

Effective HVAC Solutions for Manufactured Housing

Shannon Stendel

April 26, 2018



Mission

WECC champions and delivers innovative energy initiatives that produce enduring economic and environmental benefits for all.

Who We Work With



Making A Difference

Since 2001, WECC has helped save:

\$1 billion
in energy costs

24 million
Dth of natural gas

7.9 million
MWh of electricity

6.7 million
metric tons of CO₂



That's equal to:

 **1.4 million**
cars taken off the road

626,000 
homes powered for a year

Objectives

- Describe program design and delivery
- Discuss energy and non-energy benefits
- Discuss lessons learned, barriers, and proposed strategies to overcome barriers

Manufactured Home

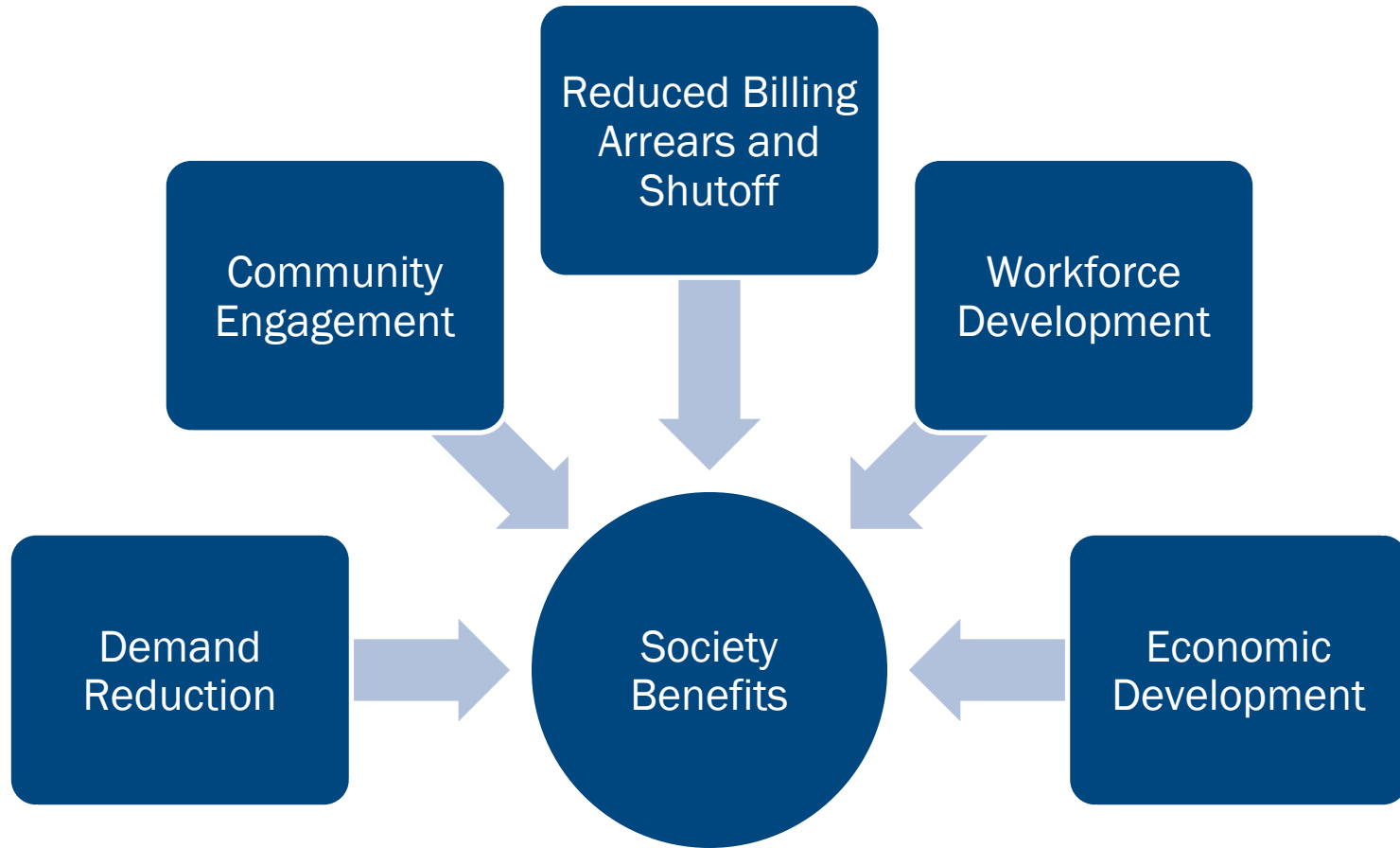
Definition: Single-story, constructed in a factory, wood-frame bolted to steel chassis, designed to be transported.



Why Target Manufactured Homes?



