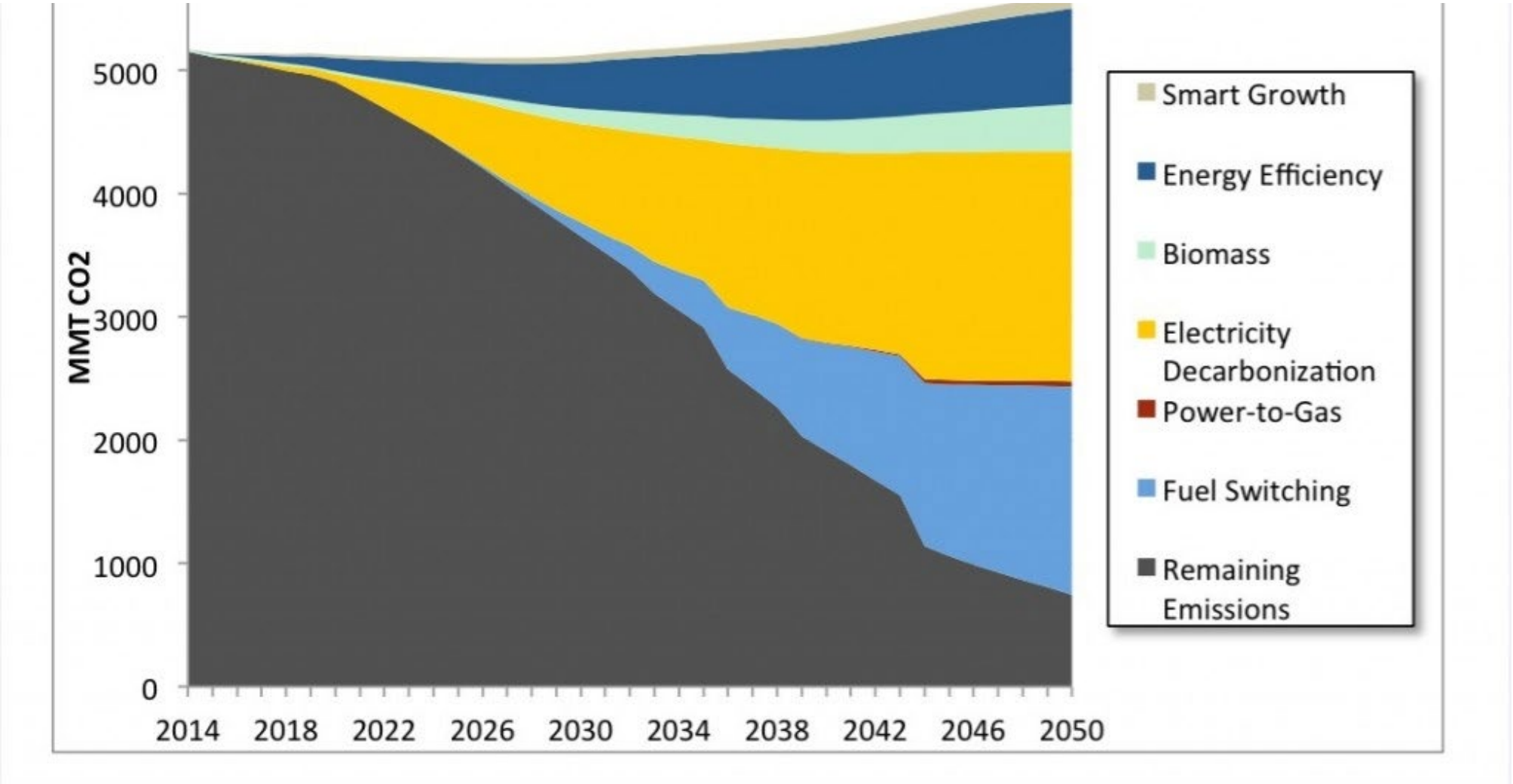
The process of switching from another fuel source to electricity in order to benefit:

- The energy user
- The co-op/utility
- The environment

Examples:

- Propane or oil heated homes to electric heat pumps
- Gasoline or diesel vehicles to electric vehicles
- Community storage with electric water heaters

Electrification Part of Decarbonization



Source: Deep Decarbonization Pathways Project

Beneficial Electrification and Co-ops

- In 2018 NRECA, unanimously approved a resolution supporting beneficial electrification programs
- Equitable beneficial electrification as a pathway for co-ops to decarbonize their power grid
- Air-source heat pumps and heat pump water heaters
- 300 Midwest co-ops analyzed to identify electric space- and water-heating conversion programs

Electrifying Residential Space Heating: Heat Pumps

- Not your grandmother's heat pumps
- 2-3 times more efficient than furnaces
- Incorporates grid-management tools; benefiting both the utility and the member
- Keeps performing even in cold winter temperatures
- Propane used only as back-up fuel

Electrifying Residential Water Heating: Water heater Heat Pumps

- 2-3 times more efficient than propane powered counterparts
- Incorporates grid-management tools; benefiting both the utility and the member
- Electrifying home space-and-water heating equipment will typically lead to increase customer electricity costs, while likely lowering overall customer energy costs.

Beneficial Electrification and On-bill Financing/On-bill Tariff

- Cold climate air-source heat pump and heat pump water heaters are more expensive than their fossil fuel-powered counterparts
- A well-designed on-bill financing program can help a member pay over time for the upgrades using the savings
- On-bill financing programs is where the repayment for an energy upgrade is made through the member's monthly utility bill overtime with no-front cost

RUS Rural Energy Savings Program (RESP)

- Authorized by Congress in 2010; introduced by Rep. James Clyburn (D-SC)
- Passed as part of 2014 Farm Bill; reauthorized in 2018 Farm Bill
- $100M in 0% interest loans available to rural utilities to support EE financing programs
- Additional funding available in FY'19 and FY'20

RESP Eligible Measures

- Whole-house energy efficiency retrofits
- HVAC systems
- Water heaters
- Property-attached appliances
- Water and waste efficiency improvements,
- Fuel switching projects
- Permanently-installed energy storage devices
- On- and off-grid renewable energy systems
- Electric vehicle charging stations
- Replacing manufactured housing

RURAL ENERGY SAVINGS PROGRAM

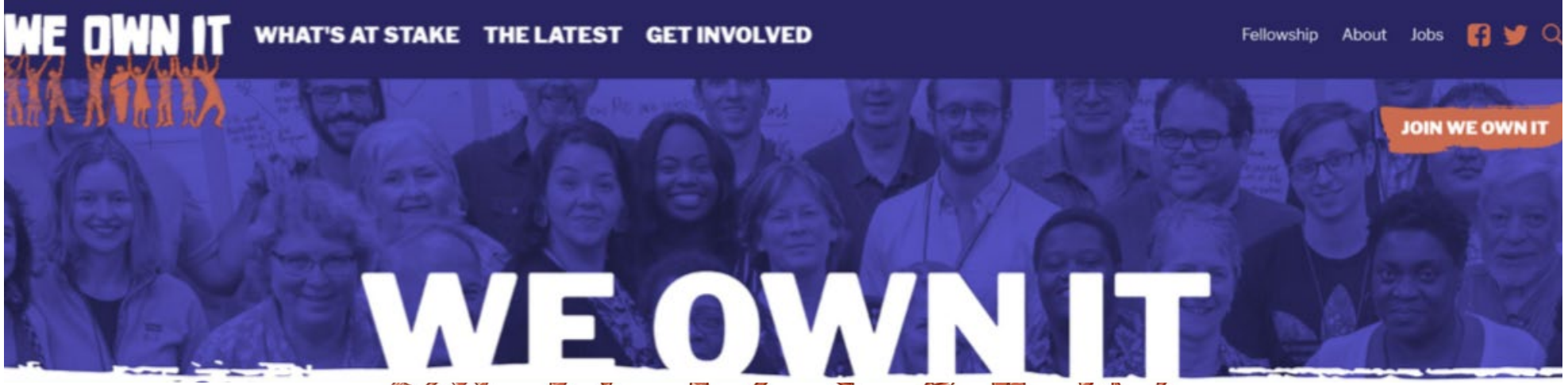
Total Funding	~ $100 M per year
Eligibility	Entities that provide electric service to rural areas
Purpose	To help rural families & rural small businesses reduce energy costs or consumption
Interest Rate	0%
Maximum Loan size	Not specified; largest to-date to single utility is $11M
Mark-up to end user	Capped at 5%
Loan term	Up to 20 years
Acceptable financial structures/ investments	Re-lending such as on-bill financing, tariff charge, PACE programs, traditional consumer loans

Application window currently open for $100 M!

