

2013 ACEEE  
National Conference on  
Energy Efficiency  
as a Resource

September 22-24, 2013

Nashville, Tennessee

# Energy Efficiency & the Smart Grid:

Lessons Learned from  
Pilot Programs Designed to Impact  
Energy Efficiency &  
Conservation Behaviors

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# Presentation Purpose

Describe 2 Smart Grid Enabled  
Consumer Behavior Studies

Share Lessons Learned

Discuss Implications for Future  
Program Design

# VEIC Delivering Services with Proven Results

Non-profit with 25 years reducing economic & environmental costs of energy

Comprehensive focus & results –

- Energy Efficiency
- Renewable Energy
- Transportation

Consult -

- Program design, planning, evaluation
- Policy & advocacy
- Research

Implementation – Operate 3 EEU's



# What is a Smart Grid?

Grid with two-way communication between grid/utility & customers/devices connected to it

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Consists of -

- Automated metering infrastructure (AMI)
- Customer-sited digitally controlled appliances, Home Area Networks (HAN)
- Modernized, automated T&D system

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Provides -

- “Real time” collection & communication of 15 minute interval energy use data
- Ability to manage energy use remotely

# What does the Smart Grid enable?

## Grid Level -

- Use of data to segment & target customers in order to manage energy use & shape load
- Ability to manage grid more dynamically, integrate EE, RE, Electric Vehicles



# What does the Smart Grid enable?

## Grid Level -

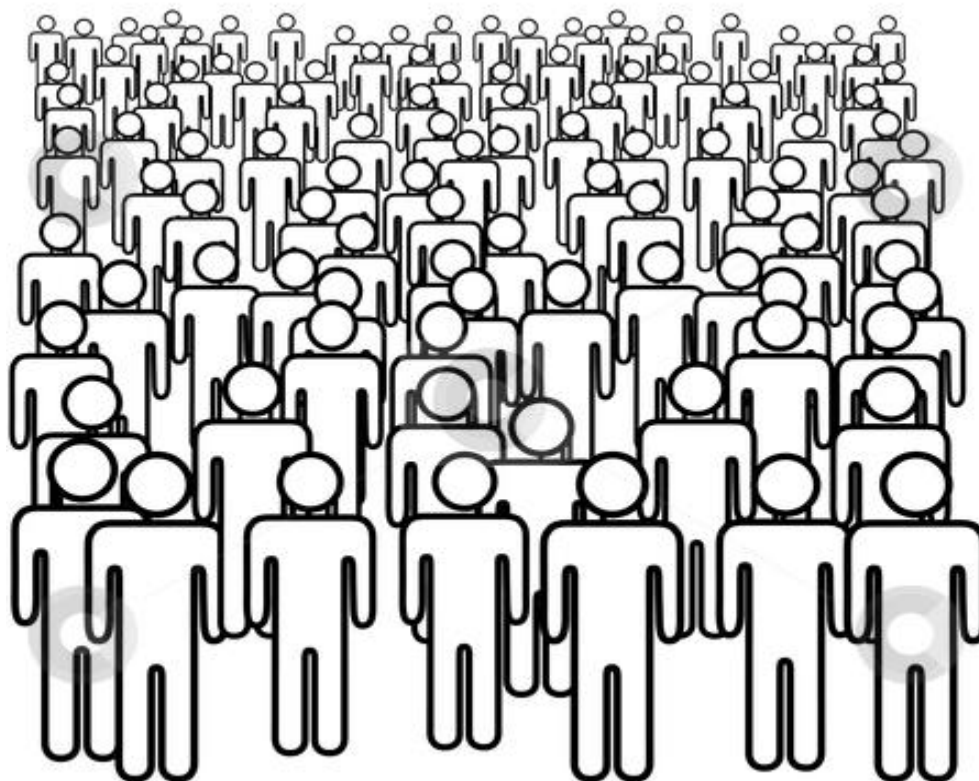
- Use of data to segment & target customers in order to manage energy use & shape load
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## Customer Level -

- Ability to see how behavior affects energy use
- Ability to identify energy savings options based on customer-specific information

## VEIC's Question:

Can Smart Grid Data & Enhanced Customer Communication Increase EE by Changing Behavior?



# VEC Consumer Behavior Study

## VT Smart Grid Infrastructure Grant



U.S. DEPARTMENT OF  
**ENERGY**



- Total grant \$139 M
- CBS \$1.5M, 1 of 9 nationwide
- Collaboration with Vermont Electric Cooperative (VEC)
- Rural coop, 35,000 customers
- 98% AMI Penetration ('05-'12)
- Participants of all income levels
- Randomly selected