Benefits

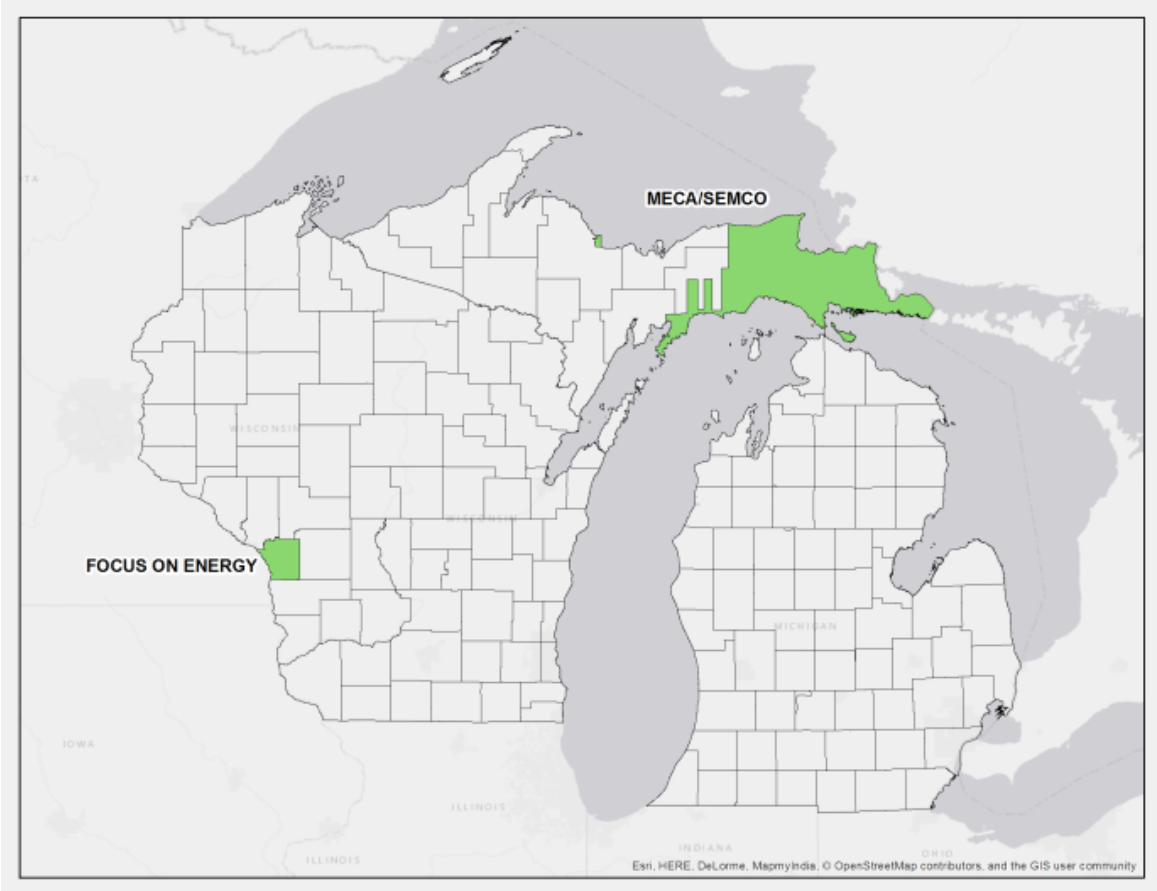


Direct Install Plus Duct and Air Sealing

- 2015: Focus on Energy Pilot
- 2015: MECA/Semco Gas Pilot
- 2016-Today: MECA Program



Pilot Locations



Michigan Market

- More than 249,000 homes – most in Midwest
- Over 10,000 homes in the UP
- Average year built: 1980
- Median value of home: \$35,900
- Owner income twice as much as renter income

Wisconsin Market

- More than 95,000 homes
- Average year built: 1974
- Median value of home: \$30,300
- Owner income twice as much as renter income

Measures

- Interior lighting
- Low flow showerhead
- Kitchen aerator
- Bath aerator
- Water heater pipe wrap
- Exterior LED
- Water heater temperature adjustments



“Plus” Measures

- Duct sealing
- Belly insulation
- Air sealing
- ECM replacement
- Refrigerator replacement



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 today. Call 877.296.4319 today.



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 role of 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 installed a carbon monoxide detector to protect your family from this colorless, tasteless, odorless gas which can develop from sources such as water heaters, 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) by 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 limit the flow of water through the mixing the water with air, but don't worry— aerators will remain the same for incandescents use only 1.5 gallons of water per minute 15 percent less water goes down

SHOWERHEAD

We installed a low-flow showerhead on your shower while limiting the amount of water used in the future. When you use 100 water per minute 15 percent less water goes down



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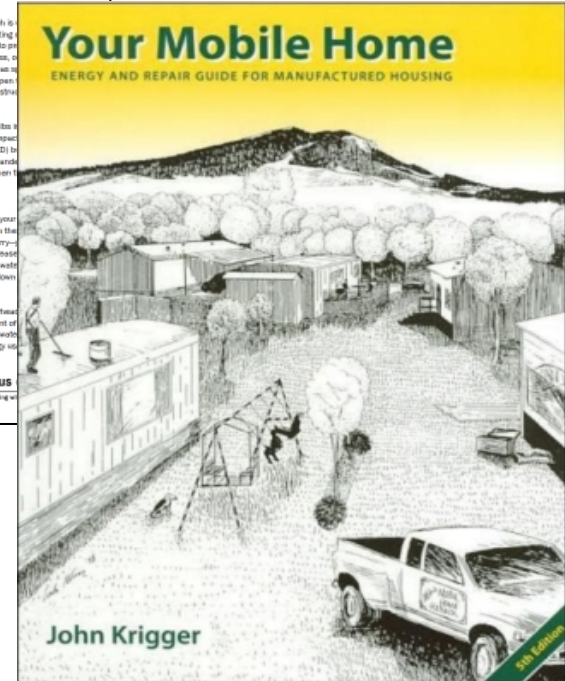
A professional, trained contractor will come to your home to:

- ✓ 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

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: _____



Contractor Training

- Classroom and in-field
- Online refresher course
- Diagnostic testing
- Measure installation best practices
- Customer service



Diagnostic Testing



Pre-Work



Post-Work



Pre-work



Post-Work

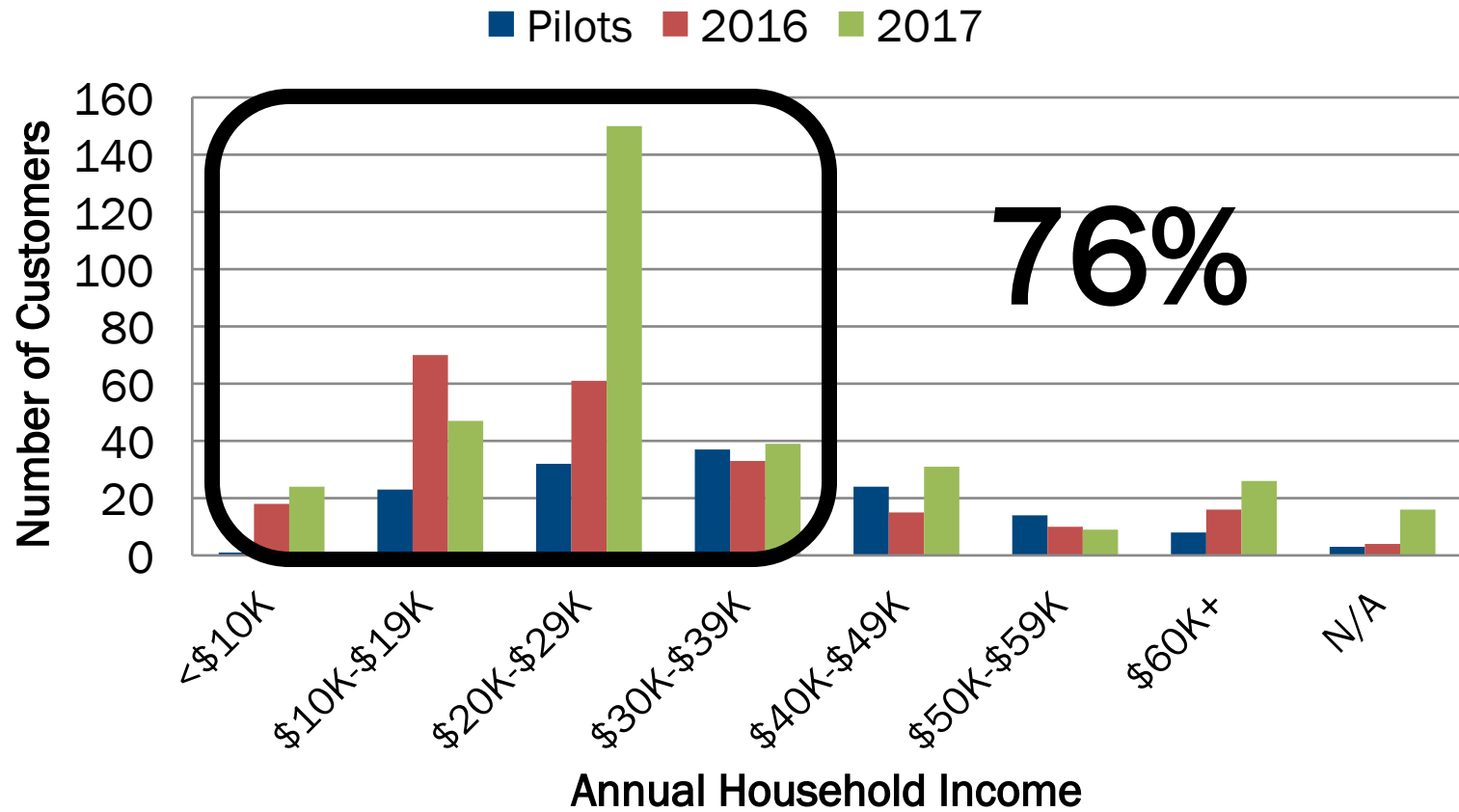


Program QC

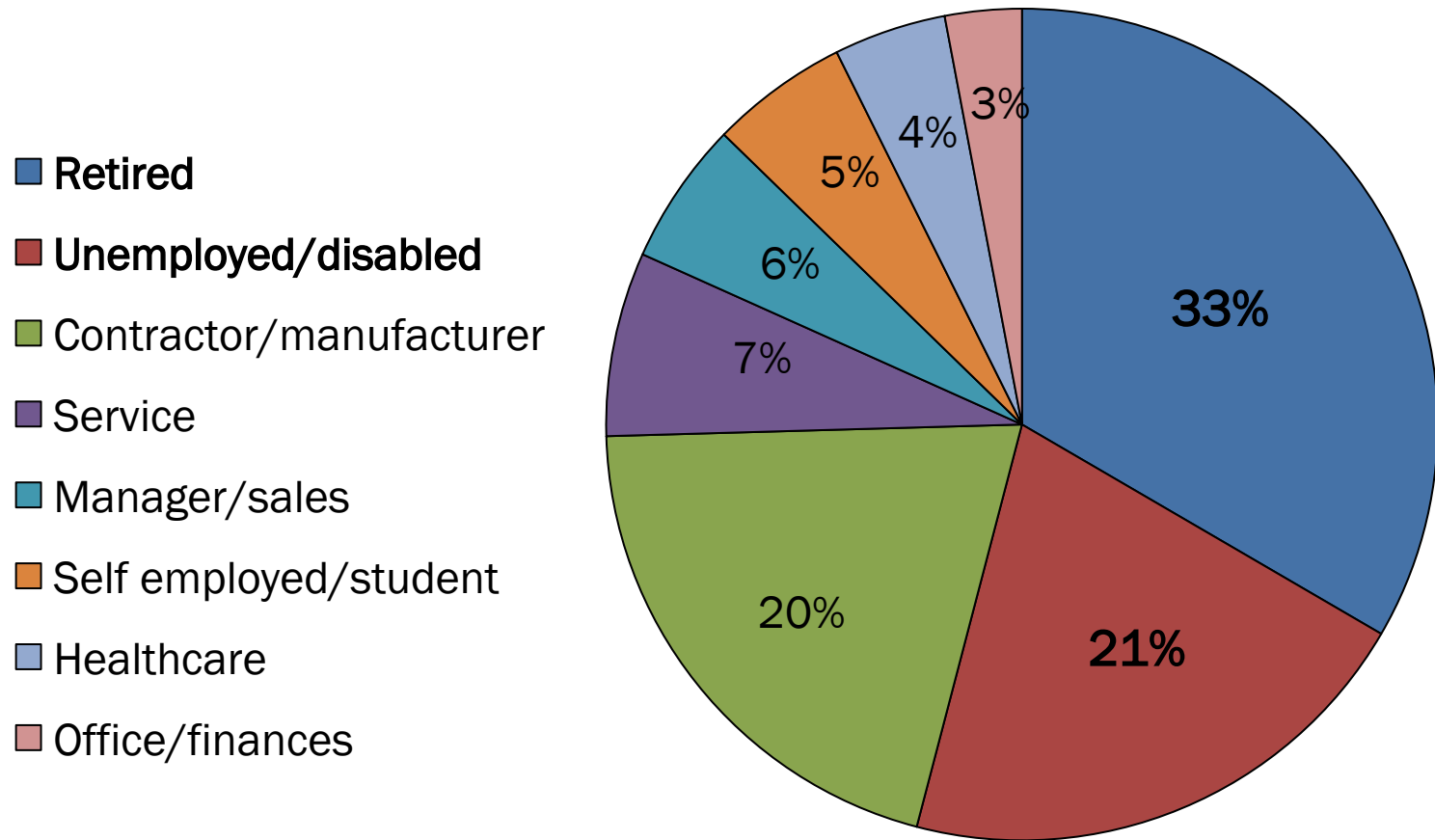
- Satisfaction with quality of work by contractor
- Value of ongoing engagement
- Duct and air sealing



