

Delivering Energy Savings to Residents of Manufactured Homes

**Presented by Shannon Stendel
Product Manager –Homes**



Who We Are

- Founded in 1980
- Mission-based nonprofit
- Innovative, nationally-recognized industry leader
 - Energy-saving programs and pilots
 - Energy efficiency financing
 - Technical training and certifications
 - Marketing, planning, and support services

Who We Work With



SOUTHERN MINNESOTA
MUNICIPAL POWER AGENCY



Making A Difference

Since 2001, **WECC** has helped save:



\$978 million
in energy costs

7.3 million
MWh of electricity

23.8 million
Dth of natural gas

6.3 million
metric tons of CO₂

That's equal to:  **572,116**
homes powered for a year

Manufactured Homes Overview

Definition: Single-story, constructed in a factory, wood-frame bolted to steel chassis, designed to be transported.



Manufactured Homes Overview

- 6% of all single family households in U.S.
- 19 million people occupy 9 million mobile homes
- Lower energy standards than site-built homes not updated since 1994

Why target manufactured homes?



Underserved Market

The manufactured housing market requires a targeted, separate program with low delivery costs to capture energy savings and affect utility bill non-payment.



Michigan Market Analysis

Regions	Total MH Homes	% MH Homes	Avg Age	Median MH Value	Average owner income	Average renter income
Eastern Upper and Northern Lower Michigan	39,910	10%	1978	\$43,450	\$42,983	\$23,586
Michiana Counties	13,088	8%	1972	\$33,700	\$50,010	\$26,456
Southeast Lower Michigan	98,274	4%	1982	\$28,300	\$52,569	\$32,829
Southwest Lower Michigan	87,713	7%	1979	\$39,700	\$48,059	\$26,679
Upper Central and Western Michigan	10,163	7%	1968	\$37,950	\$48,328	\$22,566
Statewide	249,148	5%	1980	\$35,900	\$49,729	\$29,090

Source: US Census Bureau American Community Survey State and Local Areas

Wisconsin Market Analysis

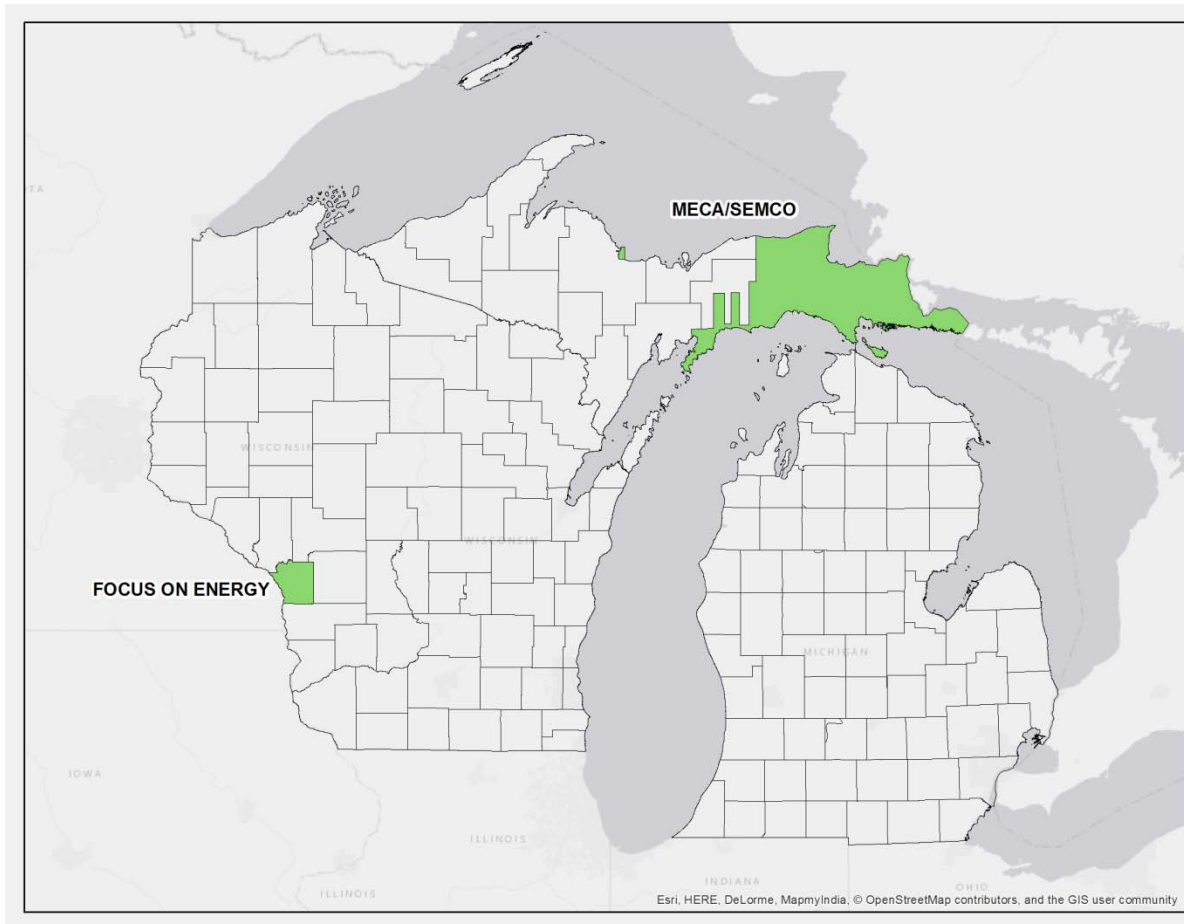
Regions	Total MH Homes	% MH Homes	Avg Age All Homes	Median MH Value	Median Owner Income All Homes	Median Renter Income All Homes
Southern Wisconsin	22,693	5%	1972	\$24,500	\$59,902	\$28,886
Southeastern Wisconsin	9,725	1%	1973	\$27,650	\$69,183	\$32,313
Northeastern Wisconsin	23,916	4%	1975	\$25,600	\$58,250	\$29,829
Northern Wisconsin	16,355	6%	1974	\$41,700	\$50,420	\$24,755
Western Wisconsin	23,305	6%	1975	\$29,500	\$58,085	\$28,518
Statewide	95,799	4%	1974	\$30,300	\$58,197	\$28,146

Source: US Census Bureau American Community Survey

Manufactured Homes Pilot Overview

- Free Energy Assessment and Direct Install with Duct Sealing
- Electric and gas utilities/statewide program
- 2015 pilots in Wisconsin and Michigan
- Train contractors and provide QA/QC
- Collected market characterization data

Manufactured Home Pilots



Marketing and Outreach



EFFICIENCY. SAVINGS. COMFORT.

SEMCO ENERGY Gas Company and Energy Optimization are joining together to offer a special Manufactured Homes Program at no cost to eligible customers.

A professional, trained contractor will come to your home to:

- Test and seal your home's heating and cooling system ductwork
- Install up to 10 Compact Fluorescent Light Bulbs
- Install water- and energy-saving items

Plus, provide valuable information on how to save energy along with energy-saving ideas. All work completed in a quality manner in one day or less, at no cost to you.

Act now! This offer is available for a limited time. Contact the Energy Optimization program to sign up for this special program. Call 877.296.4319 today.

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Contact the **Energy Optimization** program to sign up for this special program: Call: **877.296.4319** Email: info@michigan-energy.org

OR provide contact information here:

Name: _____
 Address: _____
 City: _____
 State: _____ Zip code: _____
 Daytime Phone: _____
 Email: _____



CONGRATULATIONS!