# VT Low Income WIPP Consumer Behavior Study

## Weatherization Innovation Pilot Program

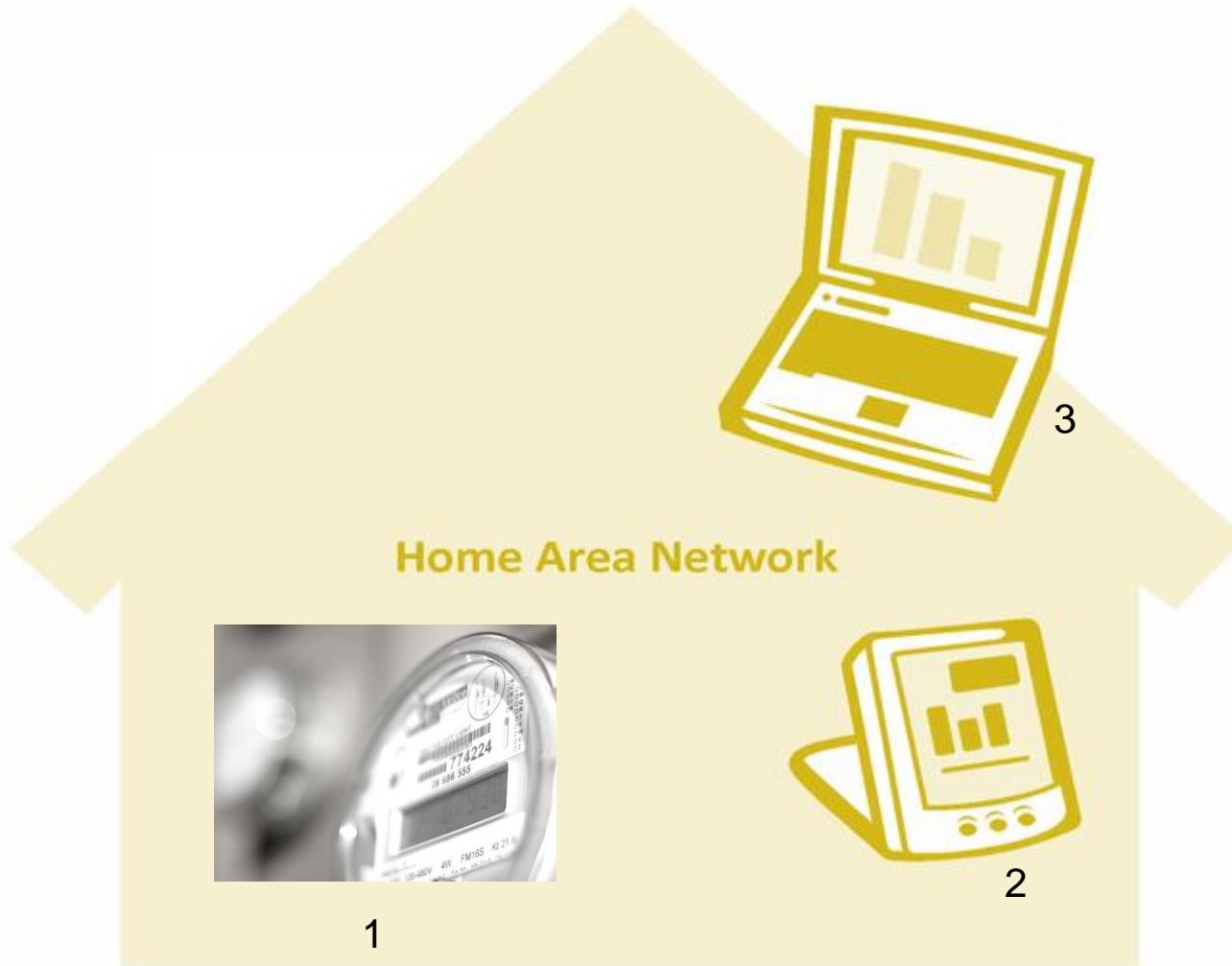


U.S. DEPARTMENT OF  
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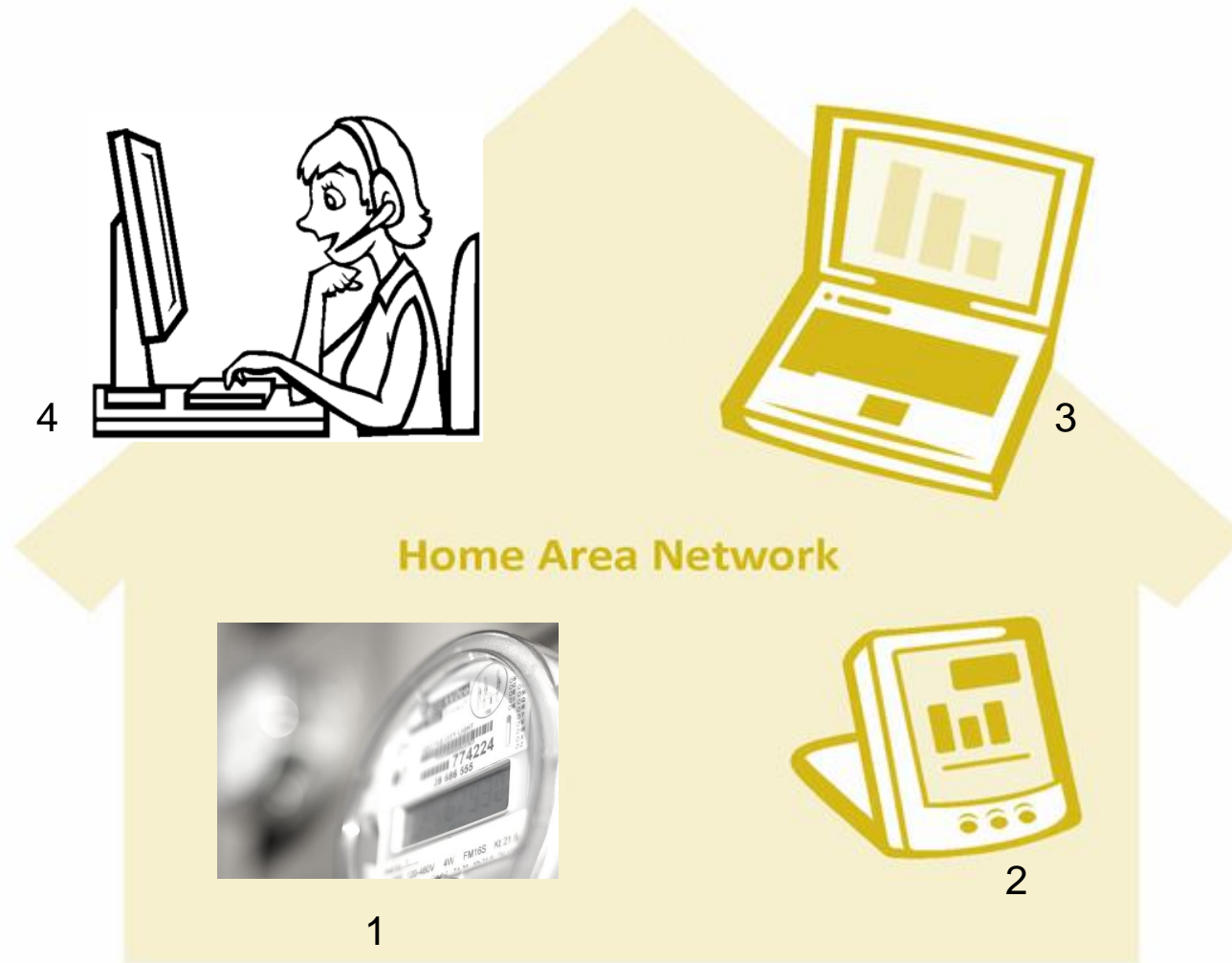


- 1 of 16 nationwide
- Collaboration with Central Vermont Office of Economic Opportunity (CV OEO) and State of Vermont
- Participants low income WAP & LIHEAP customers
- Geographically dispersed
- Served by multiple utilities

# Consumer Behavior Study Components



# Consumer Behavior Study Components



# Proactive Customer Service



- Telephone (VEC & WIPP)
  - Up to 6 outgoing phone calls
  - Ongoing support as needed

## Welcome & Thank You

As a participant of the consumer behavior study with Efficiency Vermont, Vermont Electric Co-Op, and the U.S. Department of Energy, you've been subscribed to this special monthly newsletter containing project updates, ideas for saving energy, and personal anecdotes from your fellow participants.