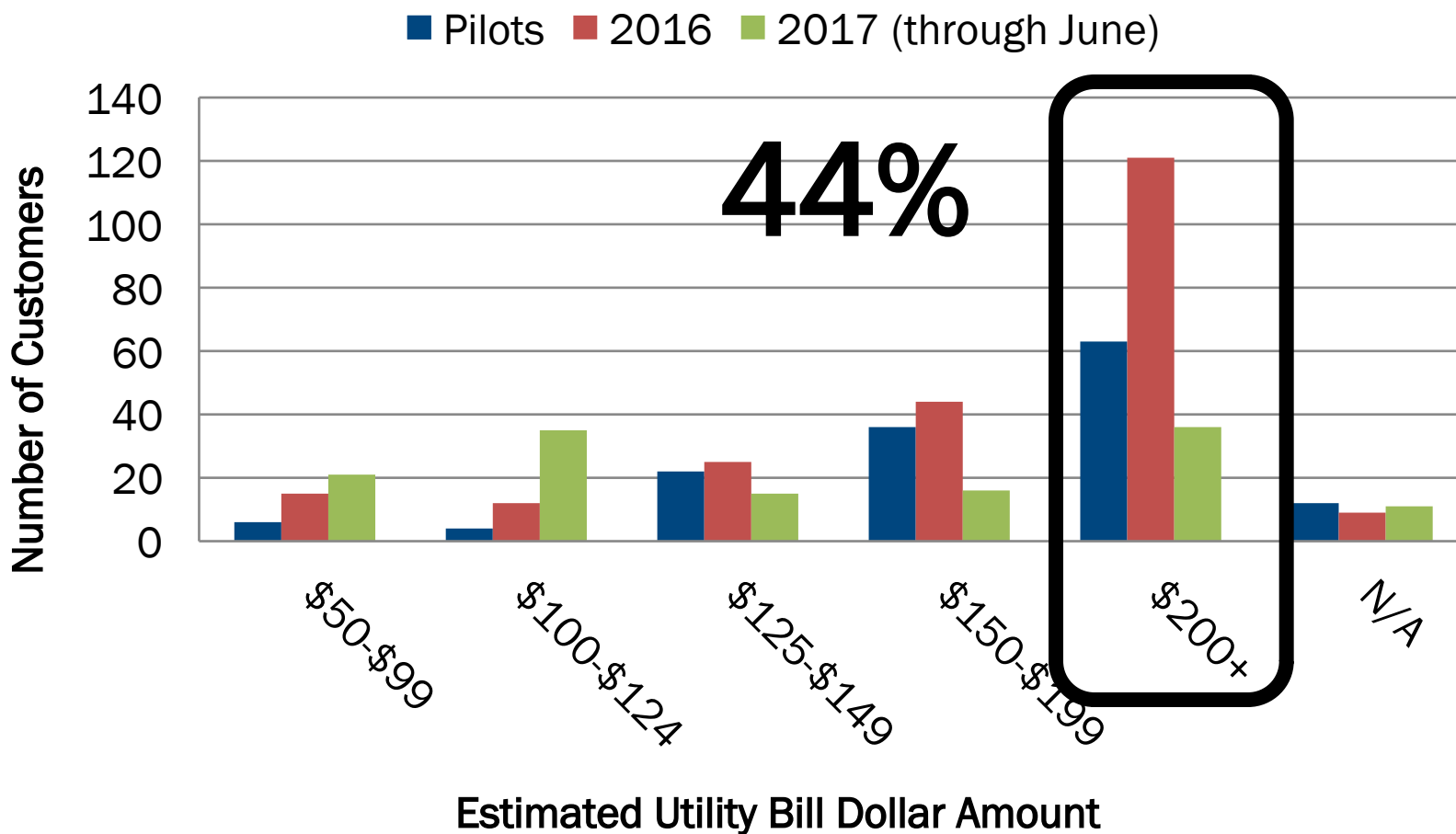
Low Income



Occupation

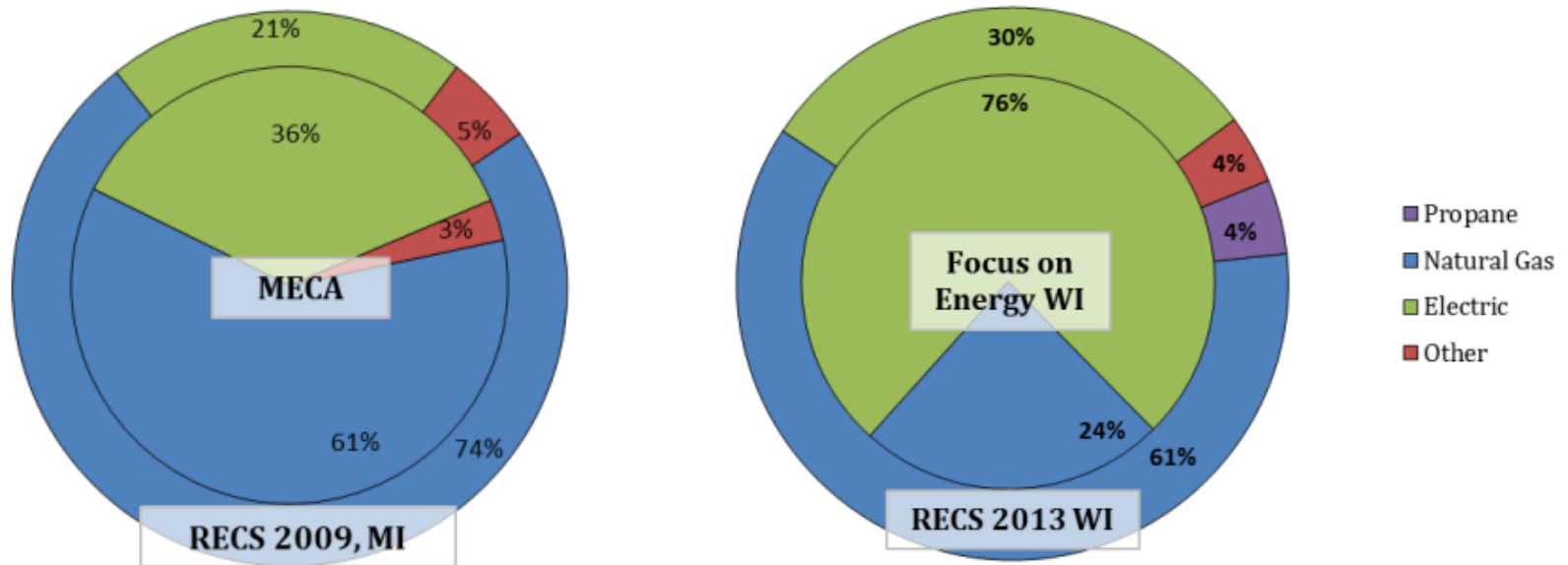


Utility Bills

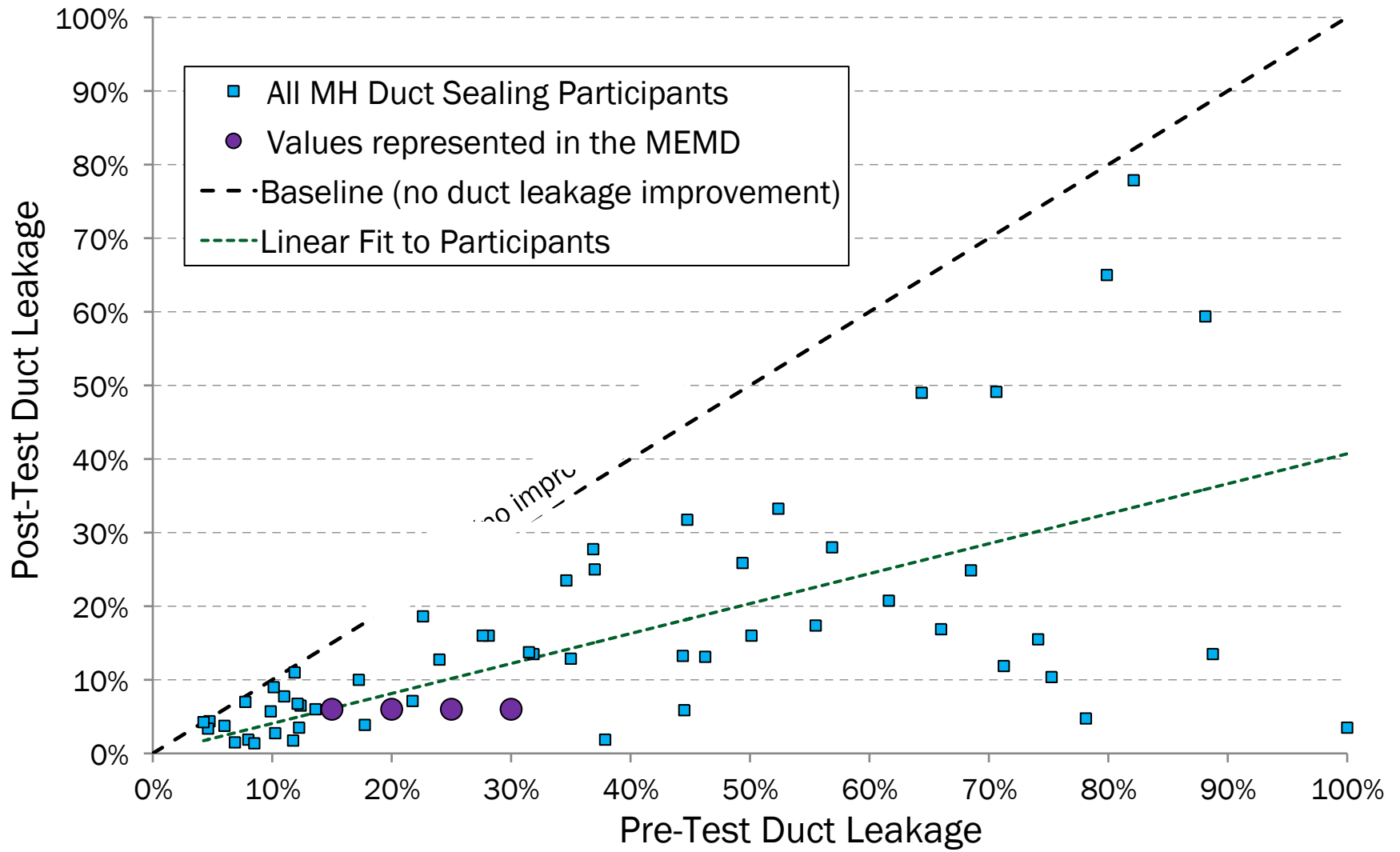


Water Heating

More electric water heating than site built homes