Source: USDA Rural Utilities Service

More than $50 M loaned out to 19 Utilities in 10 States

State	Borrower	Amount	Use
Ohio	Northeast Ohio Public Energy Council	$1 million	Energy Efficiency
South Carolina	KW Savings (7 co-ops)	$13 million	Energy Efficiency
Washington	Orcas Power & Light Cooperative	$5.8 million	All
Virginia	BARC Electric	$1.77 million	Solar
Arkansas	Ouachita Electric Cooperative	$8 million	All
Arkansas	Woodruff Electric Cooperative	$1 million	Energy Efficiency
Wisconsin	Adams-Columbia Electric Cooperative	$1 million	Energy Efficiency
North Carolina	Pee Dee Electric Membership Corporation	$.2 million	Energy Efficiency
Colorado	Holy Cross Energy	$11 million	All
Colorado	Highline Electric Association	$.5 million	Solar & Energy Efficiency
Arkansas	Southwest Arkansas Electric Cooperative	$1 million	Energy Efficiency
Tennessee	Appalachian Electric Cooperative	$5 million	Energy Efficiency
Oregon	Umatilla Electric Cooperative	$1.5 million	Energy Efficiency
Total		$51 million	
***All: Energy Efficiency, solar PV, energy storage, EV charging stations**			



THE NATIONAL NETWORK FOR COOPERATIVE MEMBER RIGHTS, EDUCATION, AND ORGANIZING

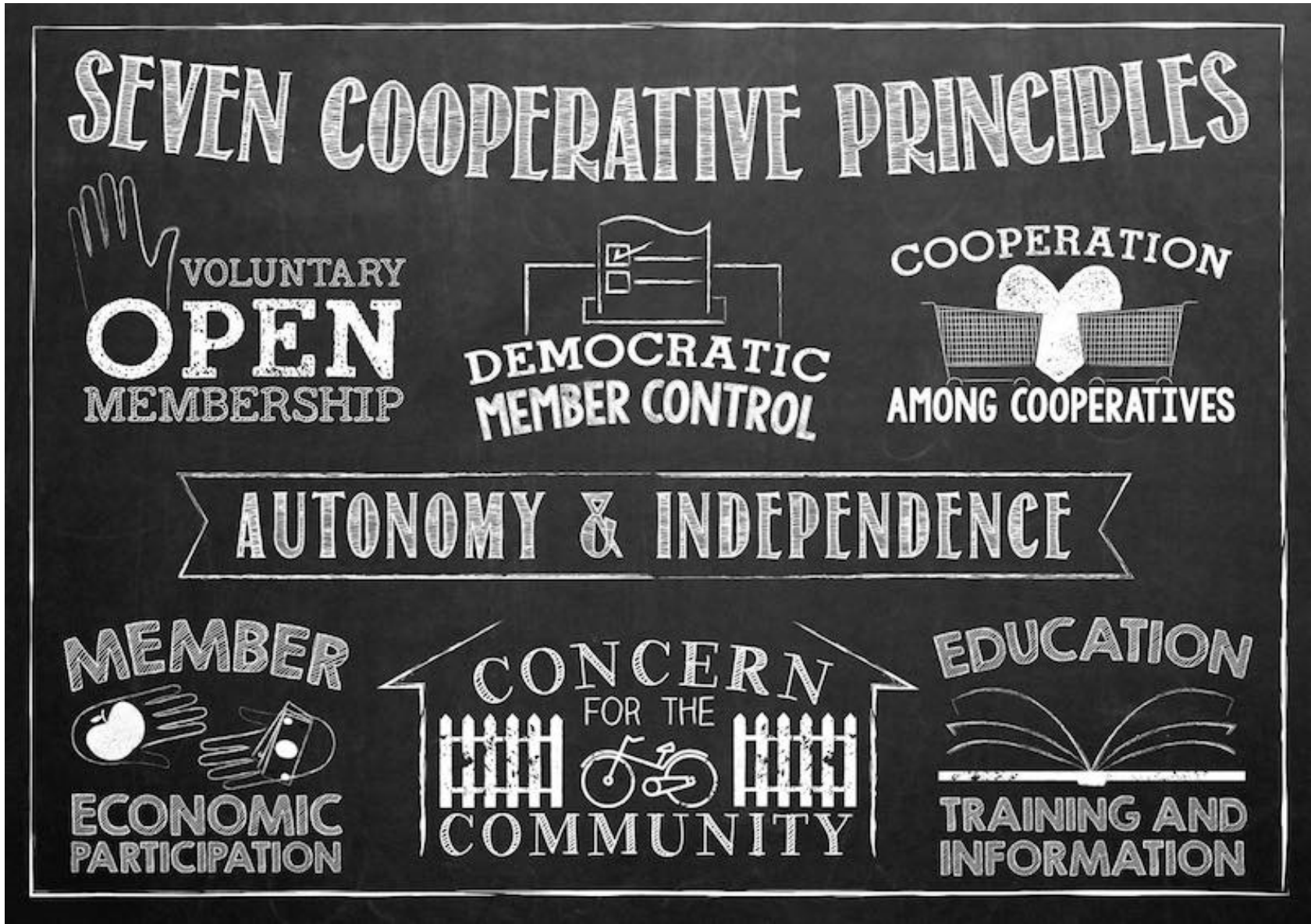
Mission: Catalyzing citizen action for democracy, participation, and excellence in cooperatives, through member education and organizing.

Fellowship Program

- Deadline July 1
- weown.it/fellowship

Cooperative Principles & Values

Values: -Equity -Equality -Solidarity -Social Responsibility



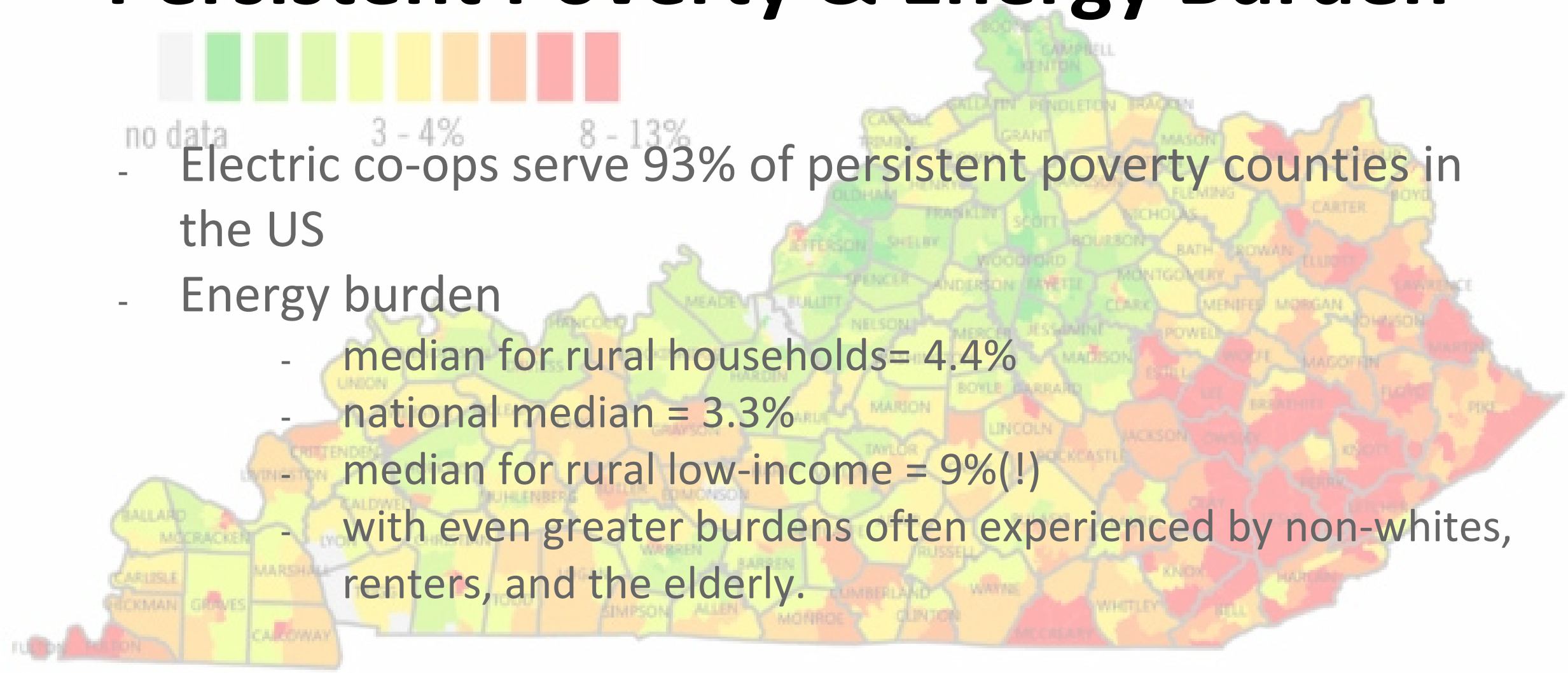
Some context on Low-Income EE

- Most residential EE funds have gone to middle- & upper-income homes
- Low-income EE is more expensive at: **$0.142/kWh**, > 4x avg residential EE cost of **$0.033/kWh** (data from 2009-2013.)
- Higher cost partly due to need for health & safety upgrades to prepare home for EE

While low-income efficiency may be more expensive, it “offers real and viable opportunities to realize multiple social, economic, and health co-benefits—that is, energy efficiency can result in health and economic improvements for families, as well as community revitalization.”

