

Inclusive Financing for Energy Efficiency Upgrades:

Scaling Up Investment by Opening Opportunity for All

**Prepared for the Missouri Public Utilities Commission
November 30, 2016**

Holmes Hummel, PhD

Clean Energy Works

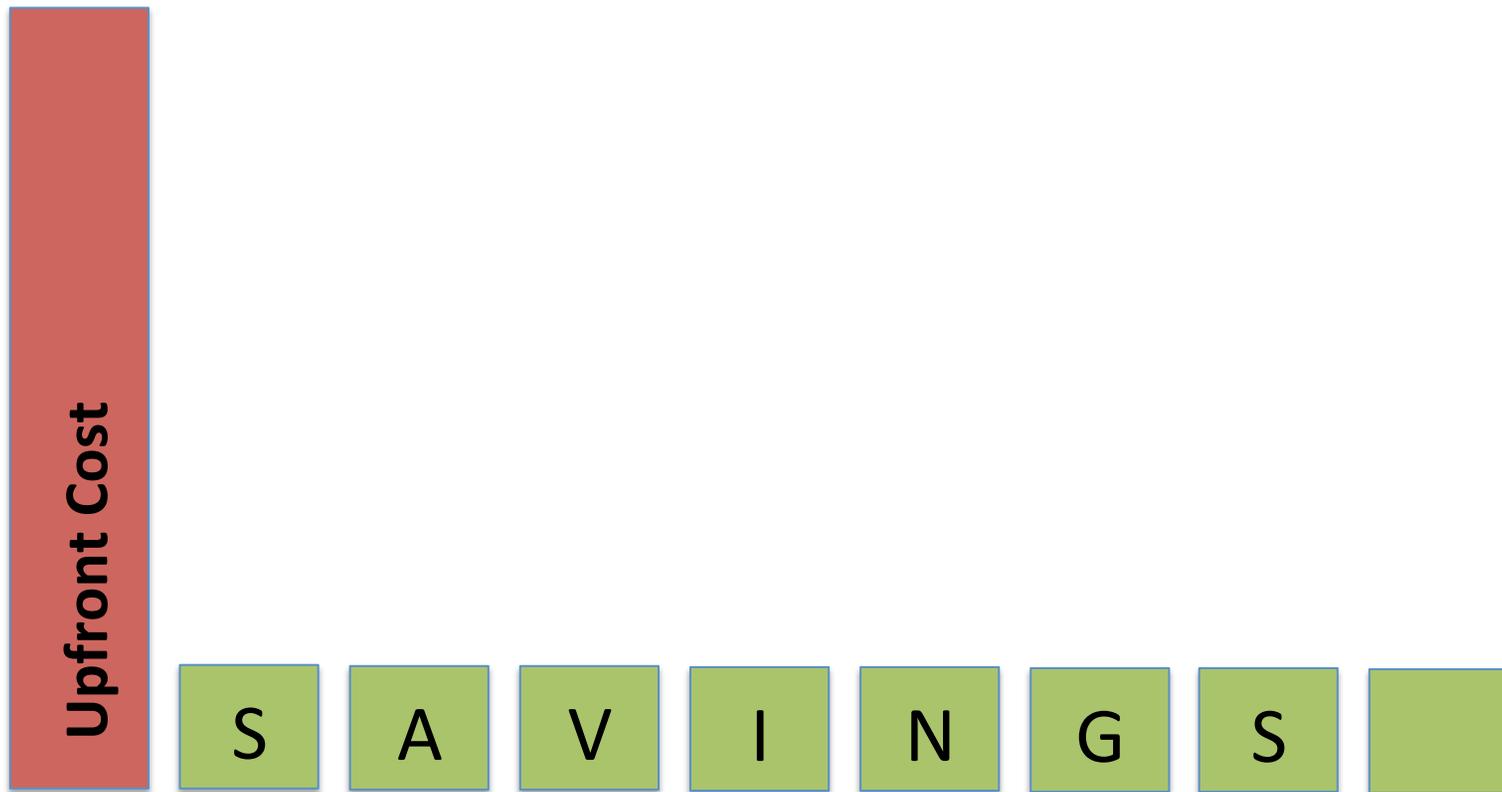
Clean Energy Works

- ✓ Opening the clean energy economy to all through inclusive financing
- ✓ Founded by Dr. Holmes Hummel, former Senior Policy Advisor in the Department of Energy's policy office (2009-2013)
- ✓ Winner of FiRe Award at the Bloomberg "Future of Energy Summit" for championing PAYS® as a high-impact innovation in finance
- ✓ Advisor to utilities on business plan development for investments in cost effective distributed energy solutions

Energy Efficiency Institute, Inc.



Addressing first-cost barrier for efficiency:



Addressing first-cost barrier for efficiency with funding:

Rebate

Upfront Cost

Customers find cash or credit for the rest of the EE upgrade - and the majority of customers do neither, declining the opportunity.