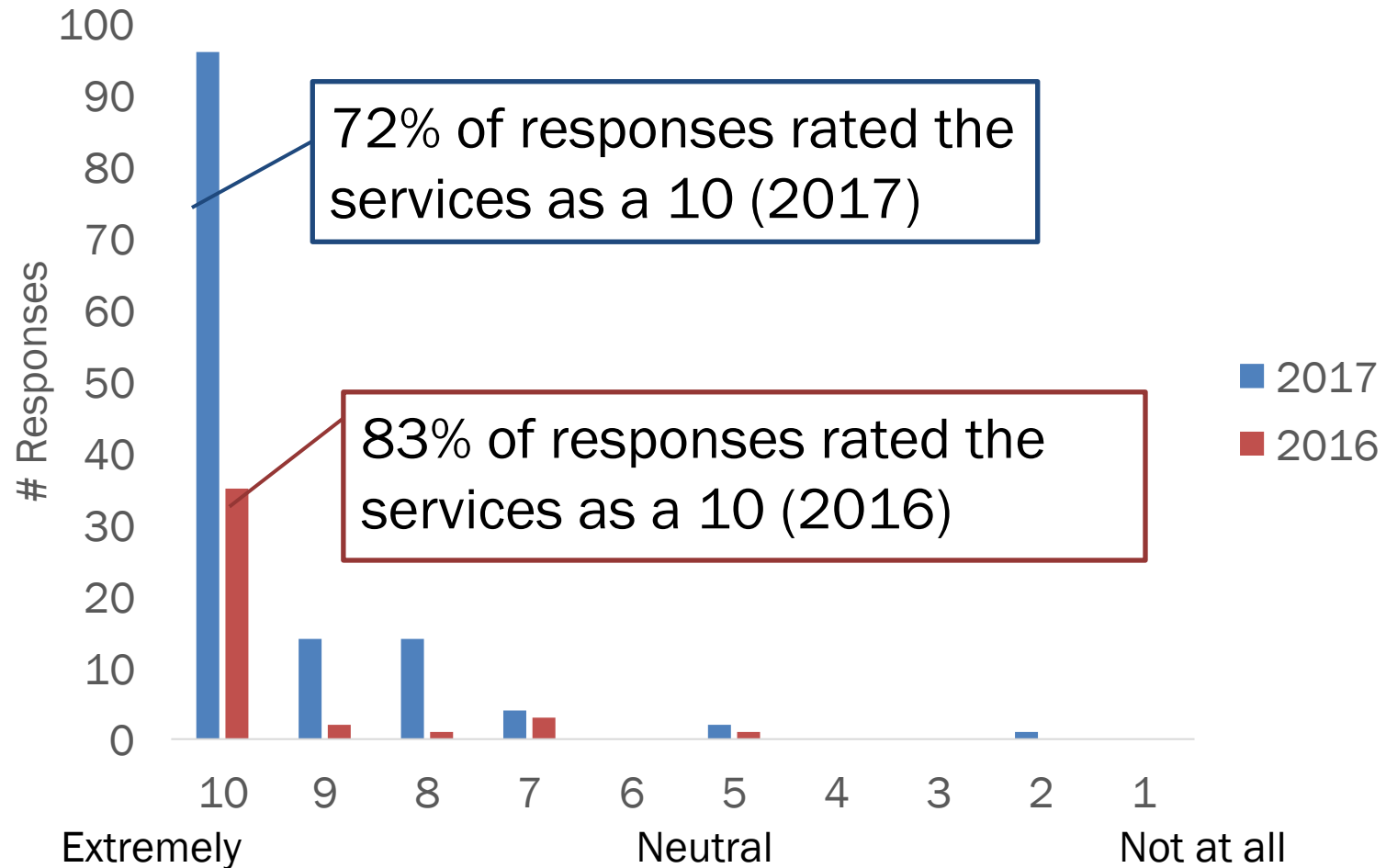
Source: RECS



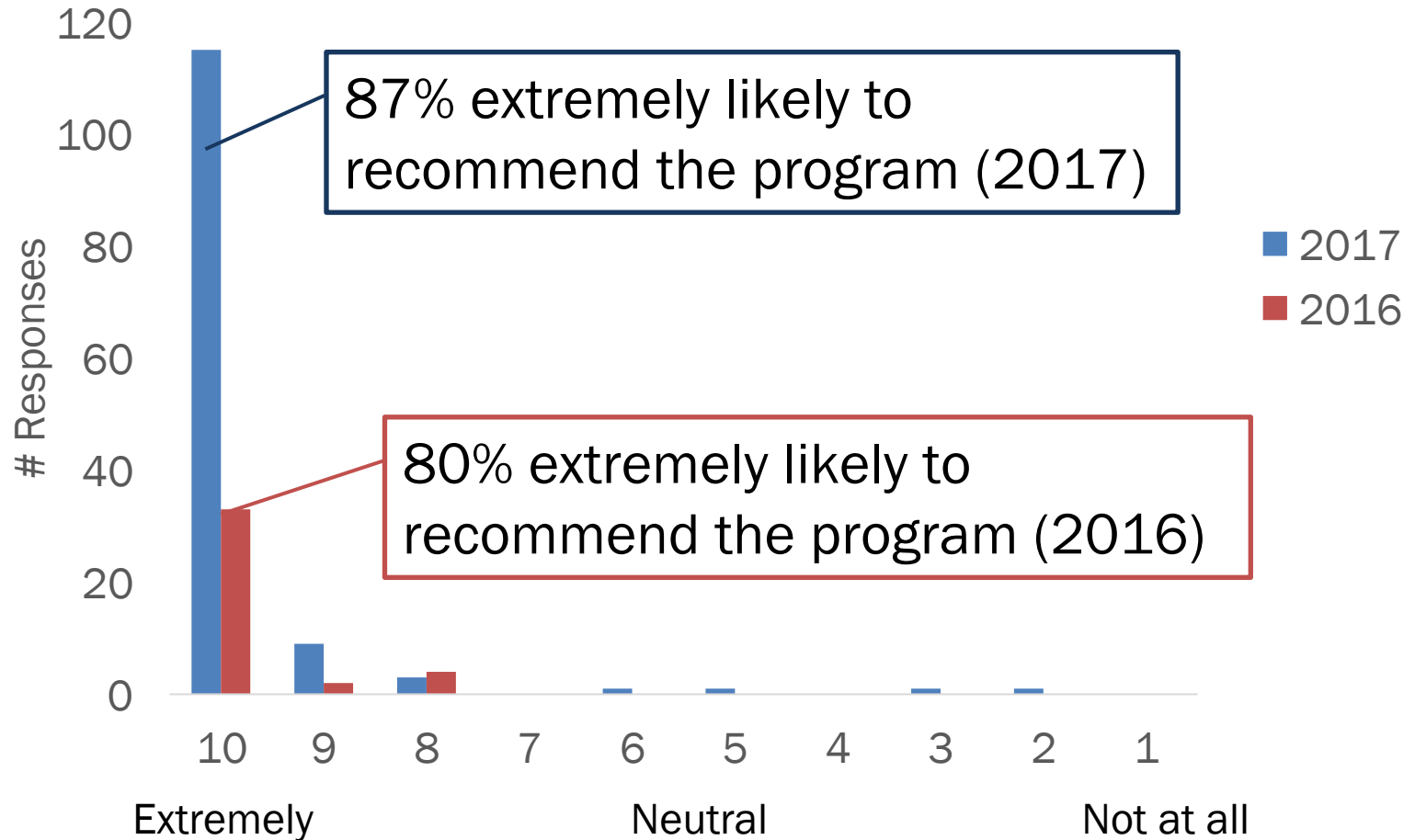
Results

	Michigan Pilot	Wisconsin Pilot	Michigan Program (2016-2017)
Participants	63	79	593
No Duct Sealing	5	2	224
Avg. kWh/home	664 kWh	503 kWh	905 kWh
Avg. therms/home	152 therms	21 therms	Electric Only Program

Program Satisfaction



Recommend to Others



Pilot 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.”
- “Bills went down!”

94% Satisfied or Very Satisfied with the pilots!

Program Feedback

"It was wonderful! I appreciate all the leaks and repairs that were fixed for free. Its so nice to be warm again. Before there was always draft & dampness."