By now, you have most likely:

- spoken with your Efficiency Specialist;
- checked out your [web portal](#); and
- set your personal energy savings goal for the year.

Maybe you're using energy differently already. To keep track of how you're doing, try checking your web portal at least once a week. It's amazing how small shifts can have a big impact over time.



In closing, we'd like to extend a big Thank You. By taking the time for this study, you're helping to ensure that this technology benefits you—the customer—as it's implemented throughout Vermont and the rest of the United States. The lessons we learn over the next year/2 years will have a lasting impact on our shared energy future.

Thank you. Questions? Call us at 888-921-5990 or email us at [vecstudy@efficiencyvermont.com](mailto:vecstudy@efficiencyvermont.com)

To stop receiving these at any time, simply click the "Unsubscribe Me" link at the bottom of this email.



"In speaking with my Efficiency Specialist, Kathleen, I realized that we have far more electrically-powered devices in our home than I thought. I'll be interested to see if knowing the details our monthly usage information can help us reduce what we spend on electricity."

- Teri Geney, Grand Isle, Vermont

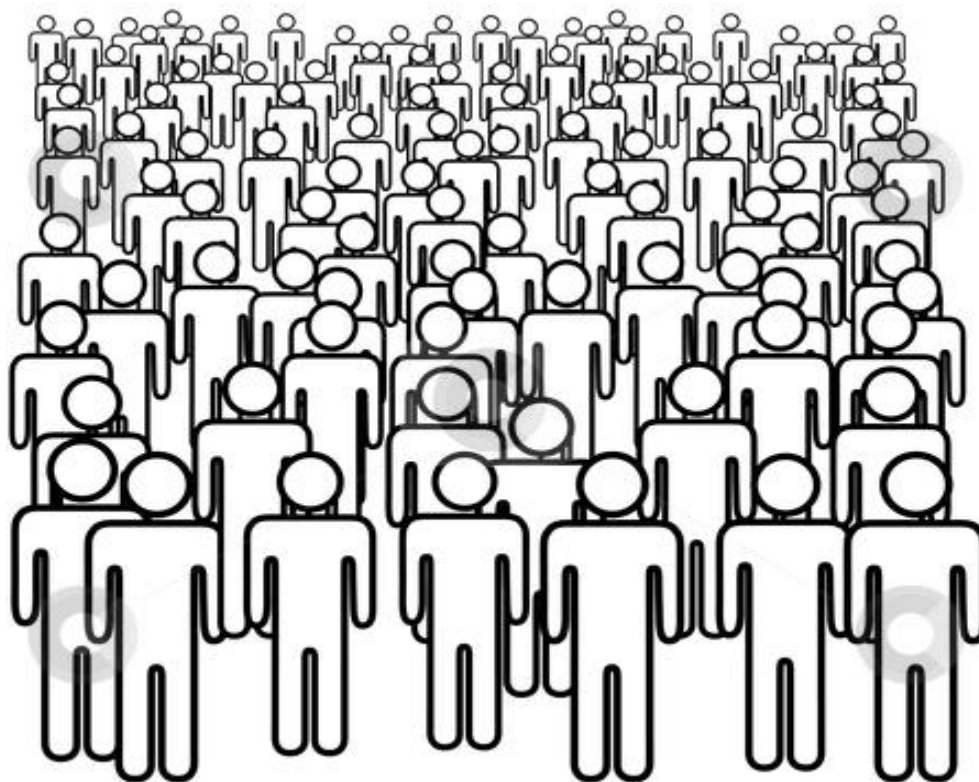
## TRY THIS TIP

Spring cleaning? Don't forget to clean the coils beneath your refrigerator. Aside from helping your fridge [work more efficiently](#) (and less expensively), regular cleaning can extend the life of your appliance.

Of course, if your refrigerator was made before 1993, you'd likely save even more money by looking for a new energy-efficient model. [Learn More.](#)