WITH THE HELP OF FOCUS ON ENERGY'S MANUFACTURED HOMES EFFICIENCY PILOT PROGRAM, YOU WILL IMMEDIATELY BEGIN SAVING WATER AND ENERGY.

The following efficiency measures were completed in your home today:

WHOLE-HOME ENERGY AUDIT

We evaluated your home to assess how much energy it uses, and which measures will be most effective in making your home more energy efficient.

BLOWER DOOR AND DUCT LEAKAGE TESTING

Air leakage in your home can increase heating and cooling costs by more than 30 percent, and can contribute to comfort, health, and safety problems. We tested your home to evaluate the rate at which air leaks to the outside, as well as how much air leaks

INSTALLATION OF:

CARBON MONOXIDE DETECTOR

Carbon monoxide is a deadly gas which is without the use of an electronic detecting device. We installed a carbon monoxide detector to protect your family from this colorless, tasteless, odorless gas which can develop from sources such as a water heater, blocked chimneys, or open to the product manual for operating instructions.

CFL AND LED BULBS

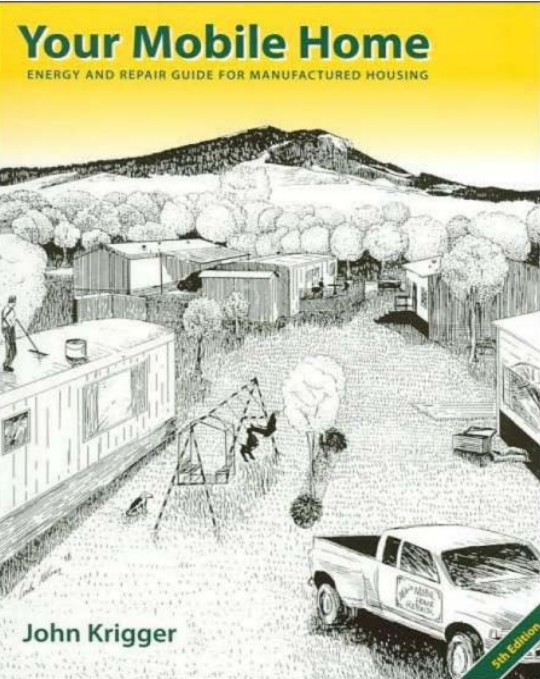
The incandescent (traditional) light bulbs were replaced with highly efficient compact fluorescent (CFL) and light-emitting diode (LED) bulbs. CFLs use about 70 percent less energy than incandescents and LEDs last up to 25 times longer than incandescent bulbs they replaced.

FAUCET AERATORS

We installed water-saving aerators on your faucets. Aerators limit the flow of water through the faucet while mixing the water with air, but don't worry—your water pressure will remain the same (or increase). Aerators use only 1.5 gallons of water per minute, 85 percent less water goes down the drain.

SHOWERHEAD

We installed a low-flow showerhead on your shower. Low-flow showerheads reduce water usage while limiting the amount of water that goes down the drain. When you use less water, you're saving money and heat—reducing your energy costs.



Direct Install Measures

Measure	Quantity
Interior Lighting CFL or LED	10-Max 15
Low Flow Showerhead	1
Kitchen Aerator	1
Bath Aerator	1-2
Water Heater Pipe Wrap 6 feet	1
Duct Sealing	1
Belly Insulation (WI only)	1
Exterior LED (WI only)	Max 4
Water Heater Temperature Adjustment (WI only)	1
ECM Replacement (WI only)	1
Refrigerator Replacement (WI only)	1
Air Sealing (WI only)	1