From: Martinez, Cecilia. 2017. “Environmental Justice and the Clean Power Plan: The Case of Energy Efficiency.” 41, Wm. & Mary Envtl. L. & Pol’y Rev. 605, http://scholarship.law.wm.edu/wmelpr/vol41/iss3/4

Persistent Poverty & Energy Burden



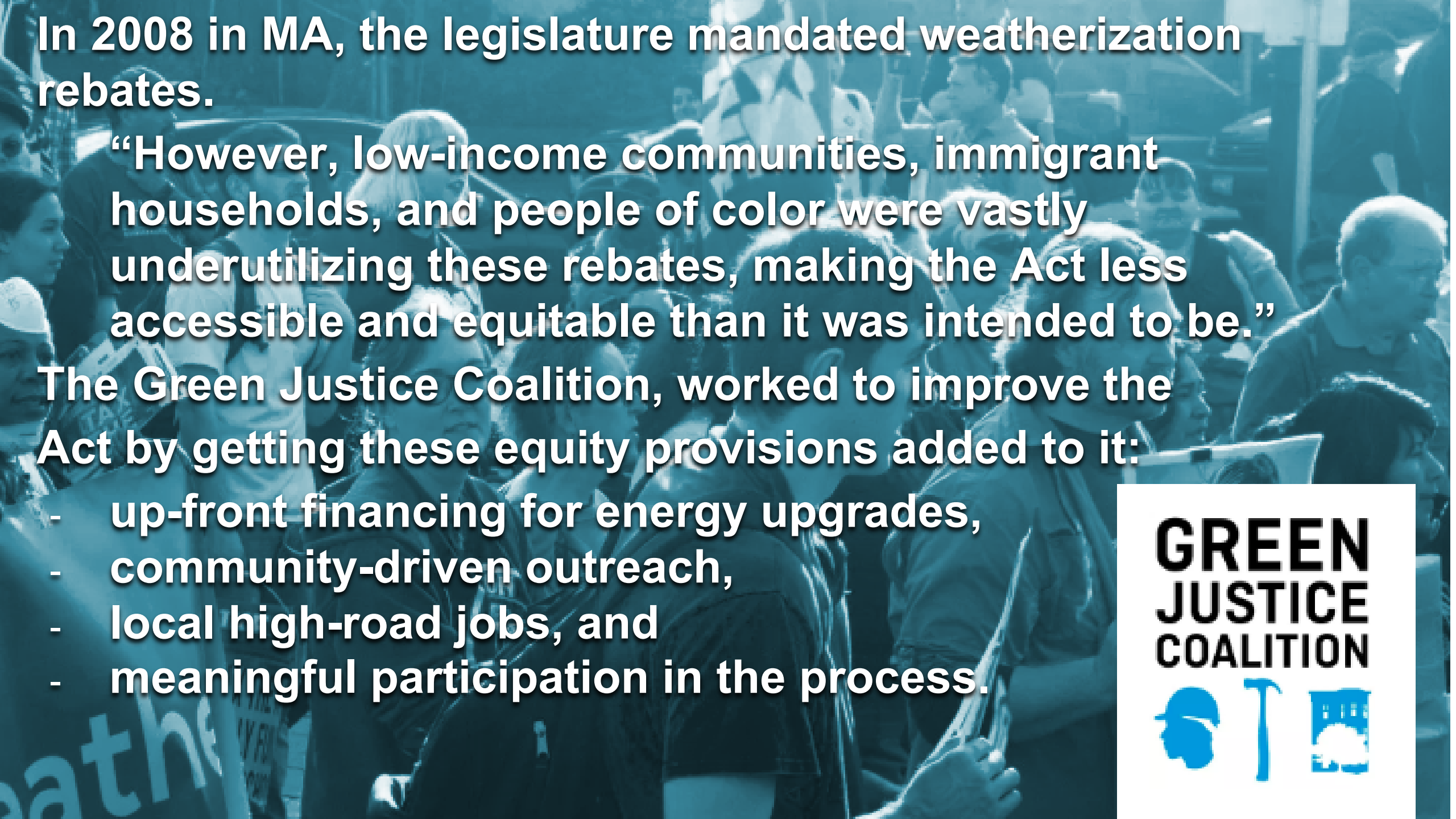
- Electric co-ops serve 93% of persistent poverty counties in the US
- Energy burden
  - median for rural households= 4.4%
  - national median = 3.3%
  - median for rural low-income = 9%(!)
  - with even greater burdens often experienced by non-whites, renters, and the elderly.

How energy efficiency benefits co-ops and the communities they serve[1]

Beneficiary	Energy Efficiency Outcome	Resulting Benefit
Efficiency program participants	Lower monthly utility bills	Lower energy burden and more disposable income
		Reduced exposure to risk from utility rate increase
	Improvement in the efficiency of the housing stock	Increased property value, more reliable equipment, and lower maintenance costs
		Preservation of affordable housing
Co-ops and members	Reduced peak demand	Avoided costs of increased generation, capacity, and transmission
		Reduced coincident peak pricing from wholesale power supplier, demand charges, and power supply costs
	Reduced arrearages, cost of shut-offs, and maintenance costs	Improved customer service and satisfaction
Communities	Lower electricity demand	Reduced environmental pollutants and improved public health
	Lower monthly utility bills due to avoided utility costs	More money spent in local economy because of more disposable income
		Poverty alleviation and improved standard of living
	Improvements in the efficiency of the building stock	Local job creation through efficiency providers and trade allies
		Improved quality of life
		Increased property values and presentation of housing stock

Program Design

- Opportunity to increase member engagement
- How to best serve historically underserved members?
- Addressing challenges around funding for health & safety upgrades
  - Who could you partner with locally to leverage additional resources? Health care providers? Social workers? CAAs? Who else?



In 2008 in MA, the legislature mandated weatherization rebates.

> "However, low-income communities, immigrant households, and people of color were vastly underutilizing these rebates, making the Act less accessible and equitable than it was intended to be."