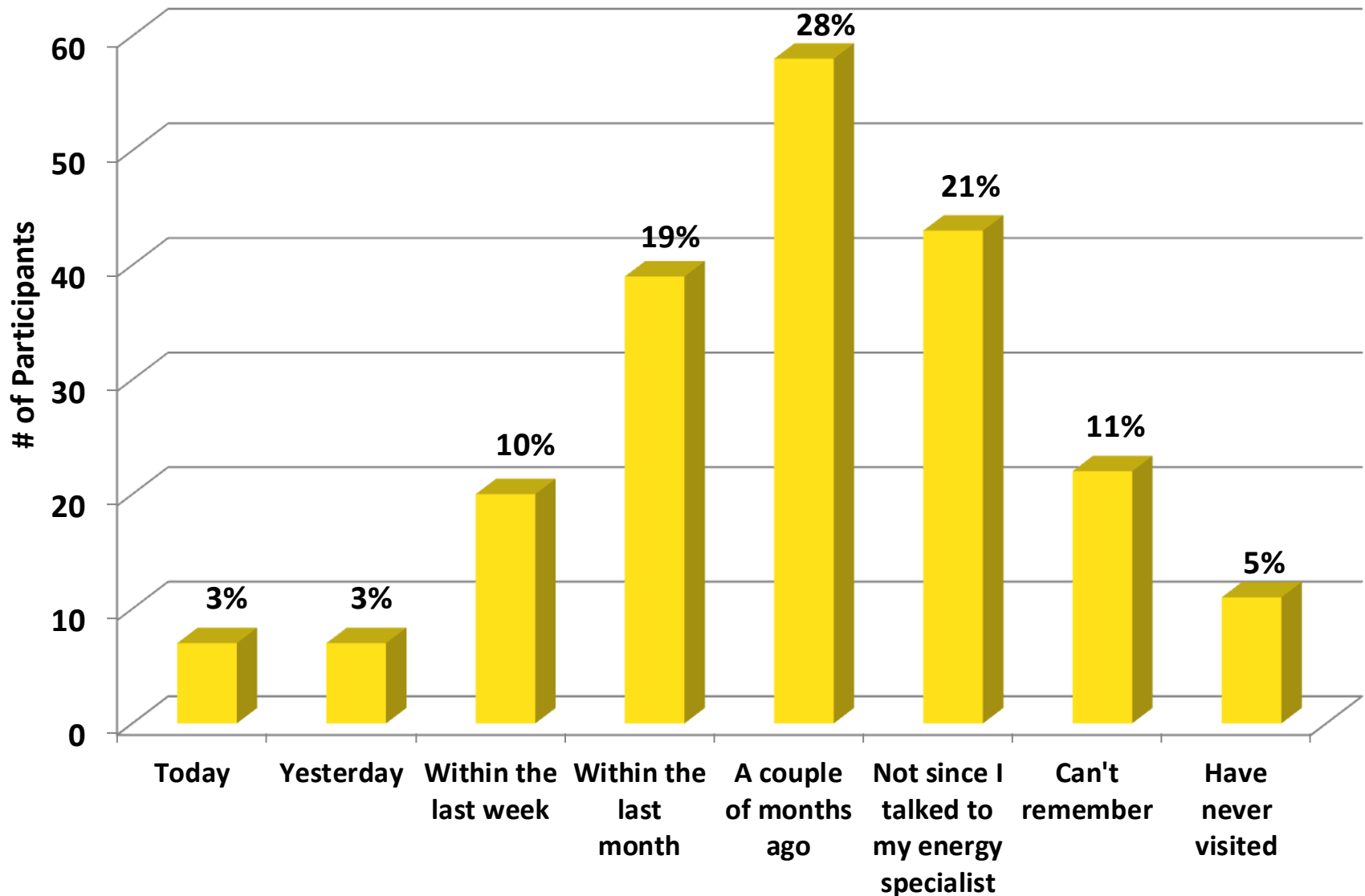
- Site Visits (WIPP)
  - 1-2 site visits over 12 months
  - 1-2 follow-up phone calls
  - Ongoing support as needed
- eNewsletter & Email Support (VEC & WIPP)
- Outreach timed with deployment (as best we could)