"They did everything allowed for the program, and I know that's going to help with my electric bill."

"I think this is a wonderful program, especially for people like me with low income."

"They were fast and efficient, did great work"

"This program is an answer to prayer! Thank you for this service. The person who came out was very informative and respectful and efficient. She was someone who knew her job and did it well."

Sept 29, 2016

Hello my Name is Bernice Klingler
God Bless you People: I had to men come
to my home around 8:30 From Fremont Mich
Thank you and thank them for what they
did to my home for me. Please tell the
young man, I just loved him. God Bless you
son, you made my Day, I had my Grandson
home with me for the day - you were him and
God should me. David was ok and happy for
me to go on and I'll be home with him soon
I thank you son. We need more men like you
your Uncle is a good man to always
remember you are loved Keep up the Good
work, as for me Please give them a 10 for
me and tell them, Thank you again
for me.

Troy - Jake.
These Boys are
from Fremont Mich

Please Be sure
they can read this
letter. Thank
You.

God Bless you
all

Bernice Klingler
3162 W. Monroe Rd
LOT 53
Hart Mich 49420



Field Operations Assistant





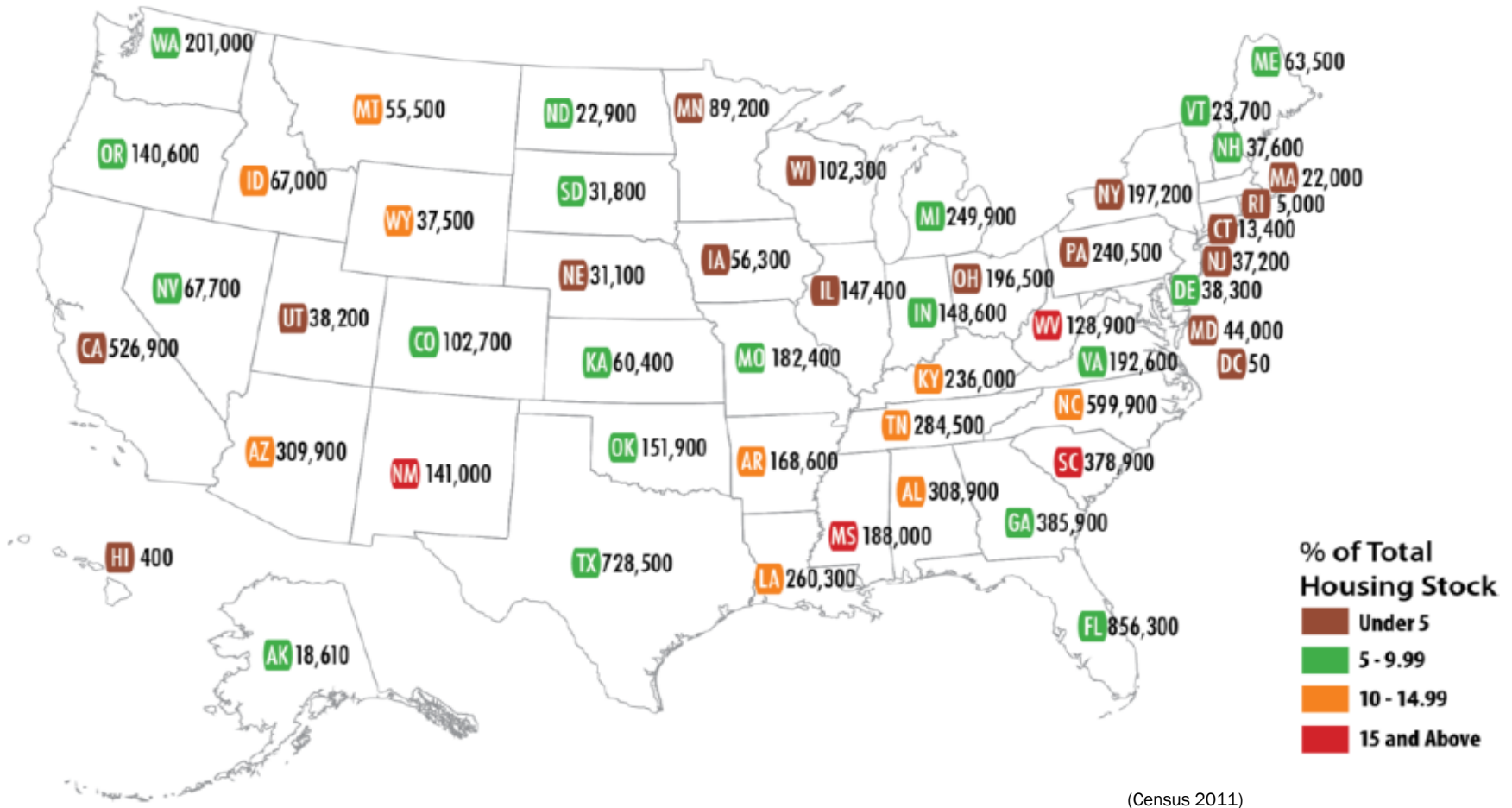
Opportunities

- Direct Install Plus
- Whole House Retrofit with Financing
- Replacement with Financing
- Distributor Refurbishment



Program Design

- Target older homes and high energy users
- Customize design to goals
- Utility partnerships for full savings potential
- Contractor training & QA/QC very valuable
- Potential financing integration



Source: Moody's Economy.com

Thank you!

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