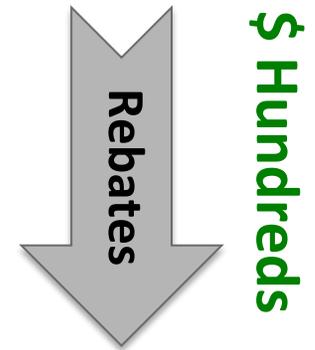
S A V I N G S

Paying for upgrades

After all rebates and public funds are applied, the remaining balance presents yields these options:

- Pay Cash
- Pay on Credit
- Decline the upgrades

**Rate-payer or
Public funds**



Customers

\$ Thousands
in upgrades
per participant

Typical qualifying criteria for loans:

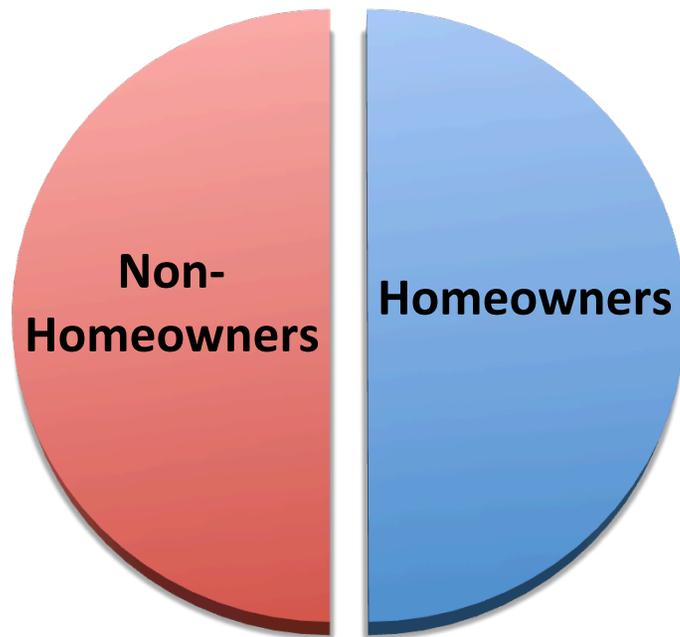
“Are you a renter?”

“Do you have a good credit score?”

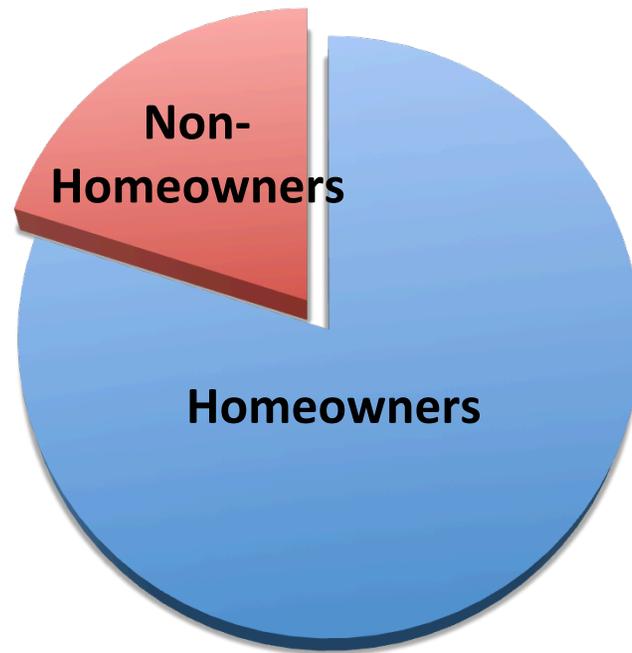
“Do you have solid income?”