# What Are We Learning from Customer Surveys?

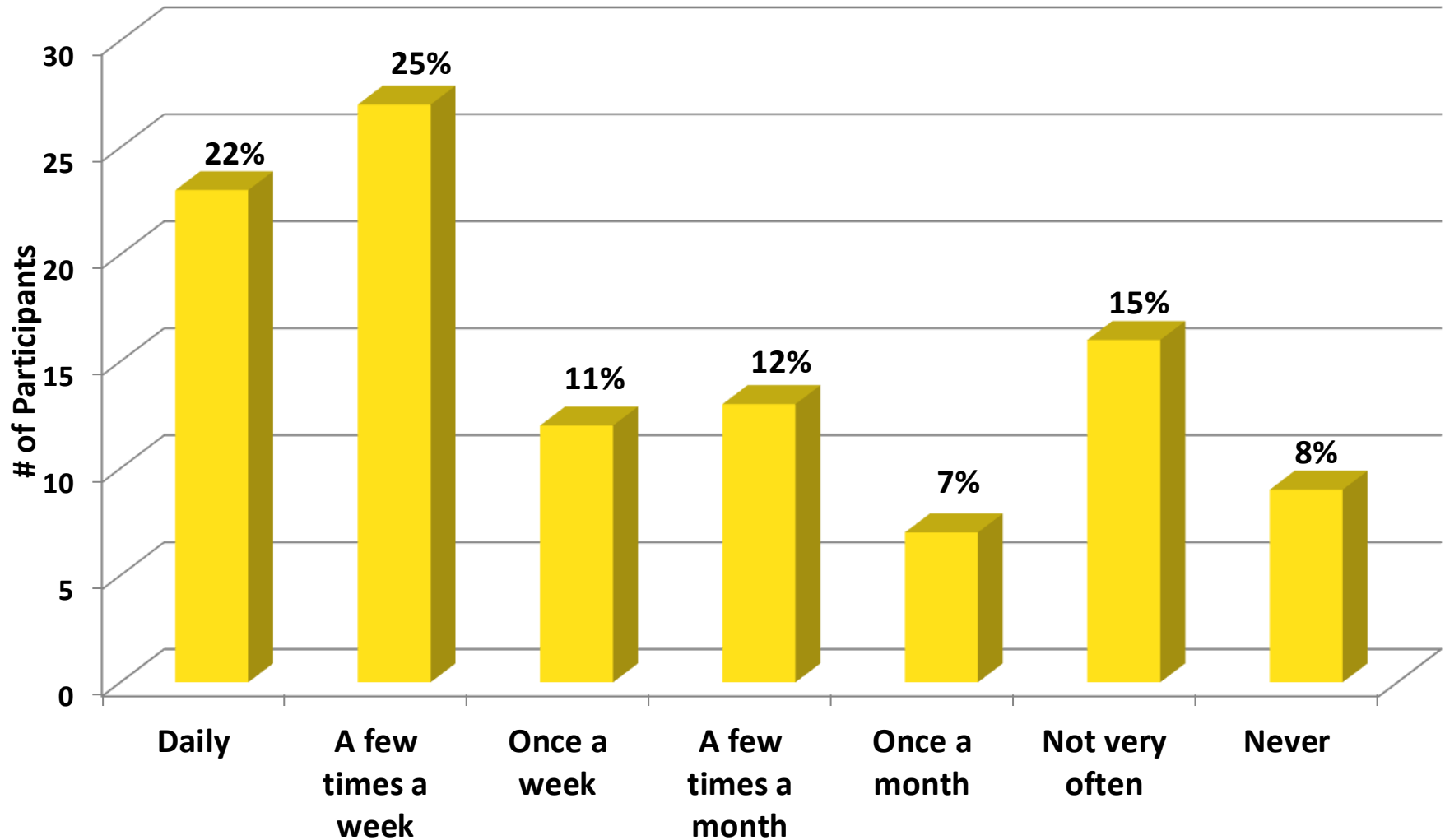




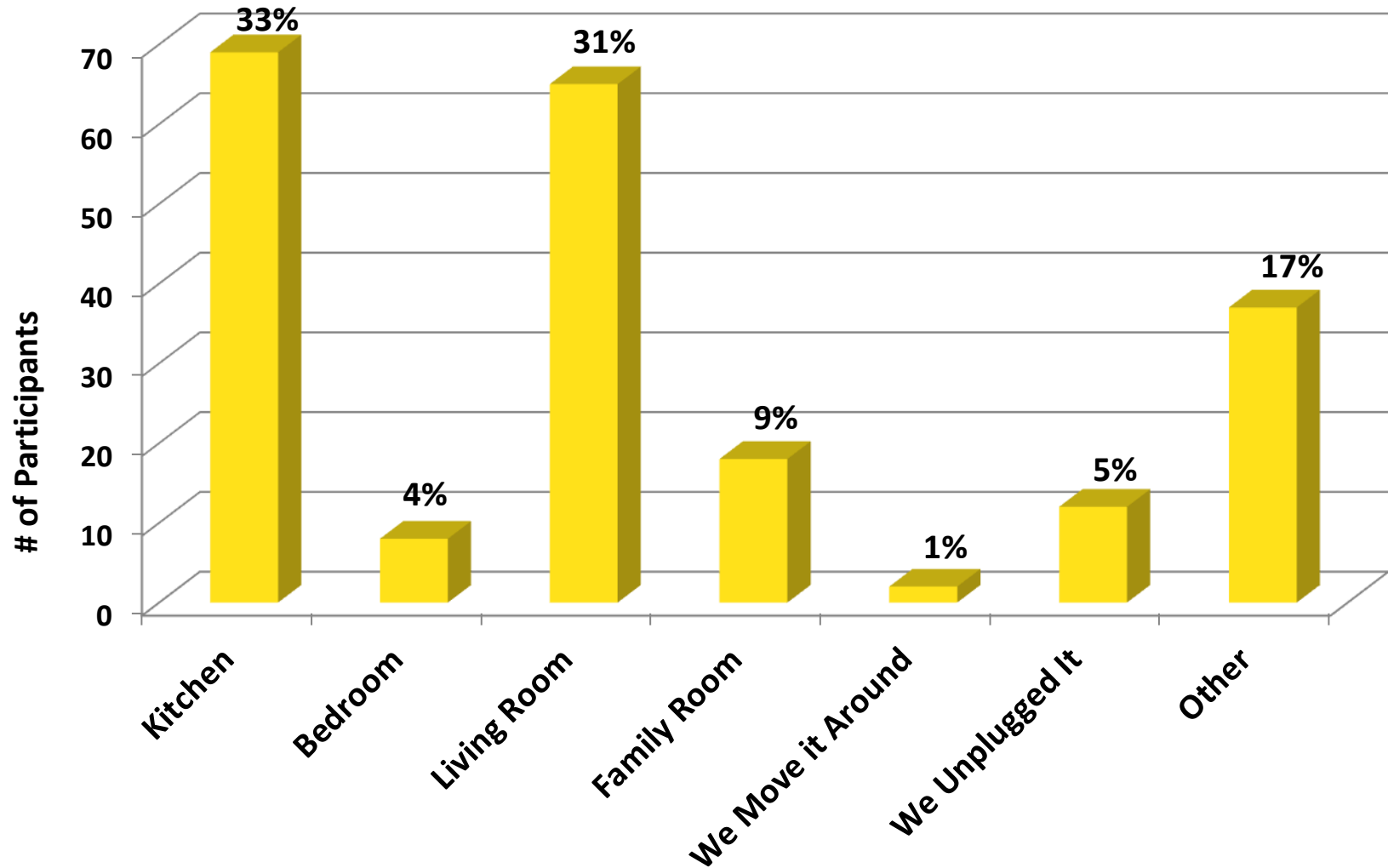
# When was the last time you visited the web portal?