Robust In-Field Testing



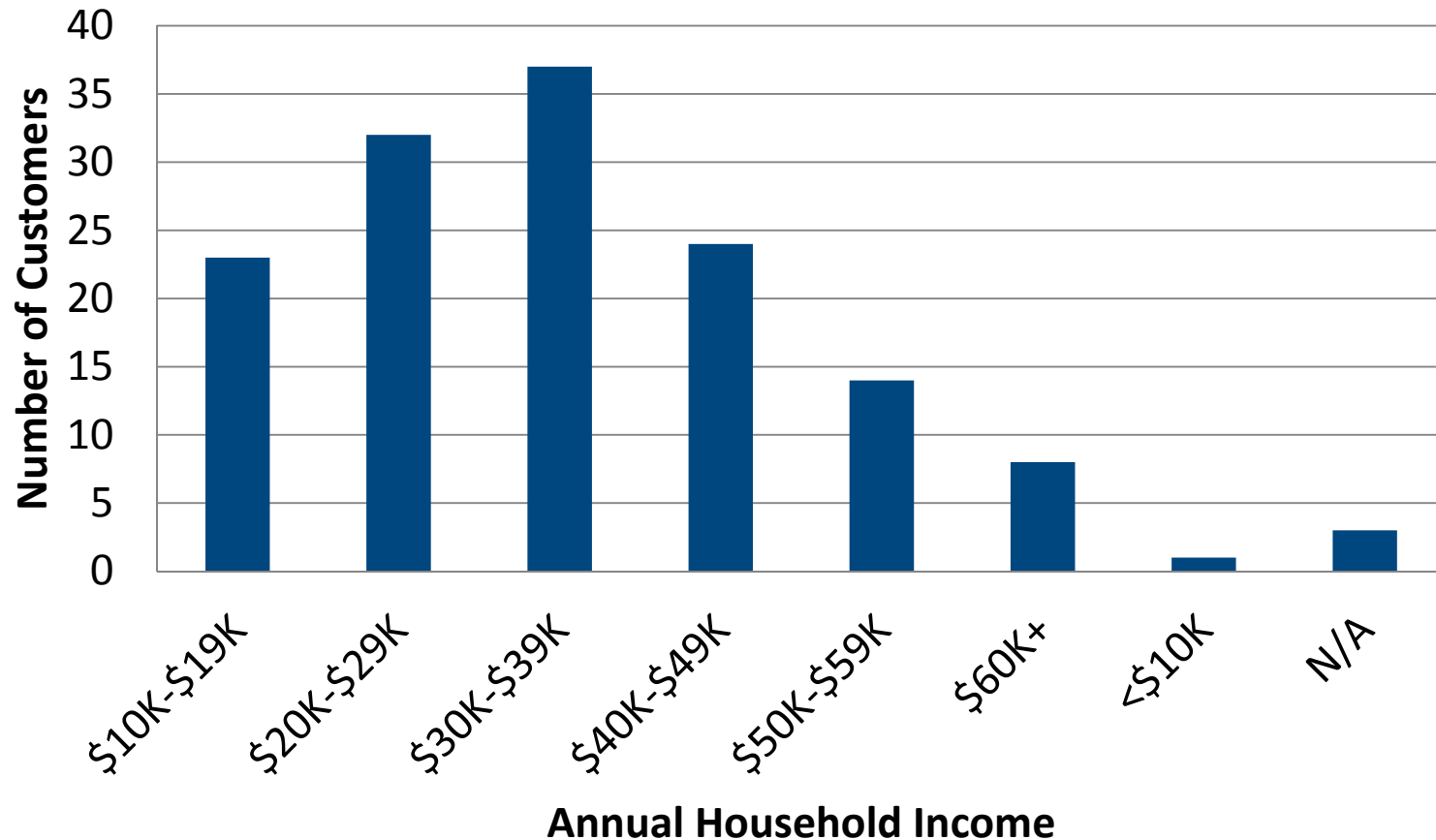
Vent Field Images – Pre-Work



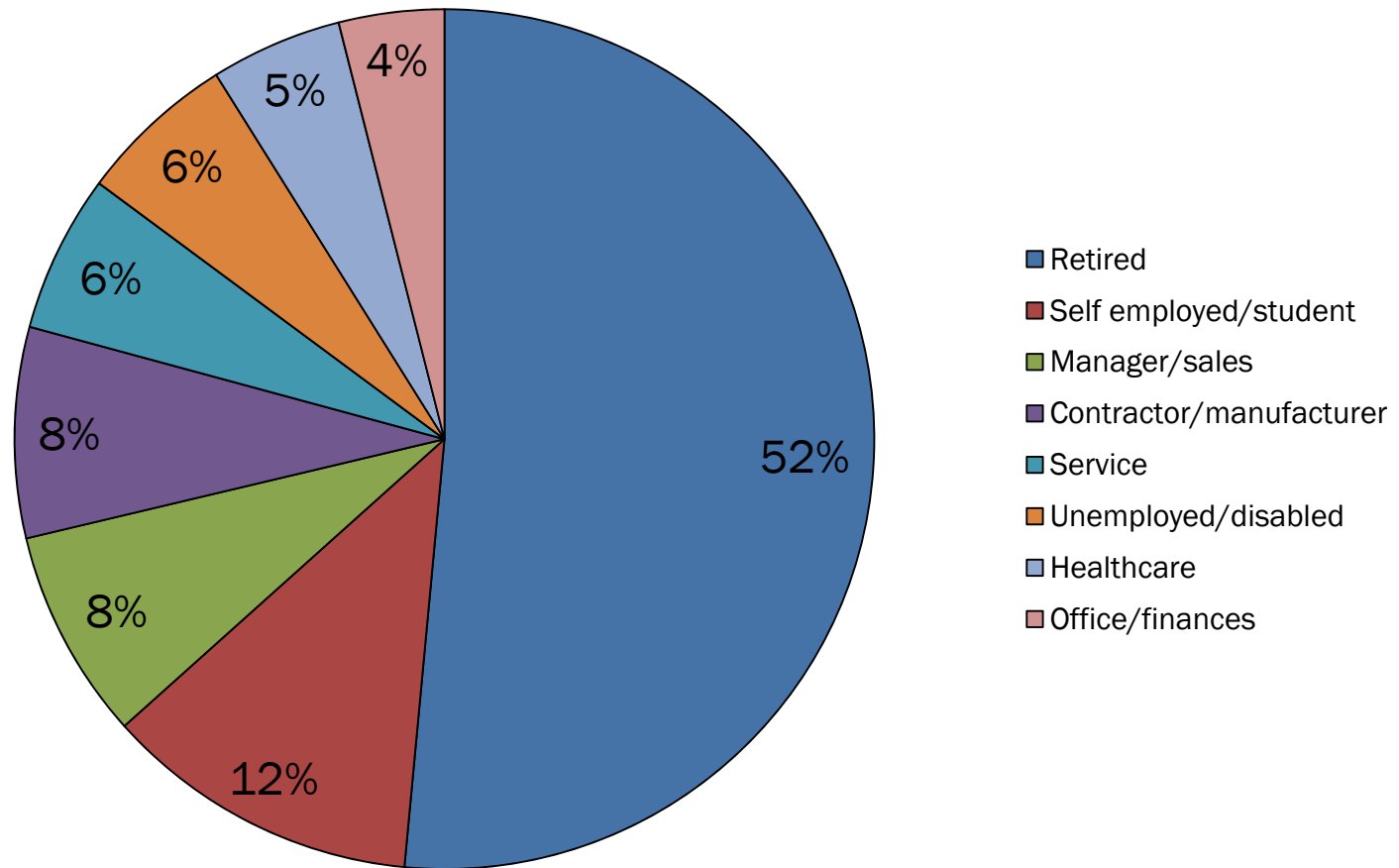
Vent Field Images – Post-Work



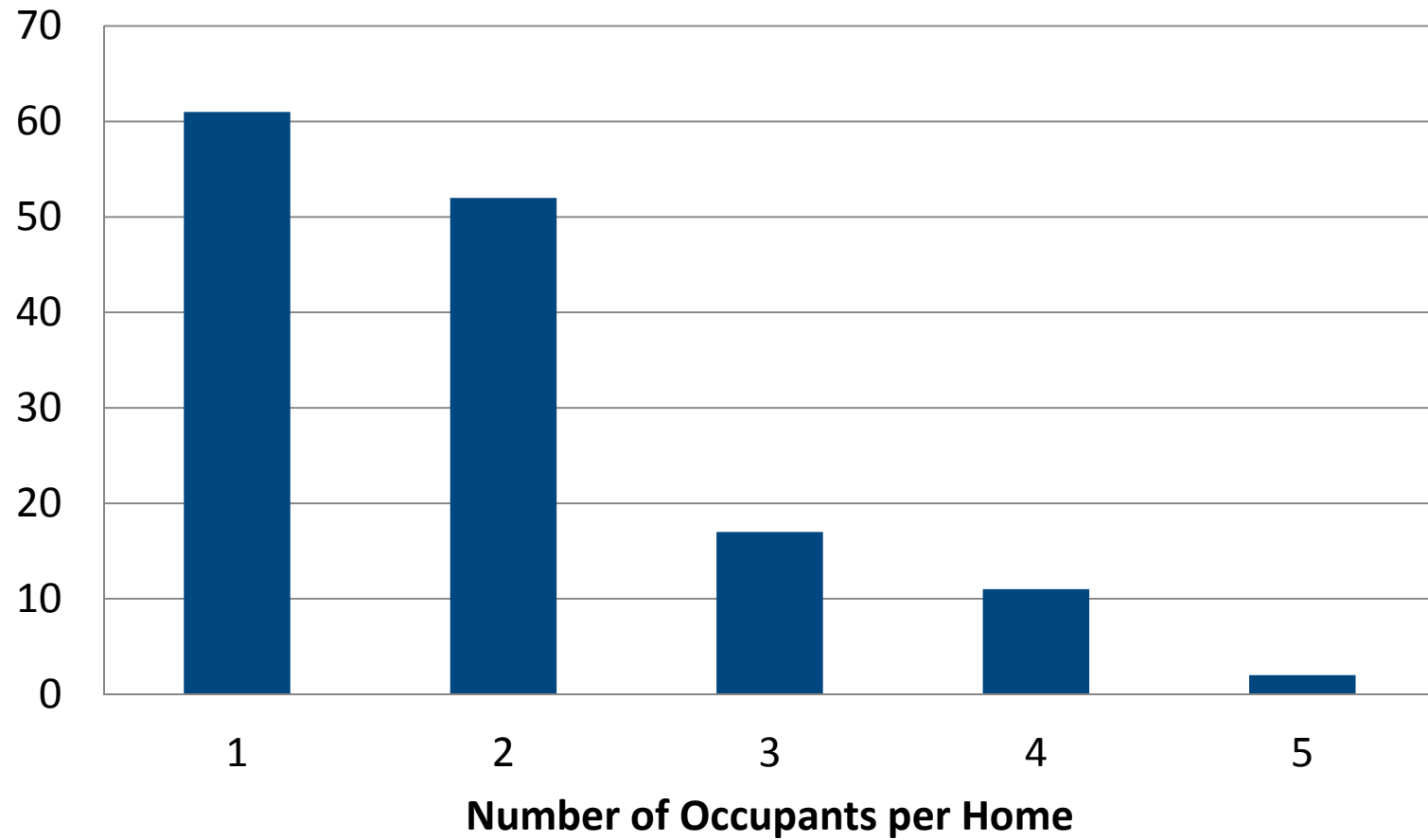