Barriers to Financing in the Clean Energy Economy: Example - Property Ownership

Below Median Income



Above Median Income

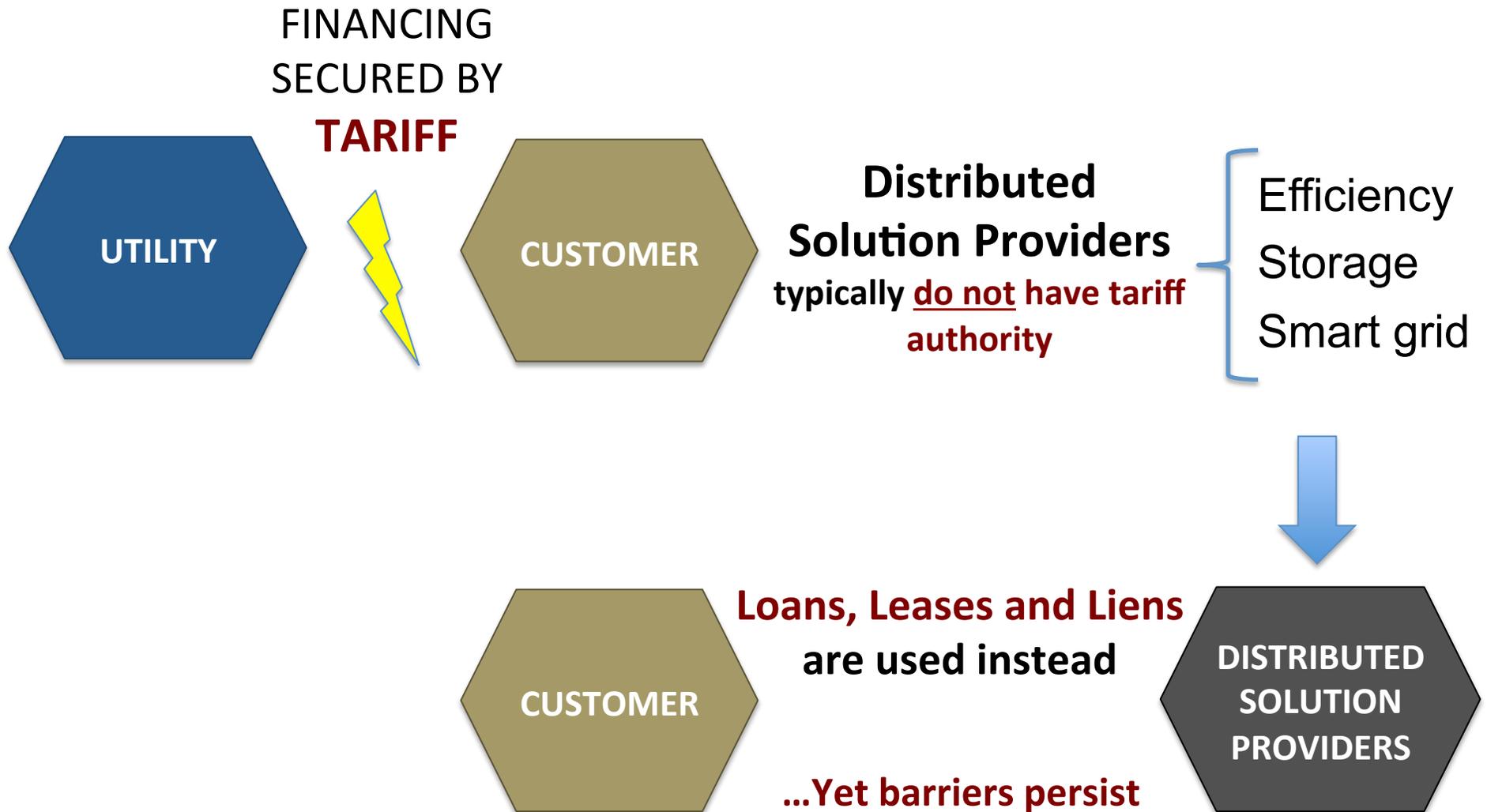


More than **1/3** of all U.S. households are not in a home they own.

For most utility programs, it is common for:

- Virtually all customers to pay into ratepayer funded programs
- Most customers do not participate in programs offered
- Renters and low-income households to be particularly underrepresented among the beneficiaries
- Most cost-effective energy efficiency resources remain untapped, creating an undue burden for customers with high bills

Financing Instruments Affect Participation

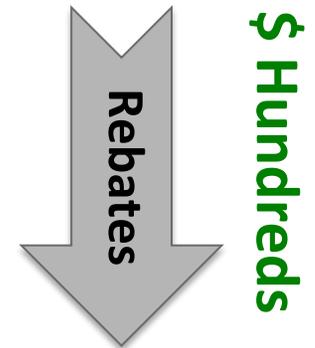


Introduce a New Option that Leads to “Yes!”

After all rebates and public funds are applied, the remaining balance presents yields these options:

- Pay Cash
- Pay on Credit
- Decline the upgrades
- ✓ **Inclusive financing**

**Rate-payer or
Public funds**



Opt-in PAYS[®] Tariff for Efficiency:

Approved by Utility Commissions in
Kansas, Kentucky, N.H., and Arkansas

PAY AS YOU SAVE (PAYS) ON-BILL PROGRAM MODEL TARIFF

- 1 **Eligibility:** Subject to an optional and voluntary audit to any cooperative member who takes service under any rate schedule for energy efficiency improvements (upgrades) where the cooperative provides electric service to the structure. It shall not be a requirement that the structure be all-electric.
- 2 **Participation:** To participate in the Program, a member must: 1) request from the cooperative an analysis of cost effective upgrades, 2) agree to the terms of the cost effectiveness analysis for as described in Section 2.2, and 3) review the Purchase Agreement that defines member benefits and obligations, and implement any project that does not require an upfront payment from the member as described in Section 3.3.
- 3 **Energy Efficiency Plans:** The cooperative will have its Program Operator or approved energy efficiency contractor perform a cost effectiveness analysis and prepare an Energy Efficiency Plan (Plan), identifying recommended upgrades to improve energy efficiency and lower power costs.
 - 3.1 **Incentive Payment:** The cooperative may make an incentive payment for program participation that is less than or equal to the value of the upgrades to the cooperative.
 - 3.2 **Net Savings:** Recommended upgrades shall be limited to those where the annual Program Service Charges (Service Charges), including program fees and the cooperative's cost for capital are no greater than 80% of the estimated annual benefit from reduction to members' annual utility charges based on current rates in electricity and/or gas costs.
 - 3.3 **Copy Option:** In order to qualify a project for the Program that is not cost effective, Members may agree to pay the portion of a project's cost that prevents it from qualifying for the program as an upfront payment to the contractor. The cooperative will assume no responsibility for such upfront payments to the contractor.
 - 3.4 **Cost Effectiveness Analysis Fee:** If the cost of the cost effectiveness analysis exceeds the value to the cooperative of upgrades accepted by members for installation, the cooperative will recover from participants the portion of the cost for the analysis that is greater than the value of the upgrades to the cooperative. The utility will not recover costs for the analysis if the Energy Efficiency Plan concludes that proposed upgrades are cost effective only with a copy. The cooperative will recover all of its costs for the analysis at a location from a member who declines to install upgrades identified in an Energy Efficiency Plan that does not require a copy.
 - 3.5 **Existing Buildings:** Projects that address upgrades to existing buildings deemed unlikely to be habitable or to serve their intended purpose for duration of service charges will not be approved unless other funding can effect necessary repairs.
- 4 **Approved Contractor:** Should the member determine to proceed with implementing The Plan, the cooperative shall determine the appropriate monthly Program Charge as described below. The member shall sign the Agreement and select a contractor from the cooperative's list of approved contractors.
- 5 **Quality Assurance:** When the energy efficiency upgrades are completed, the contractor shall be paid by the cooperative, following on-site or telephone inspection and approval of the installation by the cooperative or its Program Operator.

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- 6 **Program Service Charge:** The cooperative will recover the costs for its investments including any fees as allowed in this tariff through monthly Service Charges assigned to the meter at the location where upgrades are installed and paid by members occupying that location until all cooperative costs have been recovered. Service Charges will also be set for a duration not to exceed 80% of estimated life of the upgrades or the length of a full parts and labor warranty, whichever is less and in no case longer than twelve years. The Service Charges and duration of payments will be included in the Purchase Agreement.
- 6.1 **Cost Recovery:** No sooner than 45 days after approval by the cooperative or its Program Operator, the member shall be billed the monthly Program Charge as determined by the cooperative. The cooperative will bill and collect Service Charges until cost recovery is complete except in cases discussed in Section 7.
- 6.2 **Termination of Program Charge:** Once the cooperative's costs for Upgrades at a location have been recovered, the monthly Program Charge shall no longer be billed, except as described in Section 7.
- 6.3 **Extension of Program Charge:** As described in Section 6 or for any other reason, if the monthly Service Charge is reduced or suspended, once repairs have been successfully effected or service reconnected, the number of total monthly payments shall be extended until the Service Charges collected equal the cooperative's cost for installation as described in Section 5. The duration of Service Charges will also be extended if there are missed payments and the current occupant is still benefiting from the upgrades in order for the cooperative to recover its costs to install upgrades at a location.
- 6.4 **Tied to the Meter:** Until cost recovery for upgrades at a location is complete or the upgrades fail as described in Section 7, the terms of this tariff shall be binding on the metered structure and any future member who shall receive service at that location.
- 6.5 **Disconnection for Non-Payment:** Without regard to any other Commission or cooperative rules or policies, the Service Charges shall be considered as an essential part of the customer's bill for electric service, and the cooperative may disconnect the metered structure for non-payment of Service Charges under the same provisions as for any other electric service.
- 7 **Repairs:** Should, at any future time during the billing of Service Charges, the cooperative determine that the installed Upgrades are no longer functioning as intended and that the occupant, or building owner if different, did not damage or fail to maintain the upgrades in place, the cooperative shall reduce or suspend the Program Service Charges until such time as the cooperative and/or its contractor can repair the upgrade. If the upgrade cannot be repaired or replaced cost effectively, the cooperative will waive remaining charges.

If the cooperative determines the occupant, or building owner if different, did damage or fail to maintain the upgrades in place, it will seek to recover all costs associated with the installation, including any fees, incentives paid to lower project costs, and legal fees.

The Service Charges will continue until cost recovery is complete.