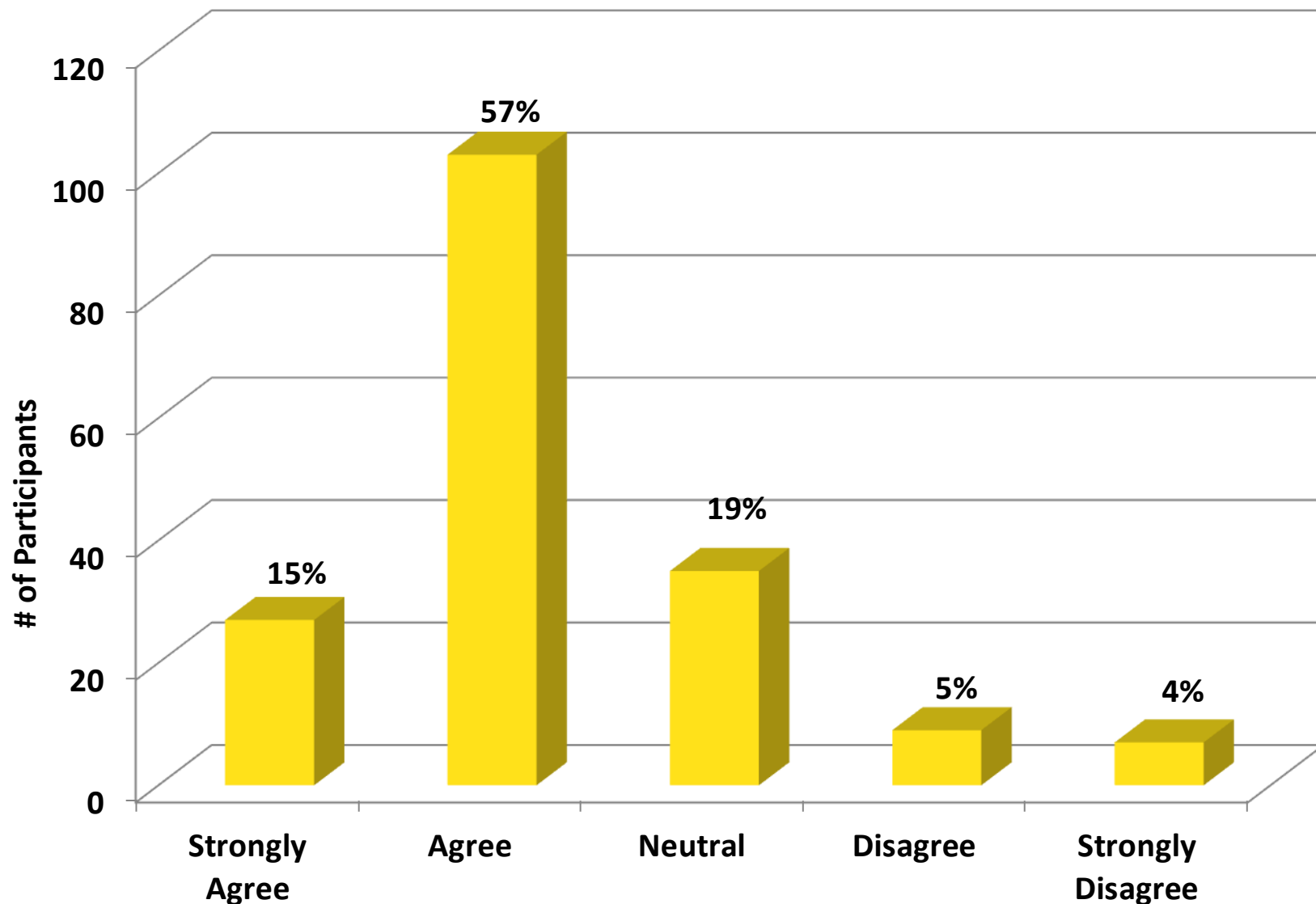
# How often do you check your in-home display?



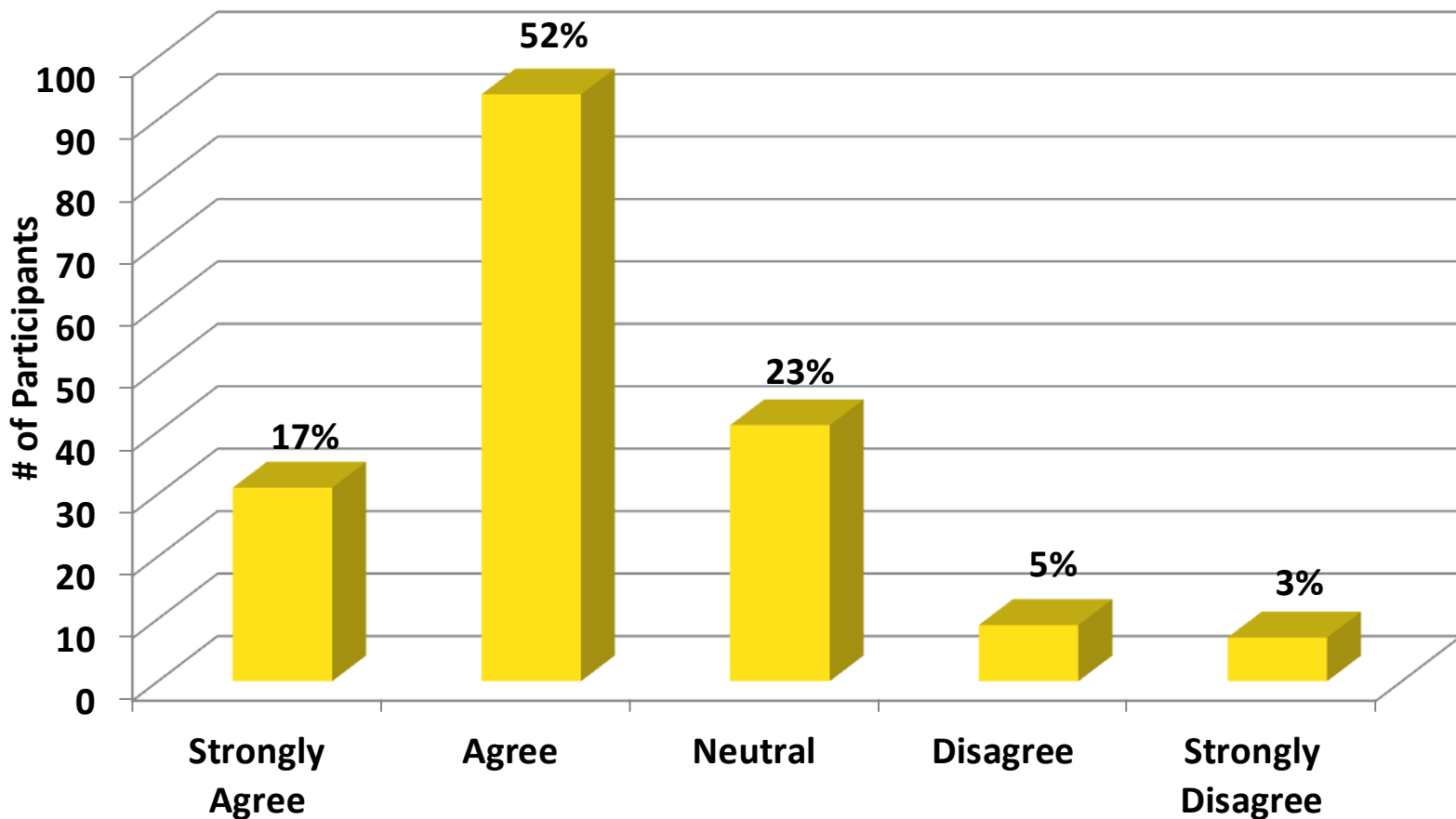
# Where is your in-home display located?