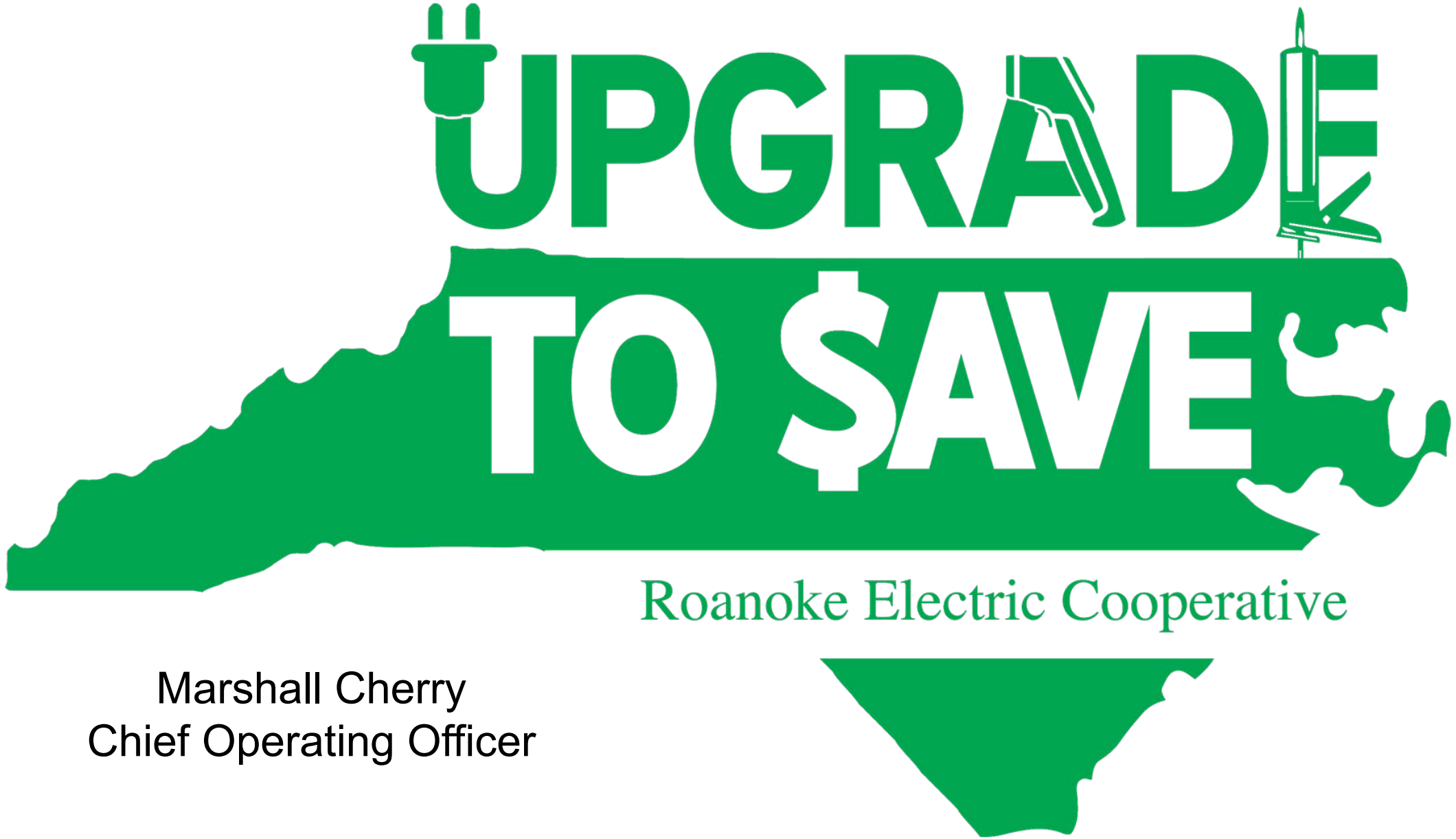
The Green Justice Coalition, worked to improve the Act by getting these equity provisions added to it:

- up-front financing for energy upgrades,
- community-driven outreach,
- local high-road jobs, and
- meaningful participation in the process.

GREEN JUSTICE COALITION

Lessons Learned from On-Bill Financing Programs

1. Orcas Power and Light Cooperative Switch It Up! On-Bill Program
2. Roanoke Electric Cooperative Upgrade to $ave
3. Ouachita Electric Cooperative HELP PAYS

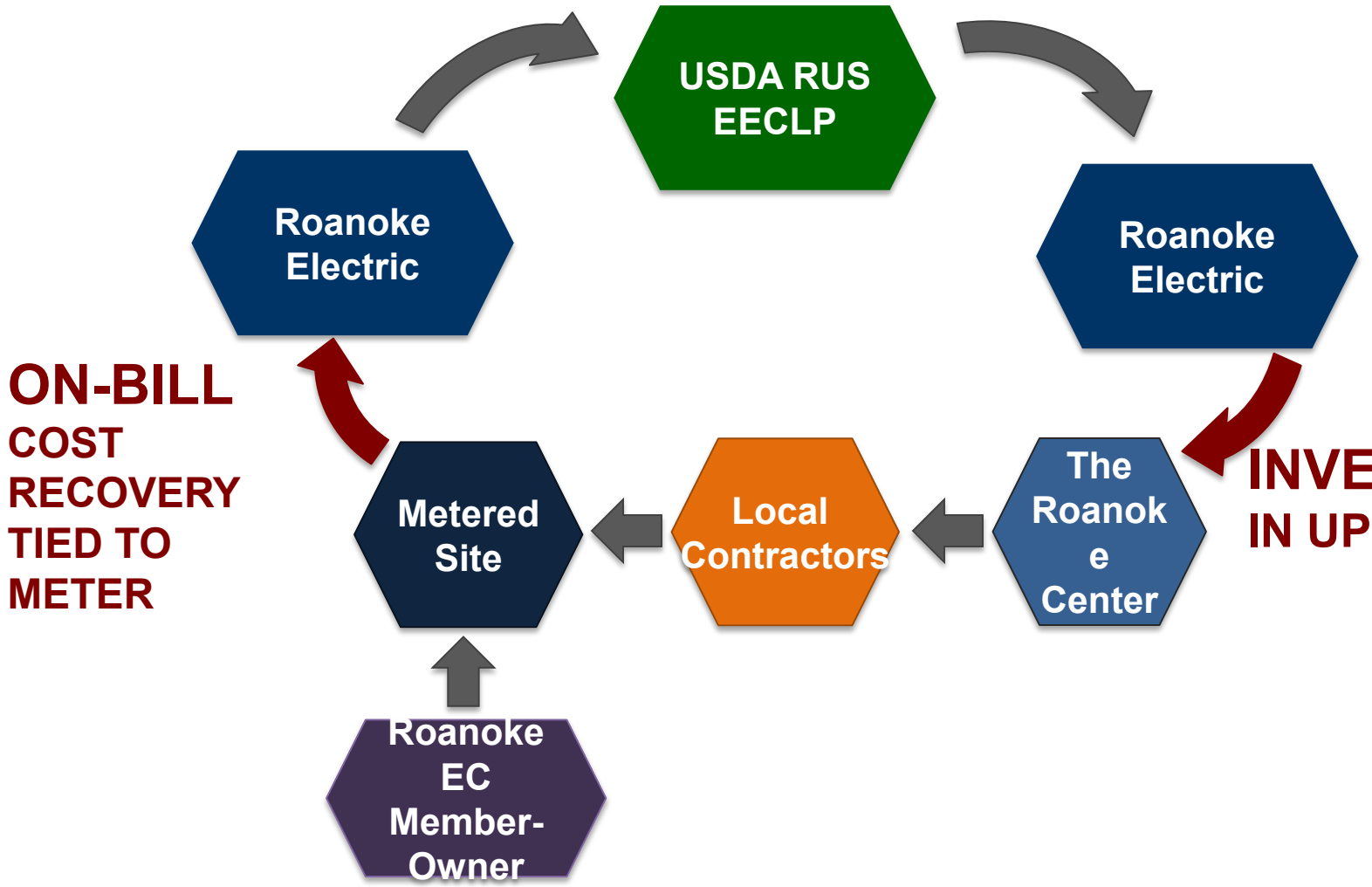


Marshall Cherry
Chief Operating Officer

Initial loan offer wasn't enough get to "Yes"…

- Even though we offered:
  - Cost effective upgrades for high consumption member-owners
  - On-bill financing
- Major barriers remained:
  - Creditworthiness
  - Renter eligibility
  - Members declining additional debt
- So, we sought a solution that would be *more inclusive* and generate *more value* for *more members*

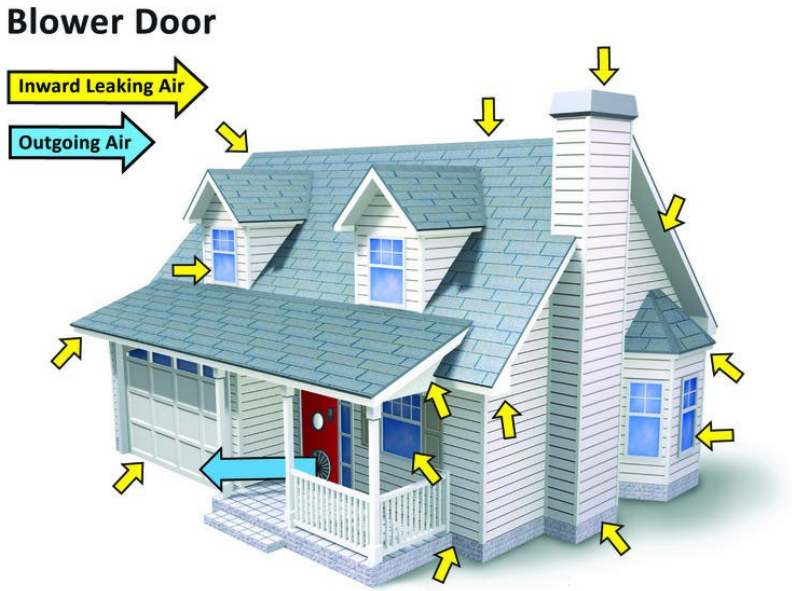
Upgrade to $ave



Based on the Pay As You Save® system developed by EEI.