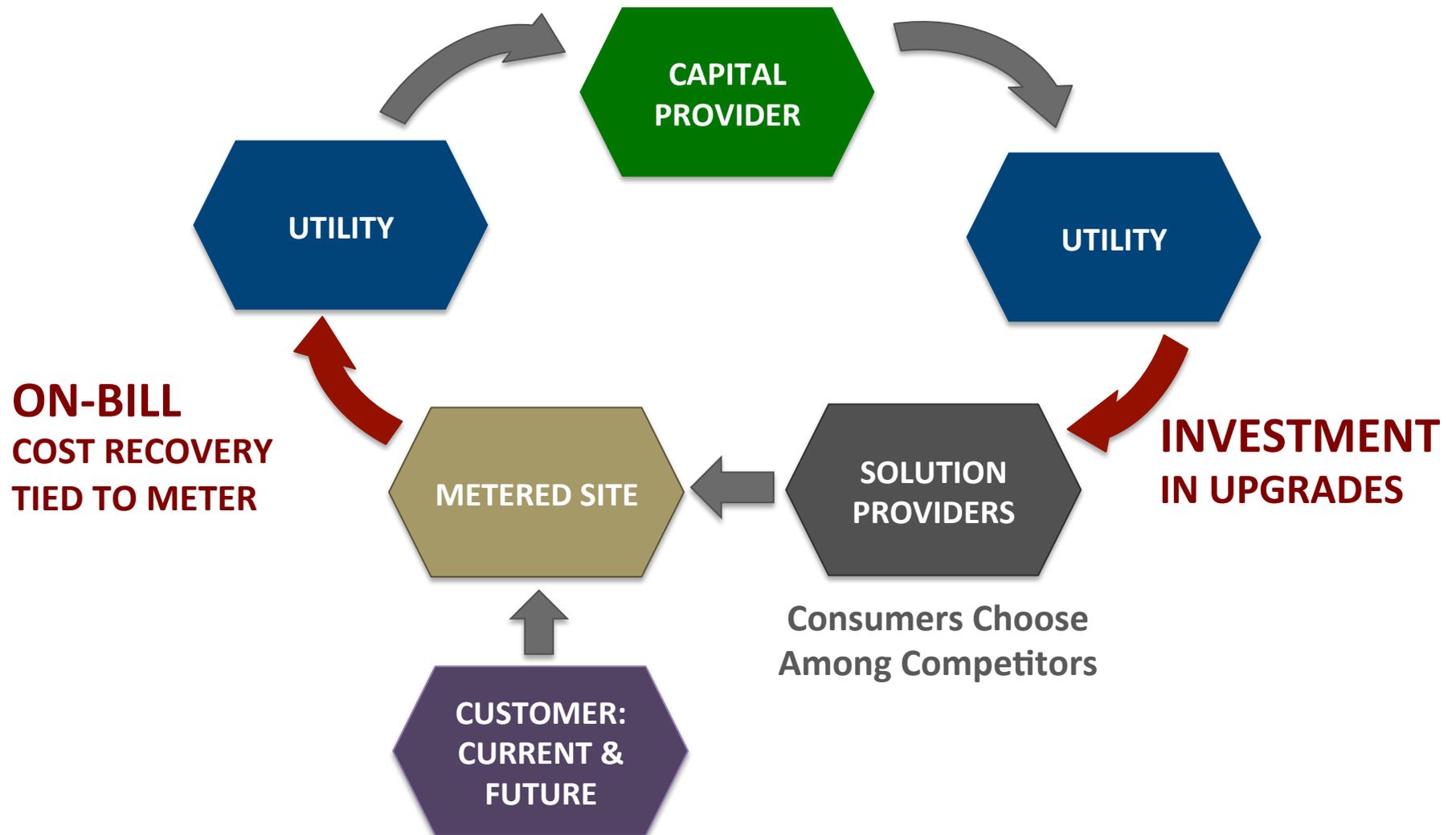
The model tariff here is based on the most recent filing, unanimously approved in Arkansas.

Pay As You Save[®] and PAYS[®] are trademarks of Energy Efficiency Institute, Inc.

Clean Energy Works

Pay As You Save[®] (PAYS[®])

PAYS offers all utility customers the option to access cost effective energy upgrades using a proven investment and cost recovery model that benefits both the customer and utility.