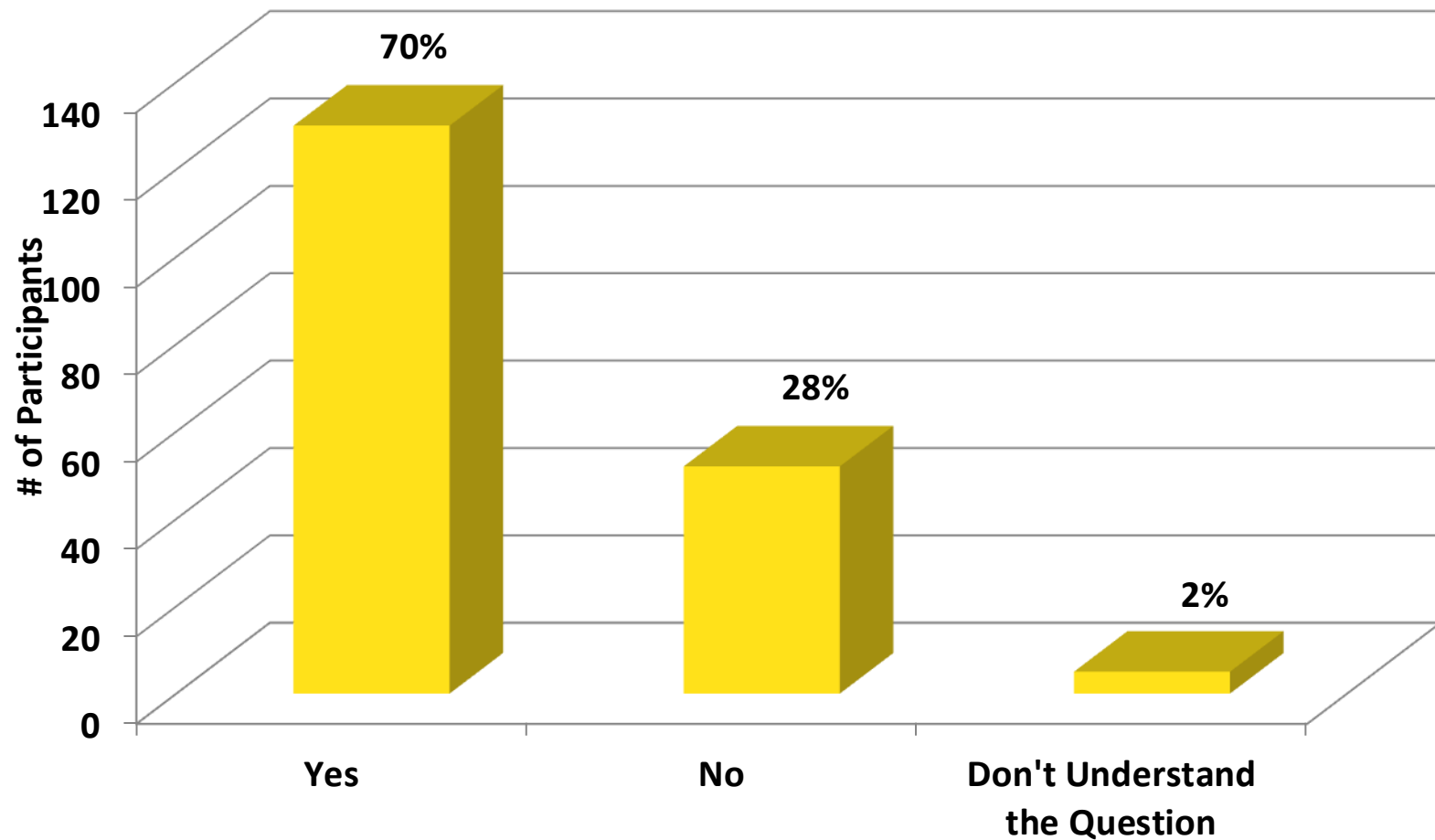
# Has your energy specialist helped you save electricity?