Energy Audit examples:

Energy audits take 3 or more hours to complete.



Roanoke Electric Cooperative

Easy Plan

Ruth Williams
629 (633--old) Moore Road
Kelford, NC 27847
252-287-0327
No email on file

Built in 2000
890 sq ft
One Story
Single Family
Foundation:

This page of your report shows current conditions observed during your home energy assessment on
November 28, 2017
By: Rafal Olan

Your Home's Annual Energy Use

Roanoke Electric Cooperative All Electric	$	2,366.31
	$	-
	$	2,366.31

Your Home's Air Leakage
The current ventilation rate for your home is 1729 cfm50 cubic feet per minute which is equivalent to a 0.66 square foot hole. The minimum rate for your home is 0694 CFM.

Your Home's Attic Insulation
The current R value of your home's attic insulation is R-22. It has been proven by the Department of Energy that R-38 is the most cost effective R value for North Carolinas' climate.

Your Home's Lighting
You currently have 8 incandescent light bulbs, 6 CFL bulbs and 0 LED bulbs. Of the incandescent light bulbs, 0 of them are not standard base bulbs.

Your Home's Duct System
26% Leakage, Rigid Duct, 50% Access to Ducts

Your Home's Heating and Cooling
Strip Heat, 2 Ton 10 SEER Whole House

Your Home's Health, Safety & Comfort
No unvented gas heaters in home., AC bearly keeps up in the summer, Member has Comfort Issue, HVAC - Repair Needed, All Health and Safety Tests Passed

Appliances In Your Home
Fridge 1, Top freezer, Kitchen, 18, $37
Freezer 1, Upright manual defrost, Laundry room, 11, $49

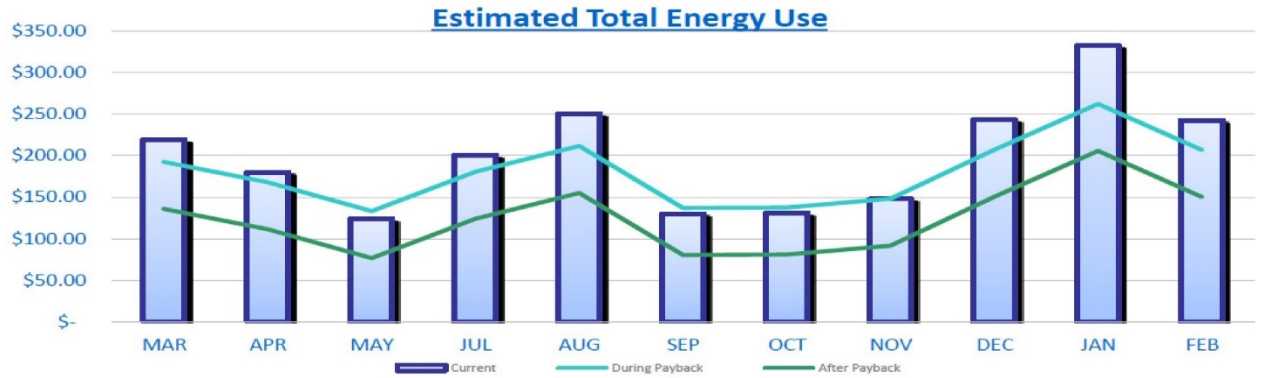
Easy Plan was created on
November 30, 2017

Page 1

Easy Plans – What the member-owner sees after the audit is complete

Payback Summary

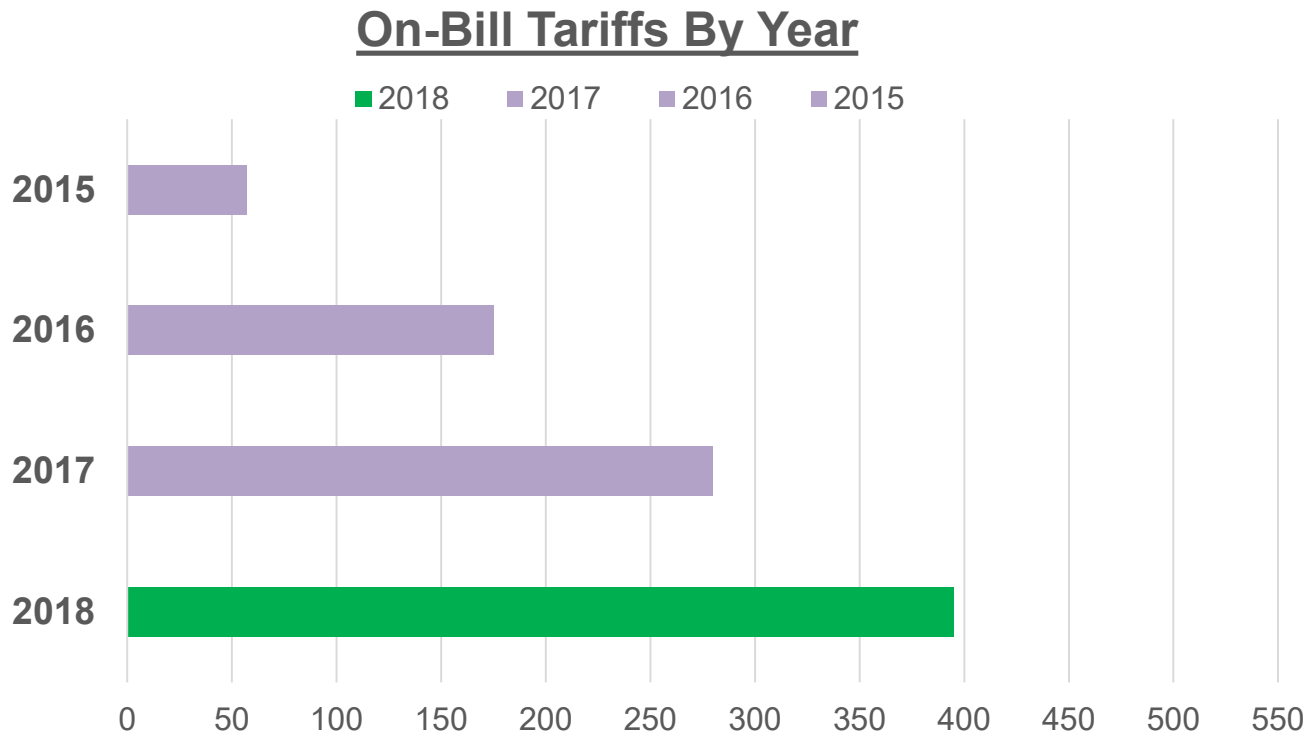
Improvement Cost	$	6,843.84
Health & Safety Incentive	$	(355.00)
Copay Requirement		Zero
Balance	$	6,488.84
Interest Rate		3.00%
Total Interest Paid	$	1,147.97
Balance plus interest	$	7,636.81
Terms Of Payback (Mo)		135
Cost added per (Mo)	$	56.57
Estimated $avings per (Mo)	$	75.10
Estimated $avings Still Remaining (Mo)	$	18.53
% Savings Not Used		24.68%



Upgrades that are part of the program:

- Heat Pumps
- Duct Sealing & Ductwork Repair
- Air Sealing
- Attic & Floor Insulation

Accomplishments



- 415 total completed projects (program-to-date)
- Over $2.62 million invested in the local economy via home improvements
- 750+ home audits/assessments performed
- More than 300 HVAC Units replaced
- Average total upgrade cost is $6,800
- An analysis of 200 homes has shown actual electric savings of $50 per month

Direct Install

- Overcomes structure-related qualification barrier
- Lets every member-owner conserve energy, lower bill
- Assistance to 114 member-owners from September 2018 through December 2018
- In-home education, free installations: water heater wraps, LED light bulbs, low-flow shower heads
- Leave-behind kits: outlet and switch plate gaskets, window film, self-stick weather stripping

Decision Tool for Utility Managers:

Key considerations before investing in resource efficiency and rooftop solar through a tariffed on-bill program

January 2016

www.roanokeelectric.com/pays

HELP PAYS®:

A tariffed on-bill investment program
based on Pay As You Save® (PAYS®)

Mark Cayce

General Manager & CEO of Ouachita Electric Cooperative

We switched our on-bill loan program (HELP) to a tariffed on-bill program (HELP PAYS®). Why?