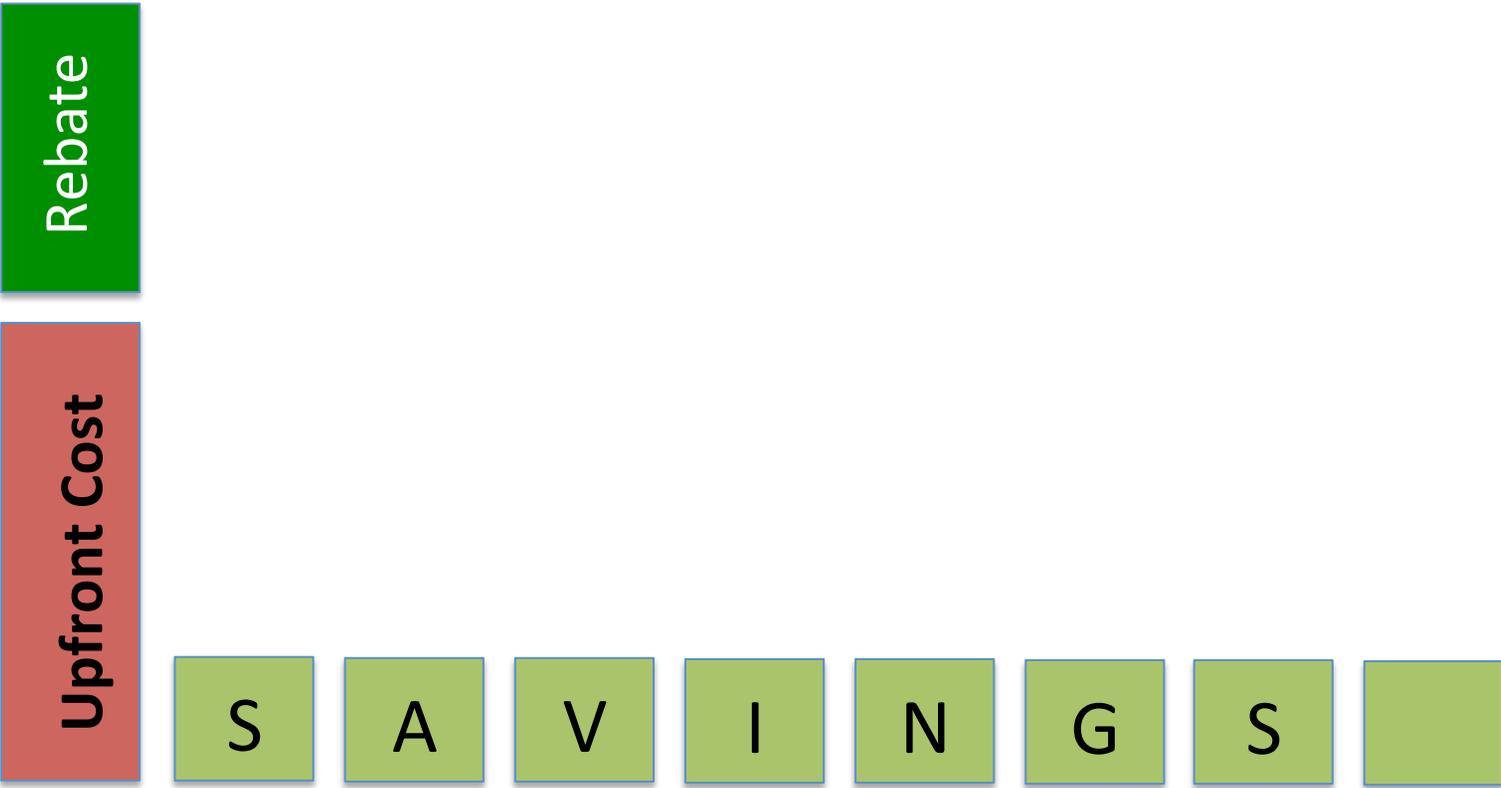


PAYS[®] Offer –

Here's how it works:

- Energy saving upgrades are installed in your home or building, and you pay nothing upfront. The utility pays for the installed energy solution.
- To recover its costs, the utility puts a fixed charge on your electric bill that is significantly less than the estimated energy savings from these upgrades.
- You have no loan, no lien, and no debt associated with this transaction; just lower utility bills and a more comfortable home.
- When the utility recovers its costs, your obligation to pay ends.
- If you leave this location sooner, or if an upgrade fails and is not repaired, your obligation to pay ends if you have followed your responsibilities.

Addressing first-cost barriers for efficiency:

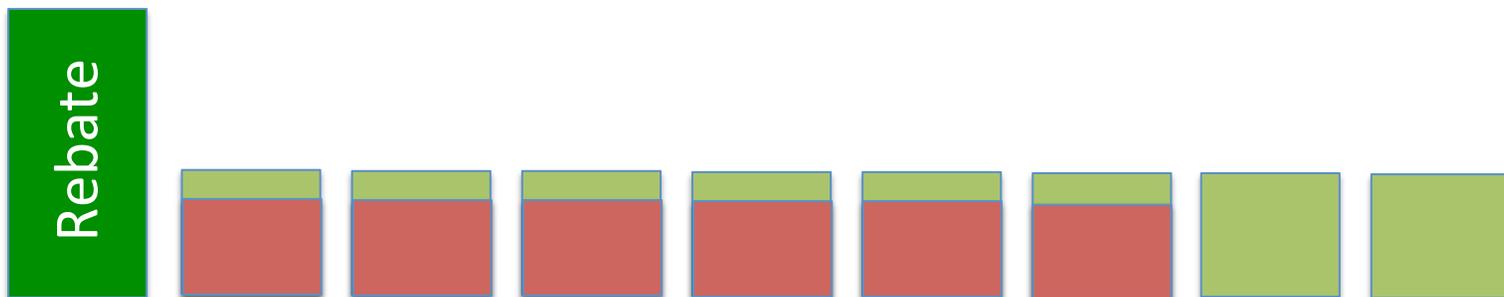


Addressing first-cost barriers for efficiency with funding and financing:



Addressing first-cost barriers for efficiency with funding and financing:

Every utility with a tariffed on-bill program reports that the majority of customers receiving an offer of investment say, “Yes.”