Low Income Customer Base



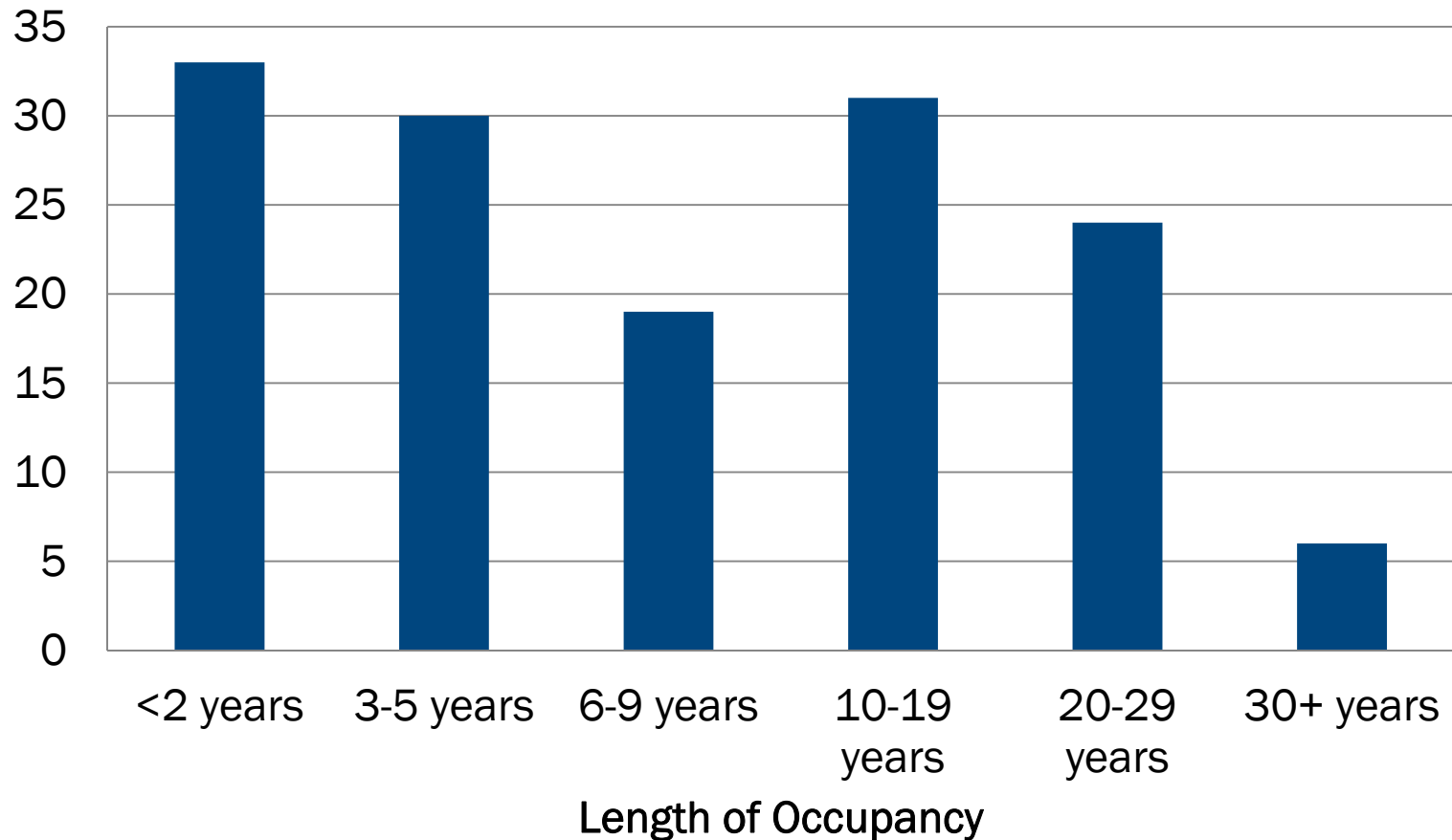
Fixed Income - Retired



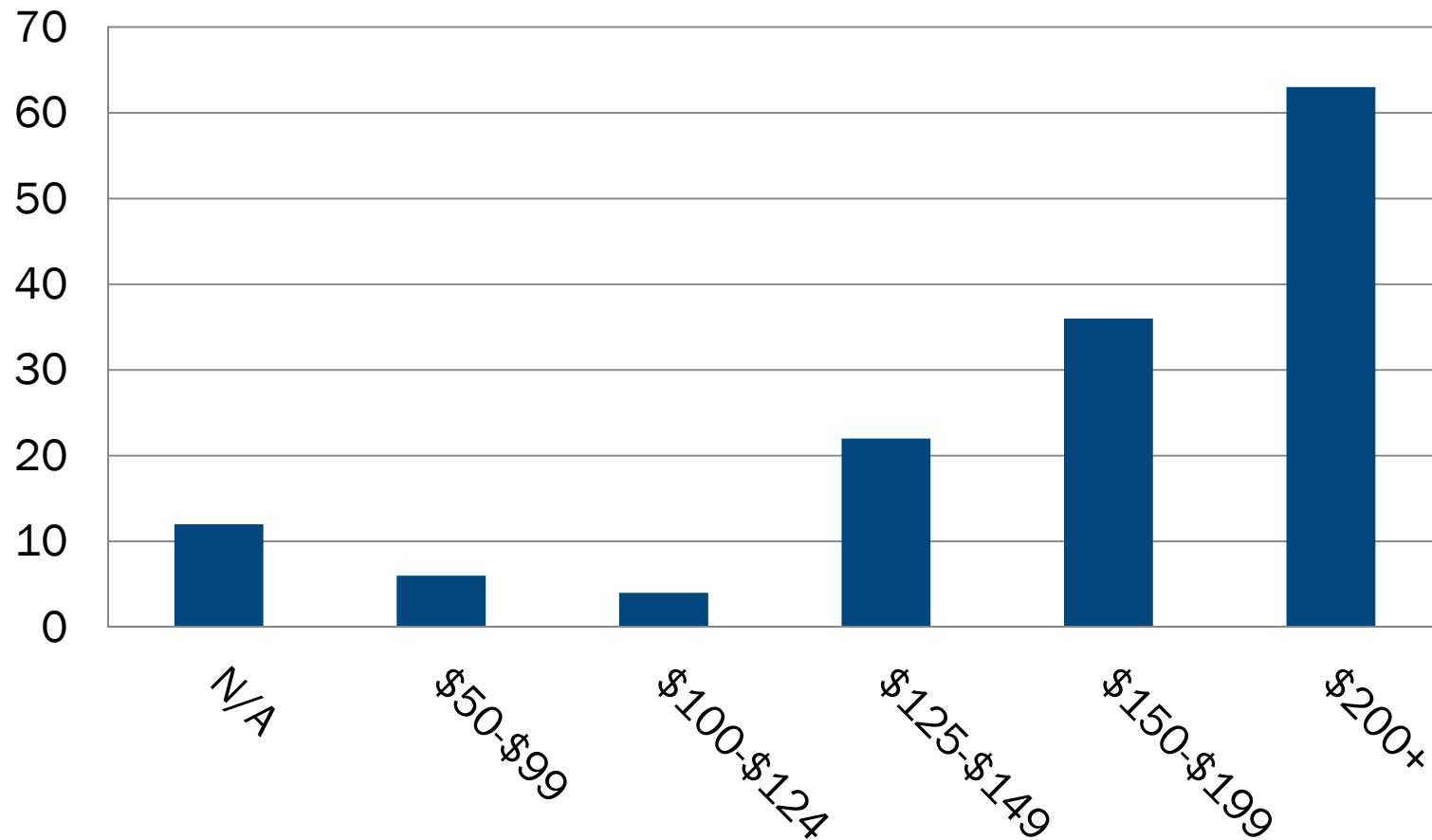
Small Households



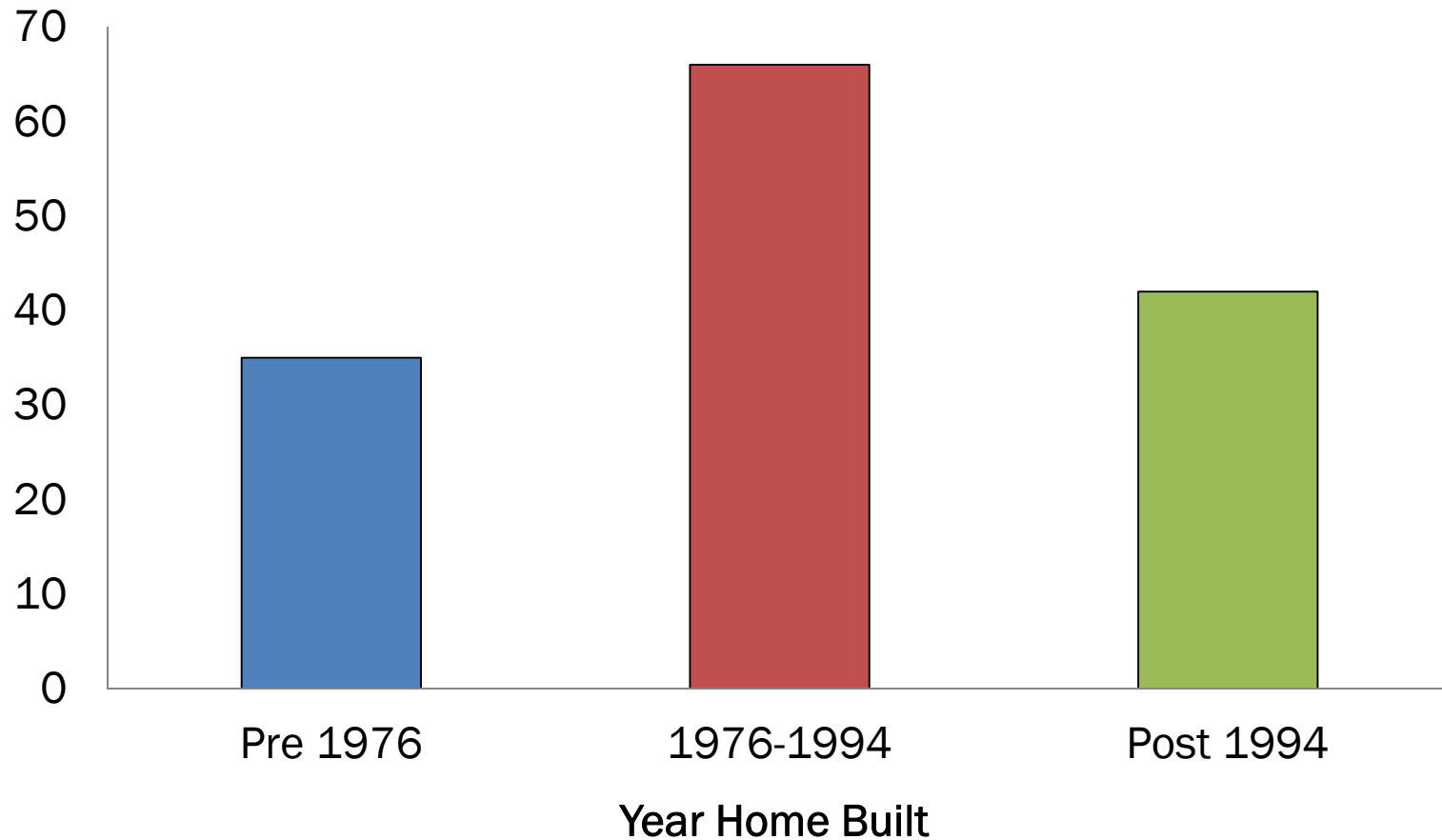
Transient Population