1. **Renters were left out.** Only property owners were eligible.

2. **Loans posed more risks**, so we could not finance bigger projects (including HVAC), leaving bigger savings untended.

To reach more people and achieve higher savings,

our Board voted to offer an opt-in tariff using Pay As You Save®.

Ouachita Electric Cooperative

On-site assessments must meet a high bar

Utility covers the cost of assessing investment opportunities using:

1. Bill history
2. On-site measurements
3. Engineering modeling

The standard Participant Cost Test* for cost effectiveness is modified to ensure immediate net savings and reduced risk:

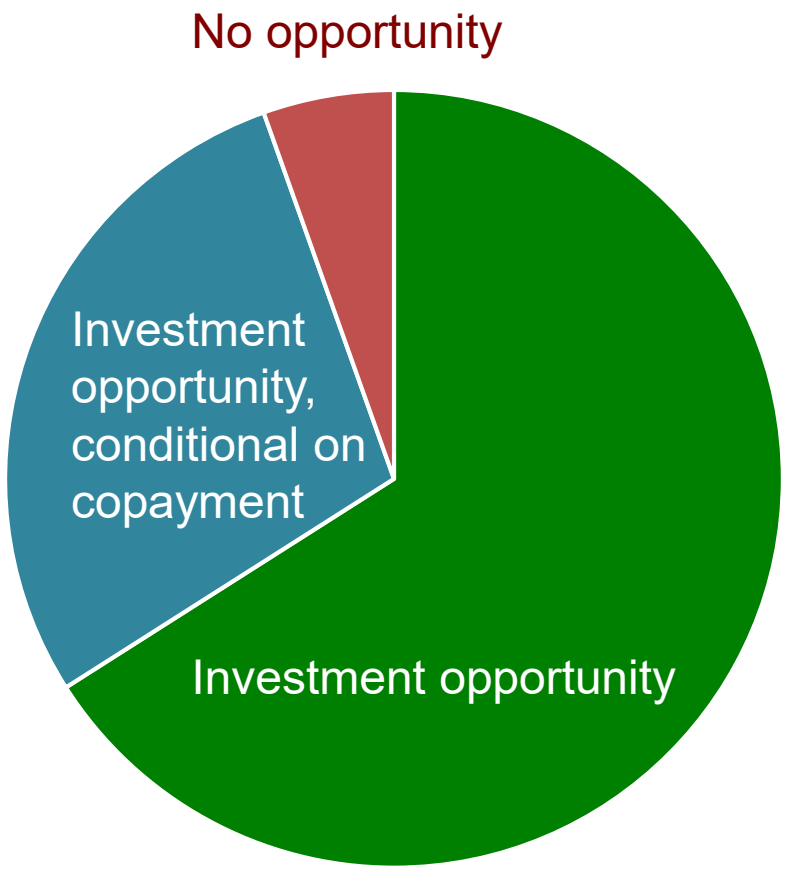
1. Cost recovery charge capped at 80% of estimated savings
2. Cost recovery period capped at 80% of useful life of the upgrades
3. Current rates applied without assuming rate escalation

Ouachita Electric Cooperative

* See California Standard Practice Manual, 2002.

HELP PAYS®

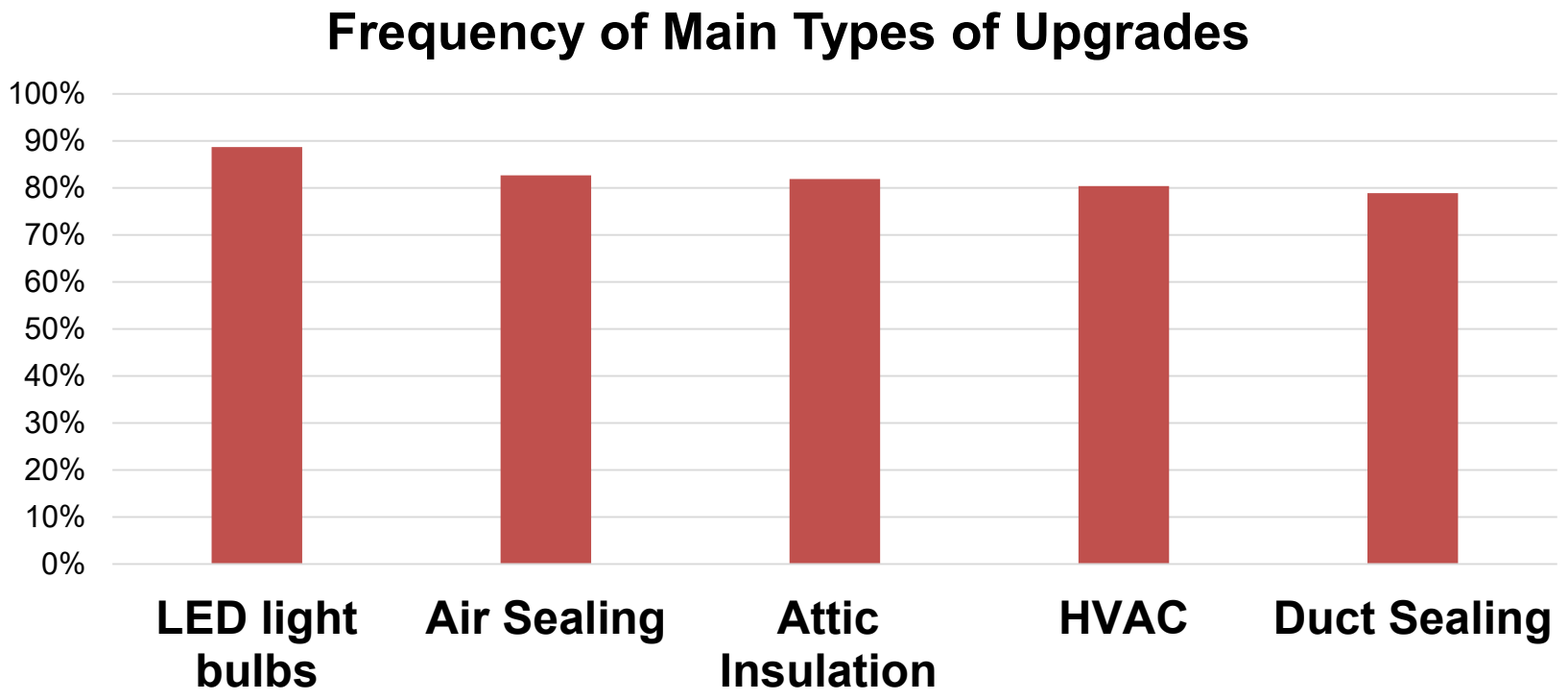
Most of the sites assessed had investment opportunities that meet the HELP PAYS® criteria for cost effectiveness