Example Transaction:



Single story home, upgraded with insulation, air sealing, and heat pump

- **Investment:** \$10,000
- **Cost recovery period:** 15 years
- **Cost of Capital:** 3%
- **Savings:** \$100 / month
- **Charge:** -\$70 / month
- **Net savings to customer:** \$30 / month, ~30% of savings
- **Energy savings:** 8,000 kWh / year

Source: Briefing by MACED, the program operator for the [HowSmart KY](#) program. This sample has conveniently round numbers; average investment size is ~\$7000.

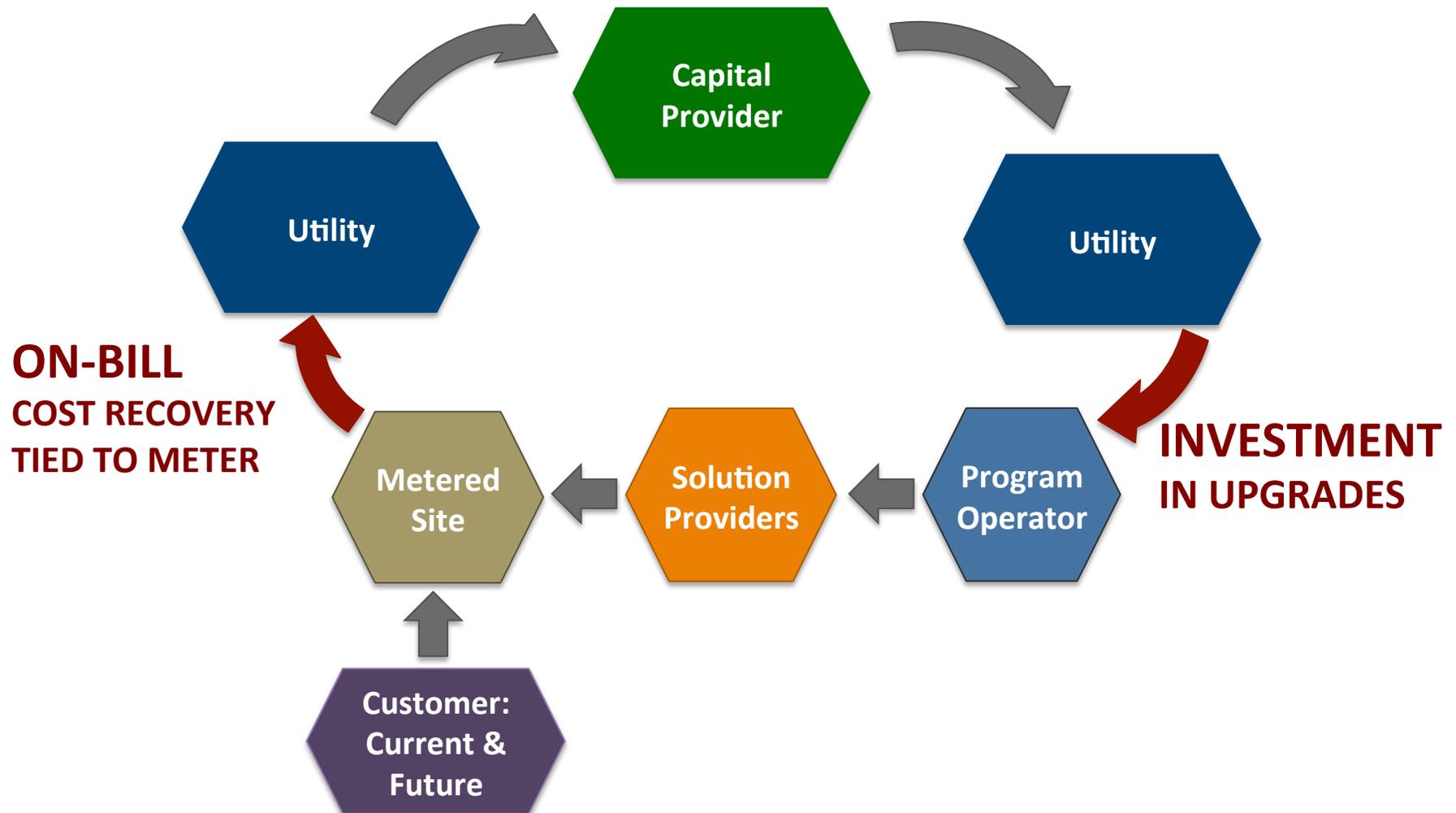
Example Investment Program:



- **2,400+** efficiency assessments with offers to invest
 - **1,400+** investments: More than half of customers say “Yes!”
 - **~\$5,700** per building, with co-payment from customer
 - **\$8+ million** invested
 - Less than **0.1%** charge off
 - **Annual Savings:**
 - **3.2 million** kWh
 - **386,000** therms
 - **5,200** tons carbon
- Tariff virtually assures full cost recovery**
- These savings generate multiple benefit streams**

Source: Midwest Energy, reporting results through August 2015

Program Design Considerations: Program Operator, Capital Source, Reserve Fund



Getting Started with Inclusive Financing

- ✓ Engage local stakeholders that want to benefit from energy upgrades
- ✓ Identify opportunities for impact (ex: better building efficiency)
- ✓ Conduct financial analysis to explore the business case
- ✓ Develop a proposed investment plan with utility, consumer advocates, and oversight boards or regulators
- ✓ Seek approval of an opt-in tariff for cost-effective energy upgrades
- ✓ License the PAYS[®] system, select a program operator, develop an implementation plan, and spread the good news!