High Utility Bill Perception

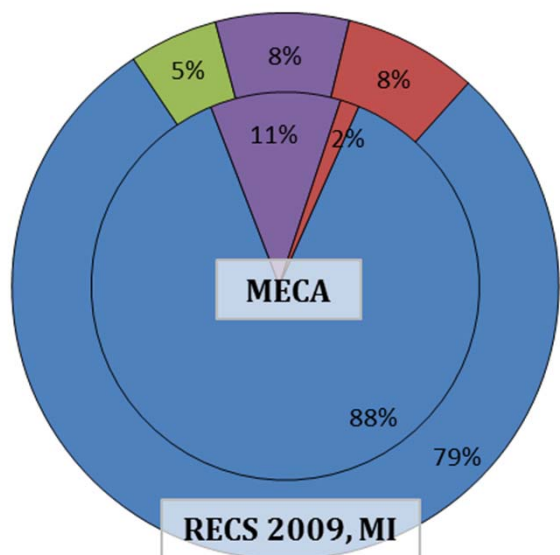


~50% Met Target Age of Home

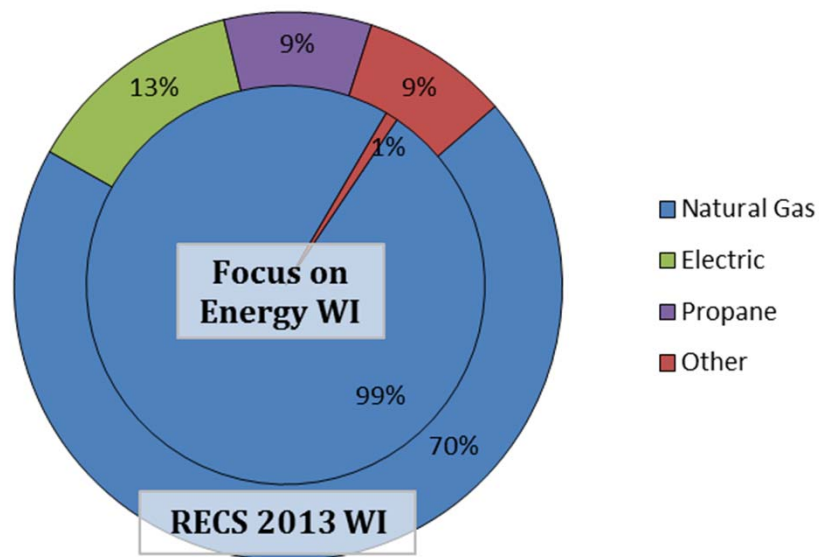


Heating Fuel Mix is Different from Site-Built Homes

MECA/SEMCO (Michigan)