Ouachita Electric Cooperative

HELP PAYS®

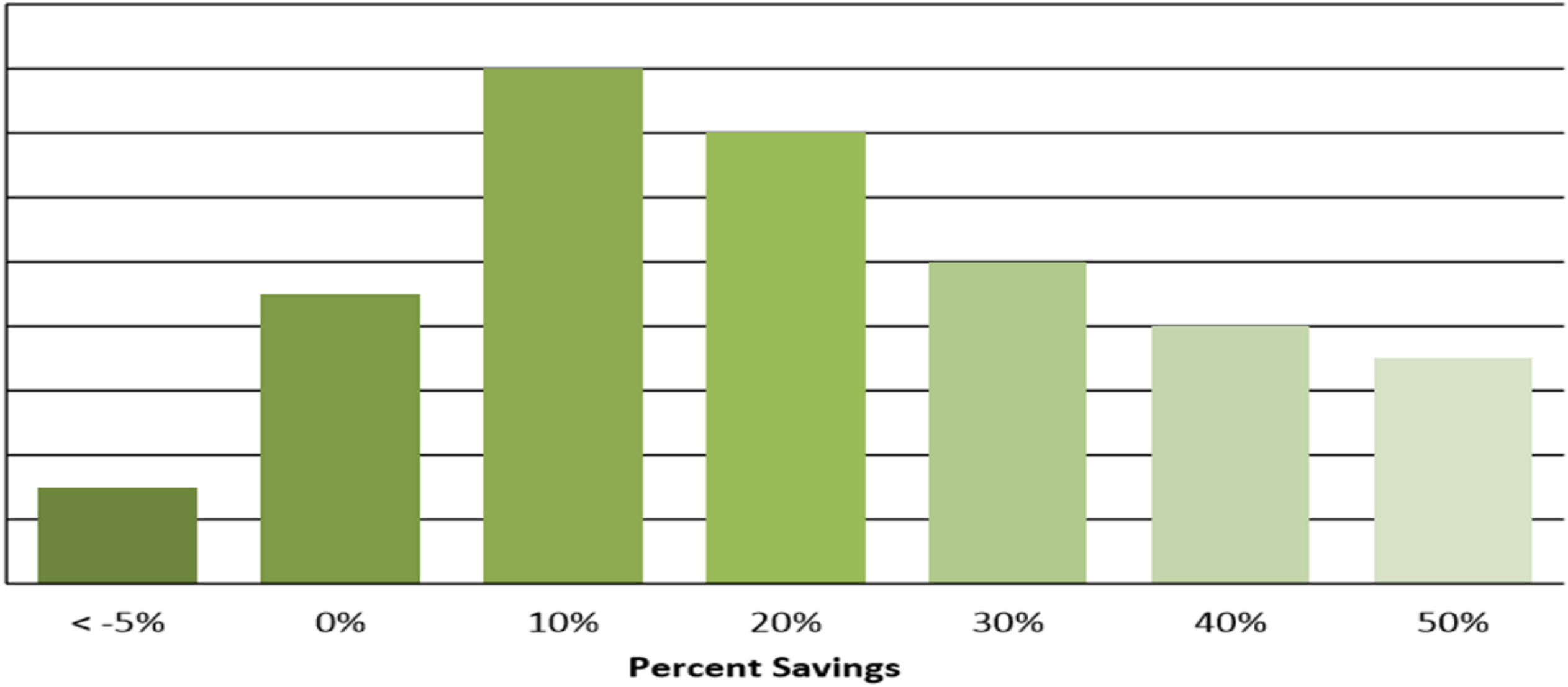
Most projects include a combination of cost-effective, long-lived building upgrades