# Did your energy specialist motivate you to make changes that will save electricity?

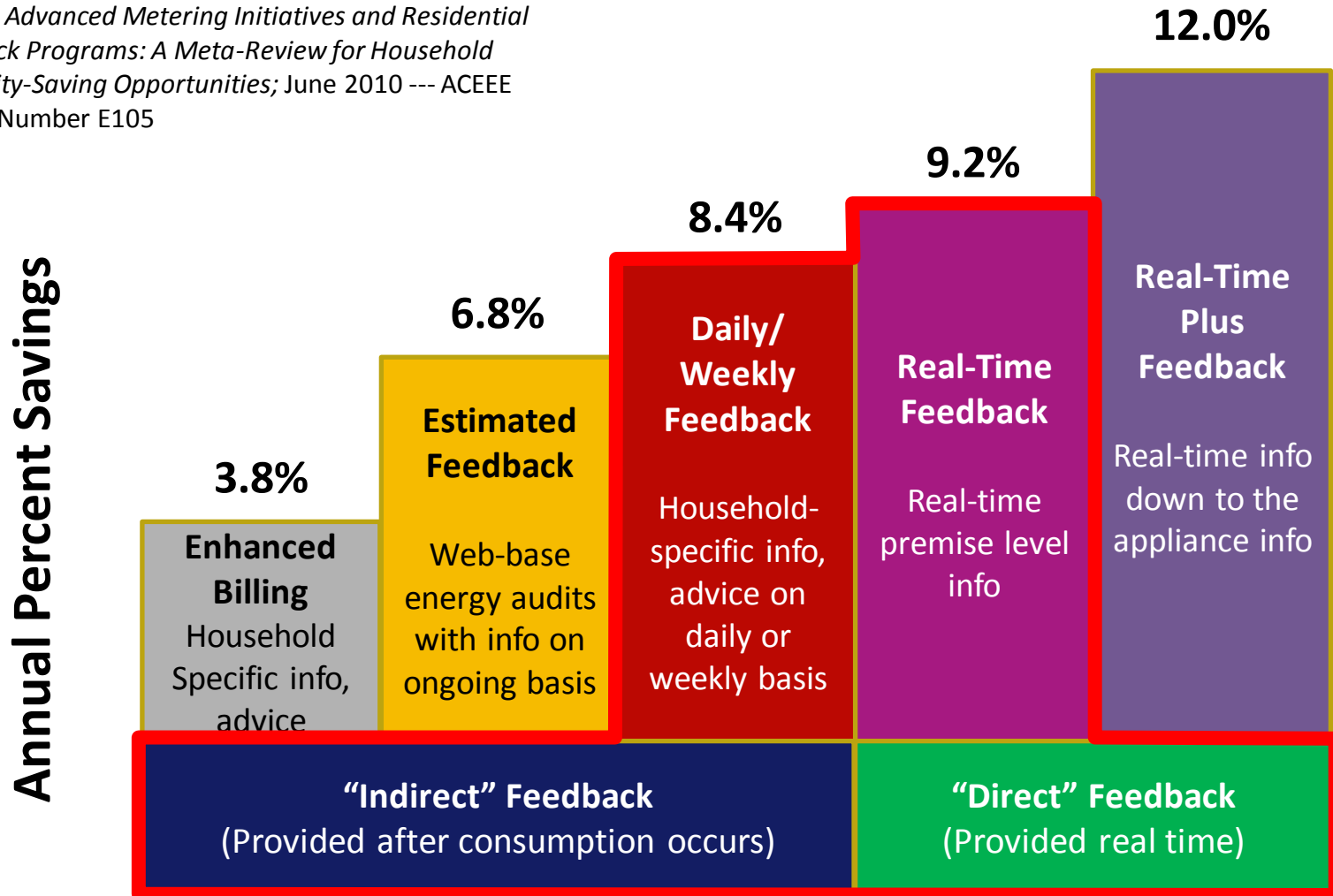


# Have you implemented any recommendations by your Energy Specialist?

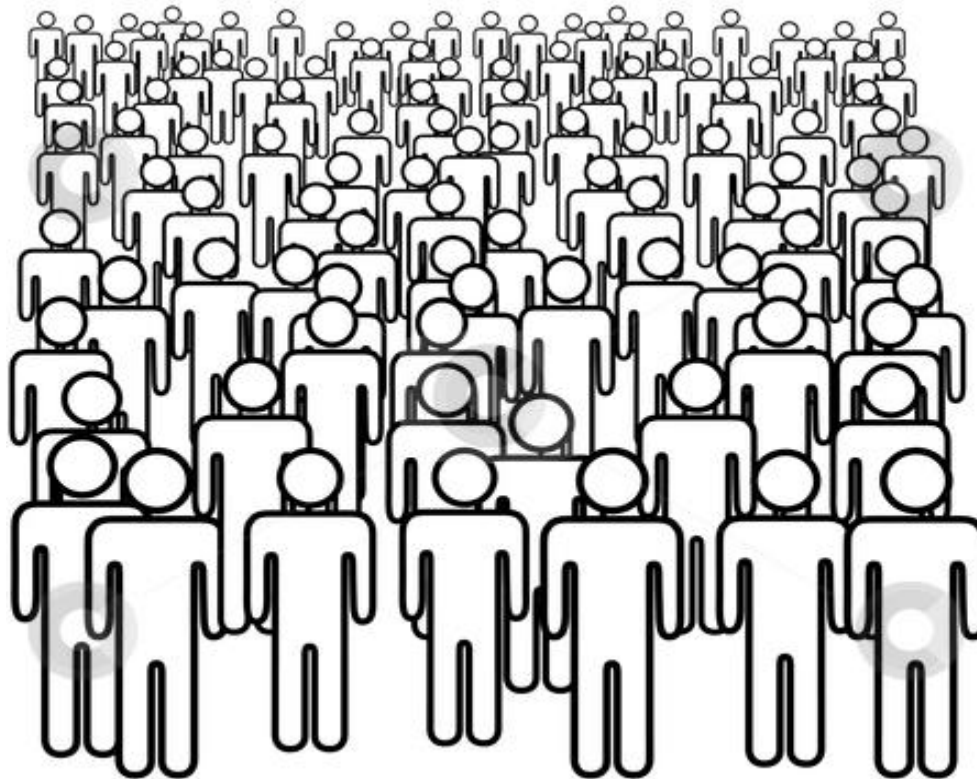


# Savings by Feedback Type

Source: *Advanced Metering Initiatives and Residential Feedback Programs: A Meta-Review for Household Electricity-Saving Opportunities*; June 2010 --- ACEEE Report Number E105



# What Are Top 5 Lessons Learned that Inform Future Program Design?





# Lessons Learned & Program Design Implications

## 1. Use of IHD Favored over Web Portal

- This distinction may become less relevant as technology continues to evolve
- And as “phone apps” become more prevalent (especially for residential customers)



# Lessons Learned & Program Design Implications

2. Proactive Customer Service Can Increase EE
  - Requires different skills (outgoing vs incoming)
  - Can create scheduling changes (evening & weekend calls)
  - Takes time (average call 17 minutes)

# Lessons Learned & Program Design Implications

3. Timing of Proactive Customer Service Matters – Big Time!
  - Customers “touched” within 30 days of deployment saved more energy
  - Customers not “touched” within 60 days saved minimal or no energy

# Lessons Learned & Program Design Implications

4. Anticipate Privacy Concerns
  - Holder of data best able to segment, target, & achieve EE at customer level
  - Long-lived customer privacy concerns & practices
  - Significant barriers to data cross-sector & cross-program (eg utility, WAP, LIHEAP)
  - We obtained customer permission upfront in participation agreements

# Lessons Learned & Program Design Implications

5. Use Commercialized Technology from Vendor with Track Record
  - Technology, data platforms, applications developing at “lightning speed”
  - We knowingly took risk by selecting pre-commercial vendor really excited about PCS approach
  - For pilots, as it should be!
  - For full scale roll-out, not advised!



# In Conclusion

## The Smart Grid :

- Is an enabler for achieving EE & DR
- Using Smart Grid data, we can segment & target customers in order to manage energy use & shape load
- In doing so, exciting new ways open up for utilities & other EE providers to affirm the role as the trusted source for customers

# Human Change Requires a Human Touch



# For More Information:

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