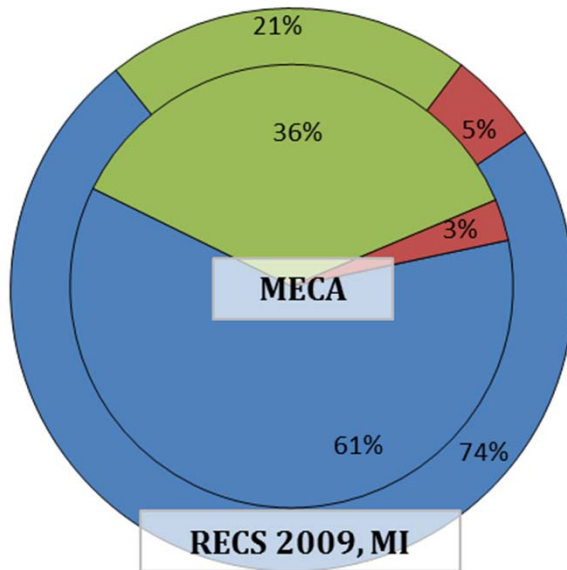


Focus on Energy (WI)

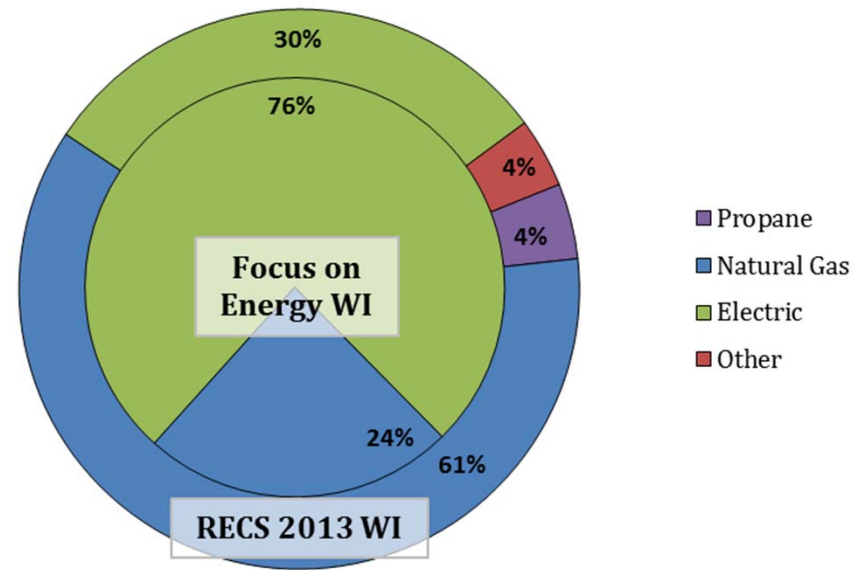


Water Heating

MECA/SEMCO (Michigan)

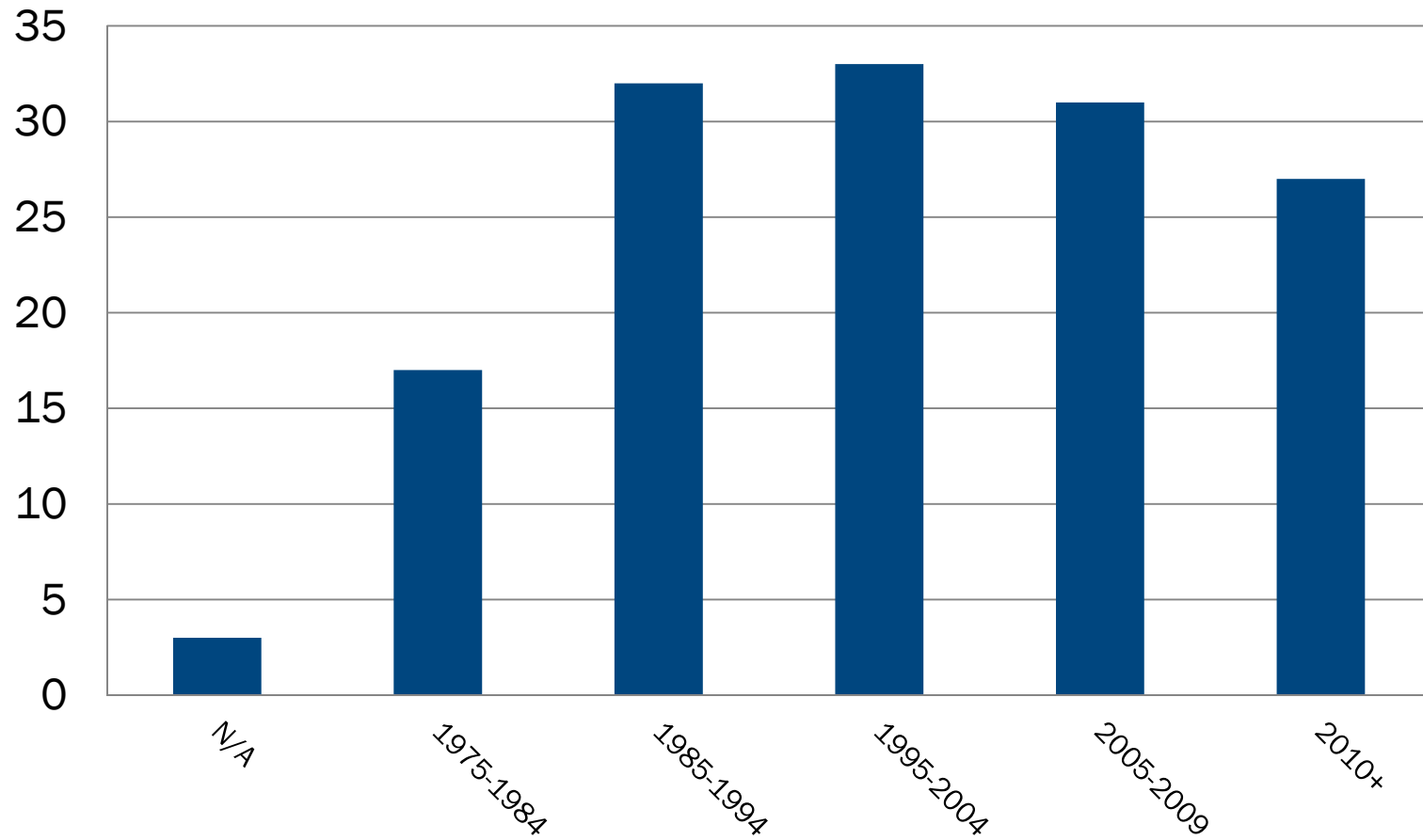


Focus on Energy (Wisconsin)



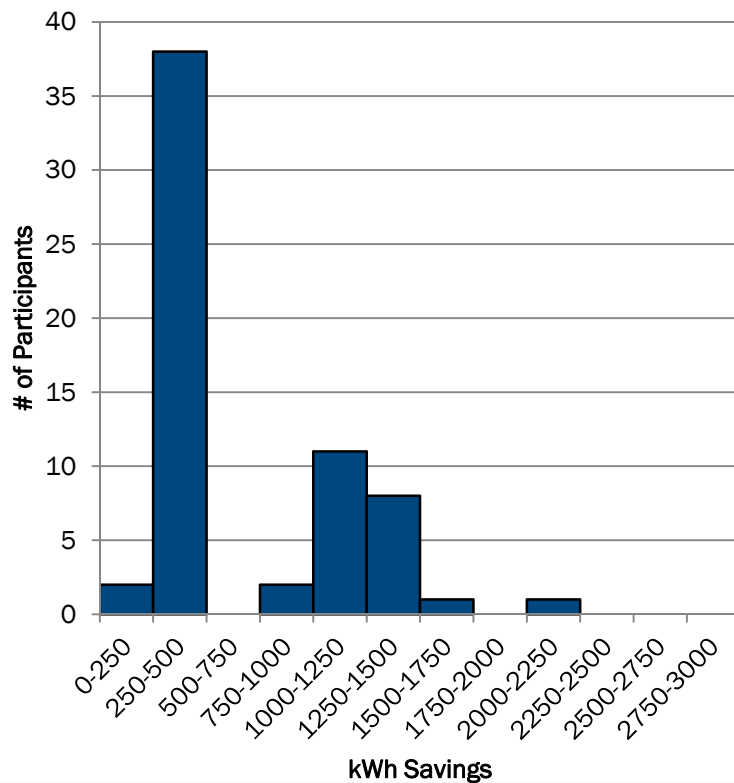
- Propane
- Natural Gas
- Electric
- Other