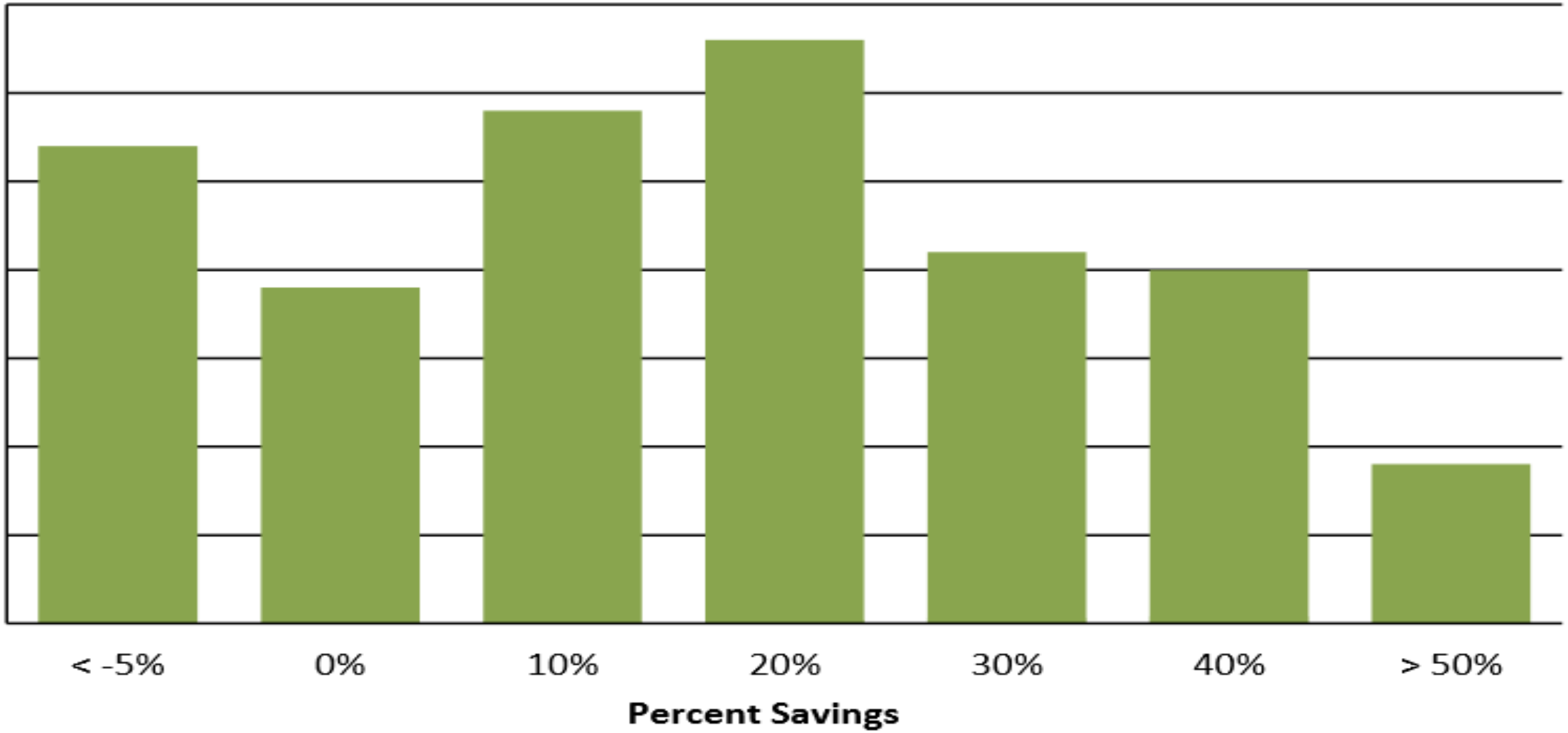
Ouachita Electric Cooperative

HELP PAYS

Ouachita Electric Cooperative
HELP Pay's 2017 Results
Average Savings 23%



Ouachita Electric Cooperative
HELP Pay's 2018 Results
Average Savings 16%

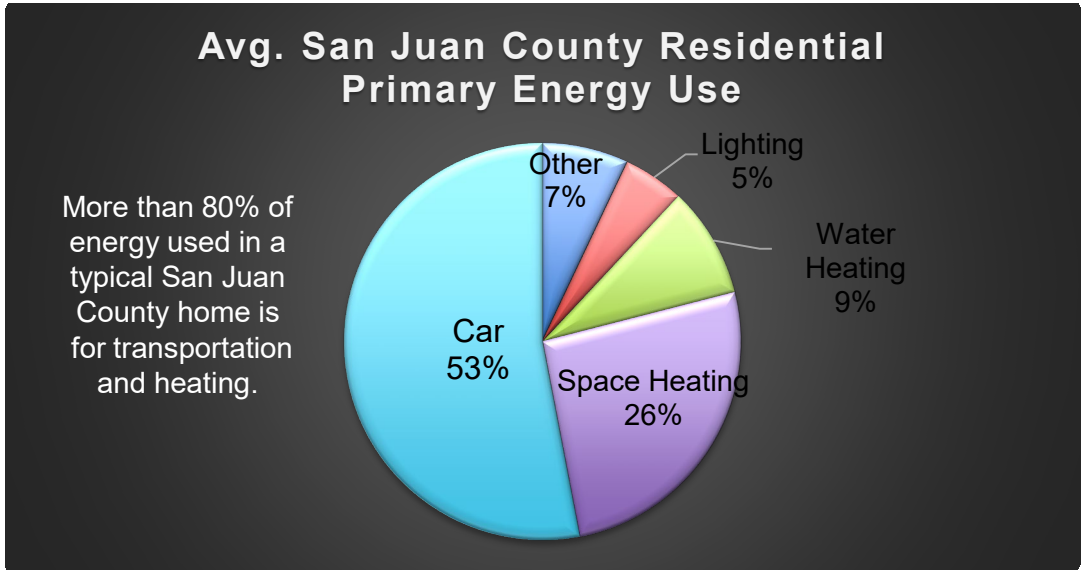


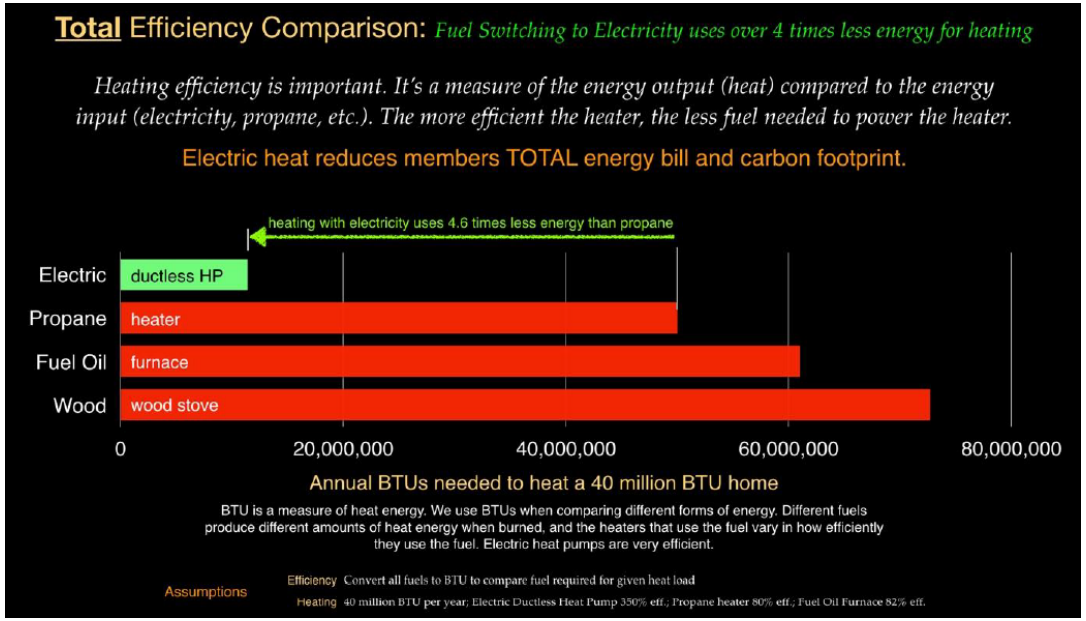
OPALCO's On-Bill Financing Program

www.opalco.com/switchitup

Program Development

- After securing $5.8M of USDA RESP funding, OPALCO developed an on-bill financing program (tariff) – a first in our 82-year history.
- Fossil fuel sources (propane, fuel oil, pellets) are barged to the islands, increasing their cost as compared to low-cost, clean electricity we purchase from the Federal Columbia River Power System (BPA/PNGC).
- Winter-peaking, mild-climate service territory.
- Focus on beneficial electrification (fuel switching) for overall member energy savings. Also benefits the Co-op with increased load/revenue at a time of flat/no growth.
- Additional $500 rebate applied before financing for true fuel switching measures.





Partnerships for Success

OPALCO is grateful to the organizations that helped us throughout the process development and program launch – sharing materials, lessons learned and bringing significant resources to help position us for success.

- Rural Utility Service (RUS) & USDA Rural Energy Savings Program (RESP)
- Environmental & Energy Study Institute (EESI)
- Collaborative Efficiency
- Finn Partners
- San Juan Islands Conservation District

Switch-It-Up OBF Program Details

- Public launch on April 13, 2019 (soft launch in March)
- On-bill financing for residential and commercial efficiency projects with a bias for beneficial electrification / fuel switching
- Project limits *per meter*:
  - Ductless Heat Pumps - $15,000 / 10 years
  - HP Water Heaters - $3,500 / 5 years
  - EV Chargers - $2,500 / 3 years
  - Total financing up to $21,000 (all 3 measures)
- Progress to date: 5 projects completed for $146K; 20 more applications approved for a total commitment of $346K
- Zero $$ down, finance charges appear as a line item on member bills
- Interest of 2% charged to cover admin costs

Commercial Project: Outlook Inn

Marketing / Outreach

Layered approach to build awareness and get members to ACT:

Regular Channels: ads, bill inserts, banners, fliers, articles, newsletters, website, social media, FaceBook Live events

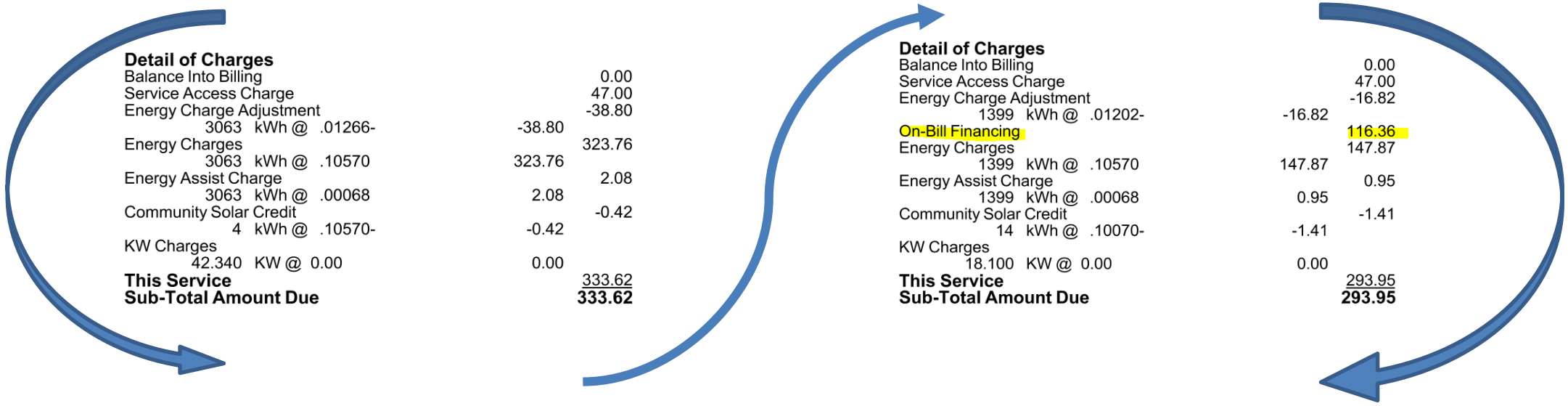
Face to Face: Speaking at community and civic clubs, homeowner/neighborhood associations, book clubs, Chamber of Commerce events – anyone who will have us

Pop-ups: informal conversations at local breweries, food co-ops, farmer's markets

Branded items: LED lanterns, piggy banks, lunch bags, staff shirts

Special: Online savings calculator, Switch it Up! song, Chevy Bolt car wrap

Member Results: DHP from Wood Fueled Forced Air



Detail of Charges

Balance Into Billing		0.00
Service Access Charge		47.00
Energy Charge Adjustment		-38.80
3063 kWh @ .01266-	-38.80	
Energy Charges		323.76
3063 kWh @ .10570	323.76	
Energy Assist Charge		2.08
3063 kWh @ .00068	2.08	
Community Solar Credit		-0.42
4 kWh @ .10570-	-0.42	
KW Charges		
42.340 KW @ 0.00	0.00	
This Service		333.62
Sub-Total Amount Due		**333.62**

Detail of Charges

Balance Into Billing		0.00
Service Access Charge		47.00
Energy Charge Adjustment		-16.82
1399 kWh @ .01202-	-16.82	
On-Bill Financing		116.36
Energy Charges		147.87
1399 kWh @ .10570	147.87	
Energy Assist Charge		0.95
1399 kWh @ .00068	0.95	
Community Solar Credit		-1.41
14 kWh @ .10070-	-1.41	
KW Charges		
18.100 KW @ 0.00	0.00	
This Service		293.95
Sub-Total Amount Due		**293.95**

Detail of Charges

Balance Into Billing		0.00
Service Access Charge		47.00
Energy Charge Adjustment		23.07
3394 kWh @ .00679	23.07	
KWH BILL ADJUSTMENT		0.02
Energy Charges		358.75
3394 kWh @ .10570	358.75	
Energy Assist Charge		2.31
3394 kWh @ .00068	2.31	
Community Solar Credit		-0.81
8 kWh @ .10070-	-0.81	
KW Charges		
34.780 KW @ 0.00	0.00	
This Service		430.34
Sub-Total Amount Due		**430.34**

Detail of Charges

Balance Into Billing		0.00
Service Access Charge		47.00
Energy Charge Adjustment		9.21
1144 kWh @ .00804	9.21	
On-Bill Financing		116.36
Energy Charges		120.92
1144 kWh @ .10570	120.92	
Energy Assist Charge		0.78
1144 kWh @ .00068	0.78	
Community Solar Credit		-1.81
18 kWh @ .10070-	-1.81	
KW Charges		
15.500 KW @ 0.00	0.00	
This Service		292.46
Sub-Total Amount Due		**292.46**


SWITCH IT UP!
This Electric Life.
On-Bill Financing available when you switch from fossil fuels to electricity
Ductless Heat Pumps
EV Chargers
Heat Pump Water Heaters
Thank you!
Calculate Your Savings: www.opalco.com/switchitup


QUESTIONS?

CONTACT US

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