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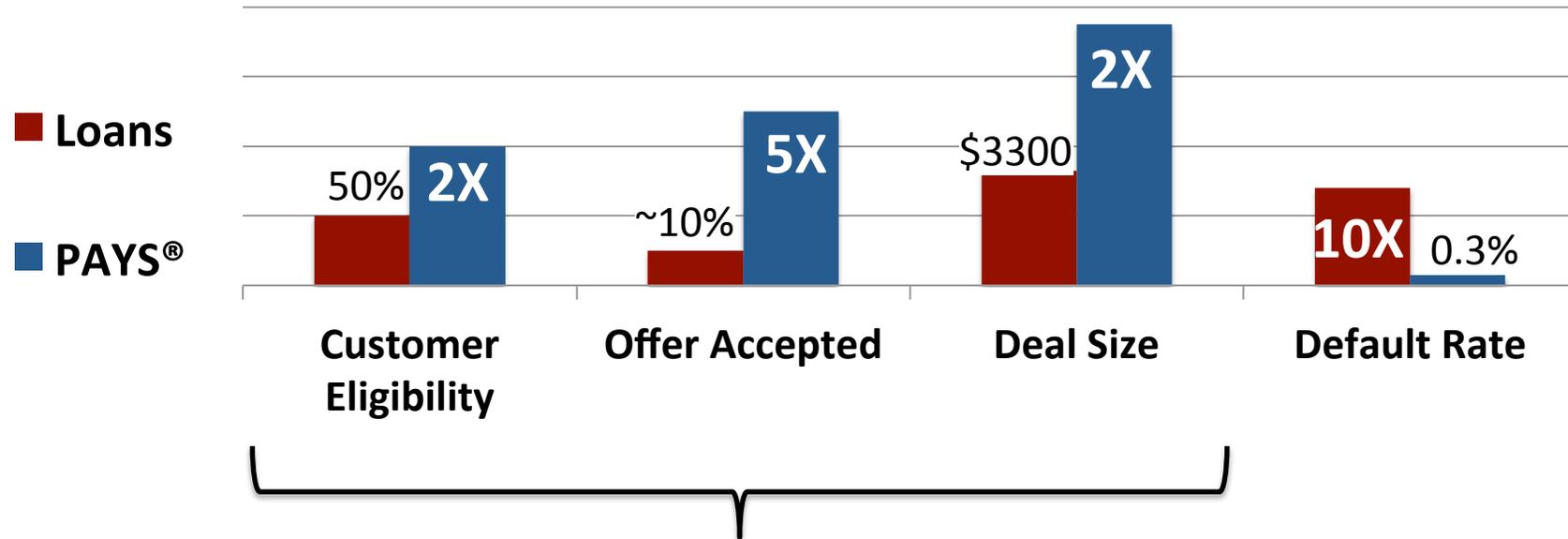
Appendix:

Distinguishing between Tariffed On-Bill Programs and On-Bill Loan Programs

Attributes	Home Energy Lending Program (HELP)	HELP PAYS®
• Commercial, municipal, residential customers are eligible	✓	✓
• Renters are eligible		✓
• No credit score check or no debt to income ratios	✓	✓
• No upfront participant cost	✓	✓
• Estimated savings <u>must exceed</u> cost recovery charges by 20%		✓
• Participant signs a loan or promissory note for a debt obligation	✓	
• Participant accepts an opt-in utility tariff (NOT a debt) tied to meter		✓
• Cost recovery is through a fixed charge on the utility bill	✓	✓
• Participant accepts tariff with disconnection for non-payment		✓
• Payments end if upgrade fails and is not repaired		✓
• Tariff runs with the meter and remains in effect for subsequent customer at that location until cost recovery is complete		✓

Pay As You Save[®] (PAYS[®])

Comparison for building efficiency upgrades



Investment acceleration is a product of these multiples.

- ✓ No consumer loan, lien, or debt
- ✓ Reaches renters and low-income
- ✓ Higher uptake rates
- ✓ Deeper energy & carbon savings

RESULT: MORE PARTICIPATION, MORE INVESTMENT

Comparing last (and best) 3 months of **HELP (Loan)**
with first 3 months of **HELP PAYS®: (Tariff)**

- **Doubled customers** seeking assessments, and *more than a third* were multi-family (compared to 0 previously).
- Among customers receiving assessments, **100% opt-in for multi-family rental units**, and >80% for single family.
- **Doubled the scale of capital improvements** from an average of \$3000 to above \$6000 to get deeper energy savings (~30%).

Double customers X Double project size =

- **Quadrupled investment**, soaring from \$225k to **\$1 million**.

Source: EEtility, program operator for HELP PAYS®



**Ouachita Electric
Cooperative**