Furnace Age

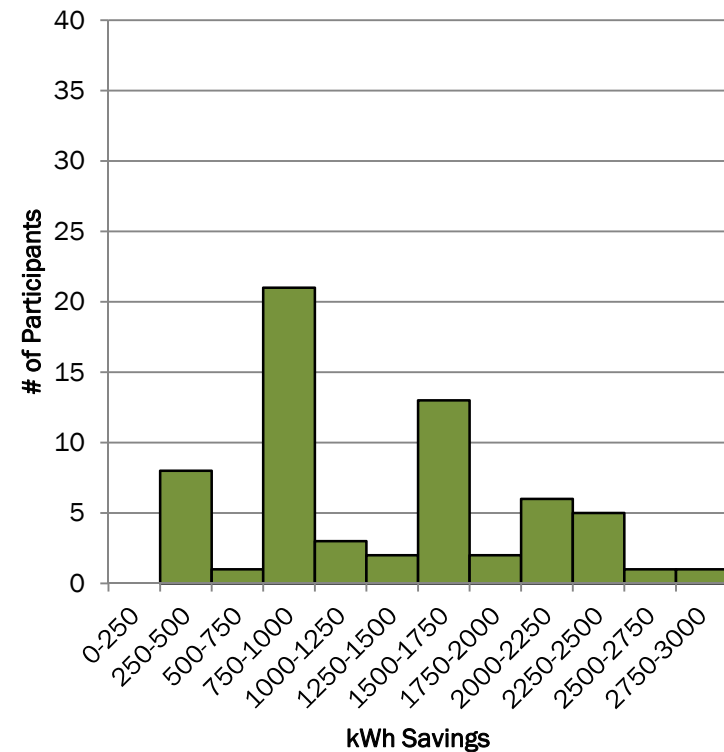


Pilot Participant kWh Savings Michigan Only

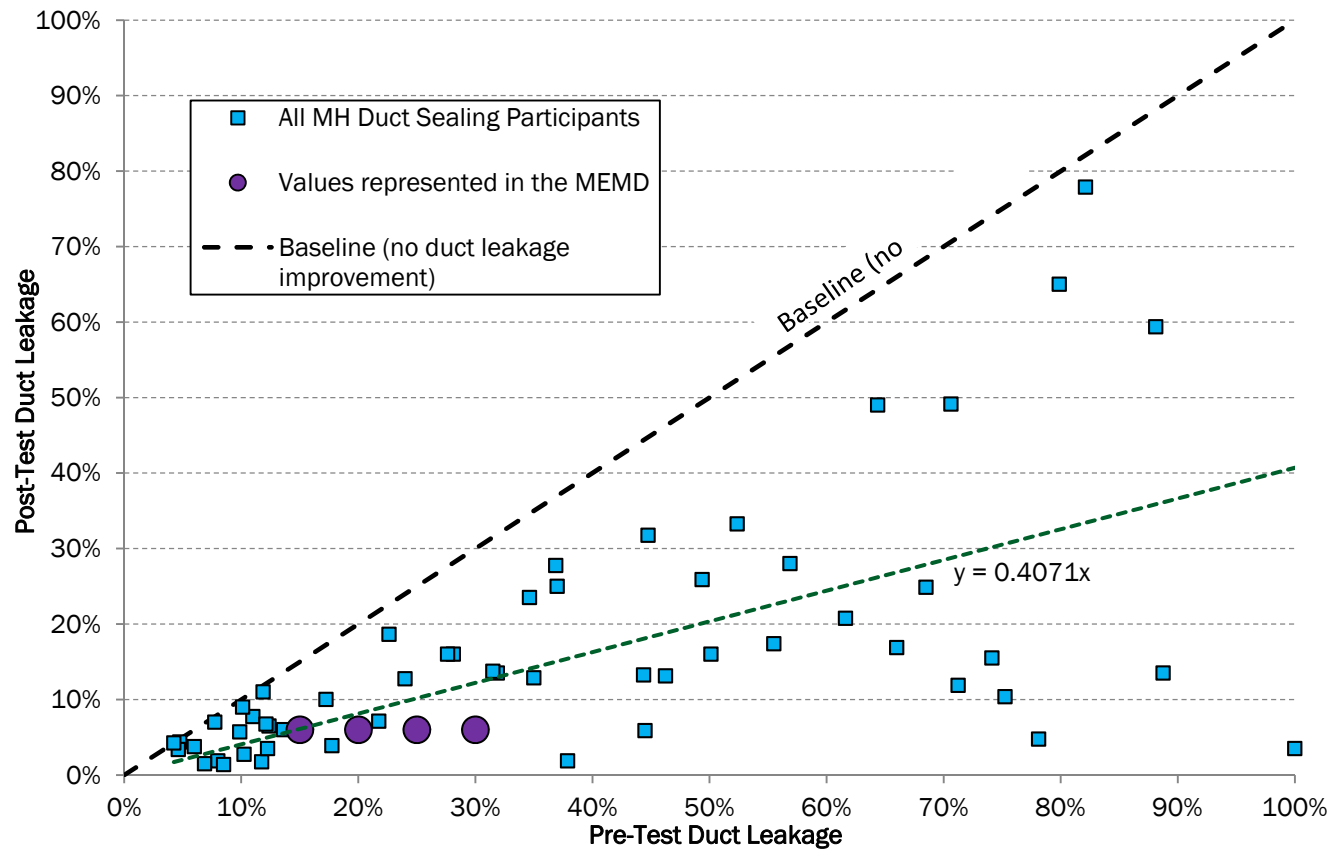
Pilot Participant Savings



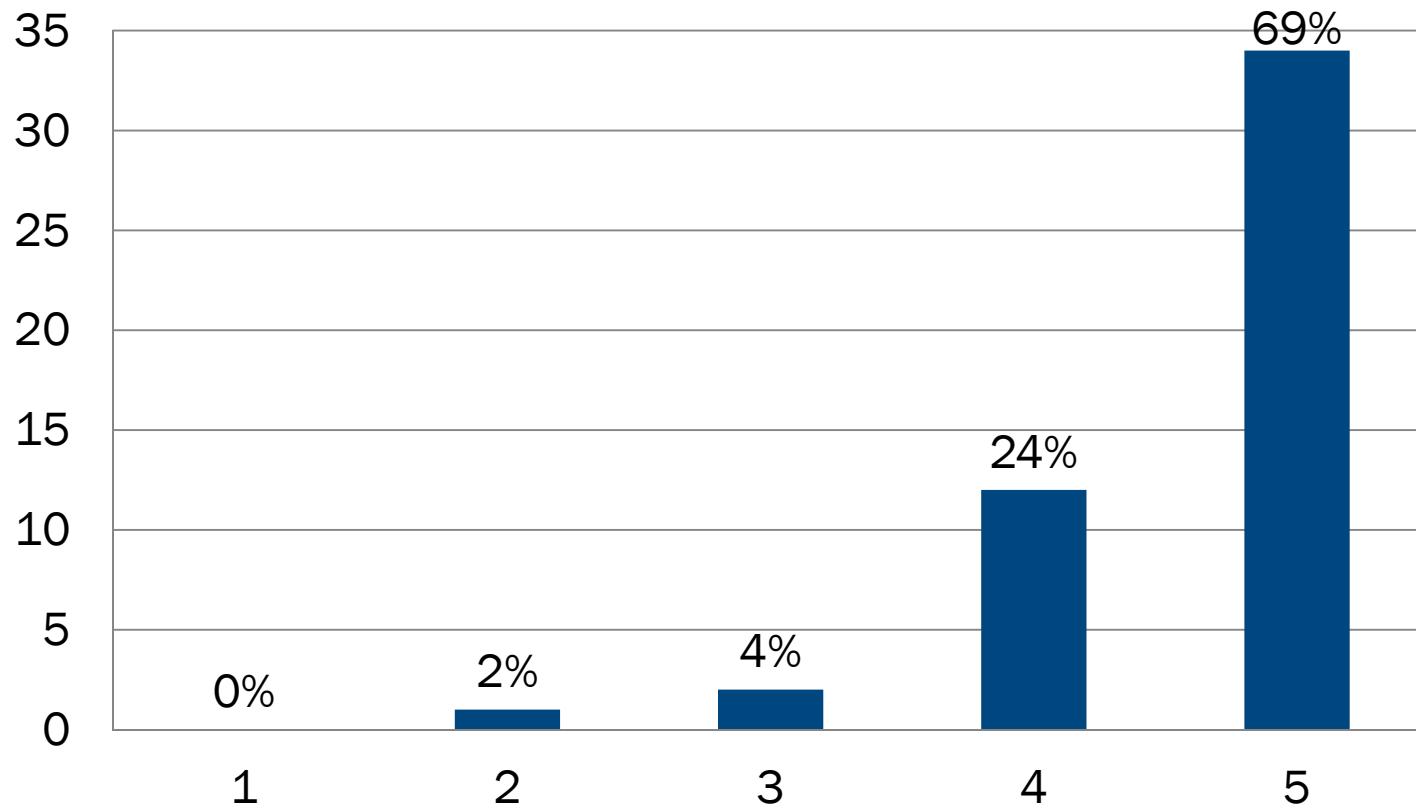
Updated Measures



Duct Leakage Analysis (MI Only)



Customer Satisfaction



Customer Feedback

- “My furnace doesn’t run so much, and the heat seems to be more evenly spread out.
- “I keep the heat set at 68 degrees and the house feels warmer.”
- “Instant relief from the dust and cold.”
- “Much warmer with the heat turned down.”
- “The new showerheads they put in are nice.”
- “Bills went down!”
- “Light bill”

Pilot Results

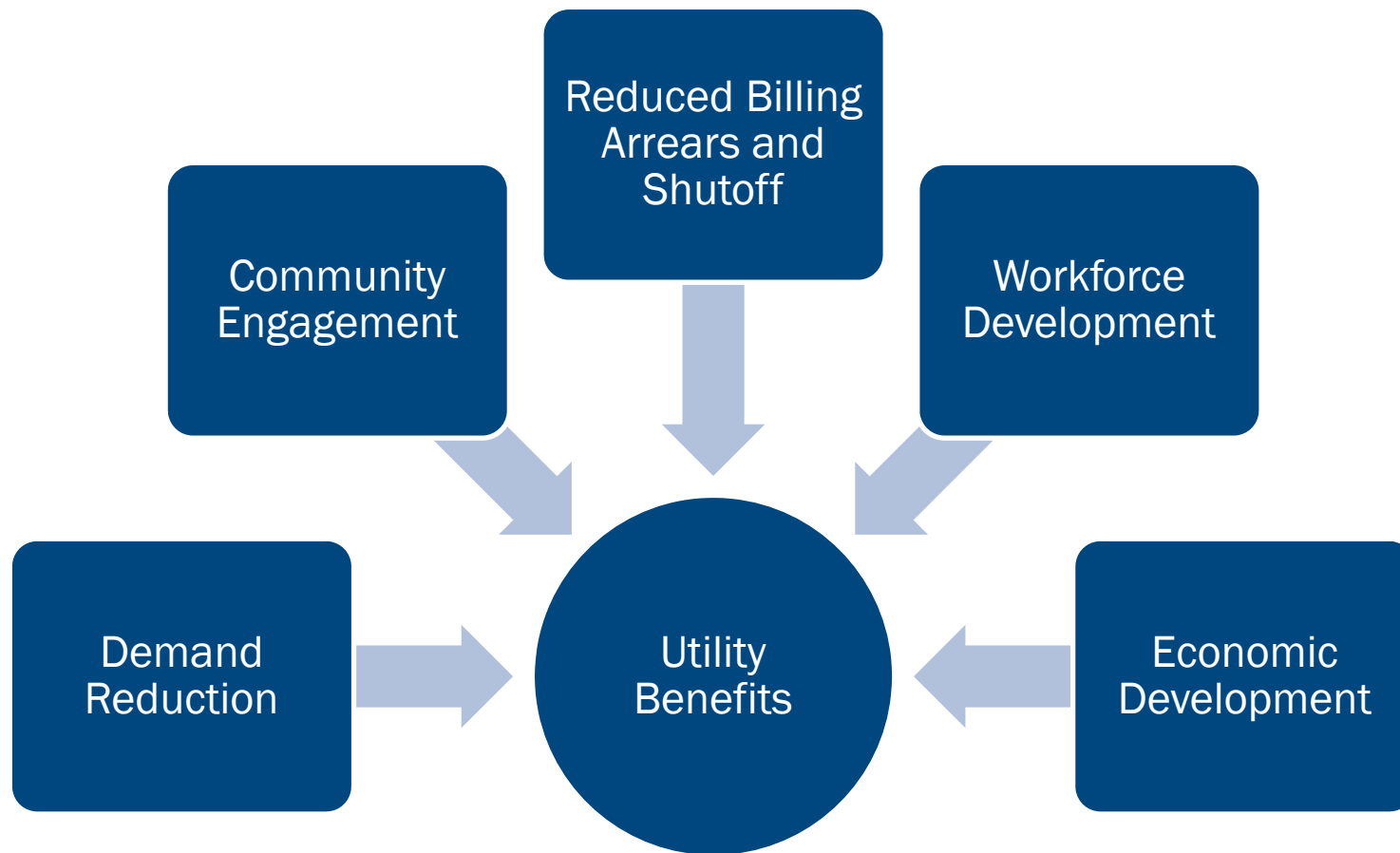
	Michigan (MECA/SEMCO)	Wisconsin (Focus on Energy)
Participants	63 - met goal	79 - exceeded goal
No duct sealing	5	2
Total Annual kWh	41,818 kWh	117,020 kWh
Total Annual therms	9,603 therms	3,823 therms
Avg Annual kWh/home	664 kWh	1,481 kWh
Avg Annual therms/home	152 therms	48 therms

Note: Billing analysis to be completed Q1 2017.

Future Considerations

- Community engagement and recruitment
- Contractor training is valuable
- Customer intake/scheduling process
- Homes have multiple bathrooms
- Geography matters
- To increase electric savings:
 - Target homes with electric water heaters
 - Include ECM and outdoor LEDs to increase average kWh savings per home

Benefits



Next Steps

- Launched as a program in Michigan 2016
- Utility billing analysis for both pilots in Q1 2017
- Explore different program approaches

Questions?

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