

Introduction to the Thousand Home Challenge

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Webinar - Objectives

1. Introduce the Thousand Home Challenge (THC)
2. Review the criteria for meeting the Thousand Home Challenge
3. Provide an opportunity to get your questions answered
4. Benefit from your feedback & questions

The Thousand Home Challenge is designed to:

- 1. Demonstrate** the potential for 70 - 90% energy reductions of North American existing homes
- 2. Integrate** energy efficiency with on-site renewable energy sources, behavioral & lifestyle choices, & community-based solutions
- 3. Develop** indicators of home energy performance

The Thousand Home Challenge is designed to:

4. Exemplify a performance-based systems approach to design, deployment, & verification

5. Assemble local / regional centers of excellence

6. Stimulate collaboration, creative problem-solving, and innovative products & approaches

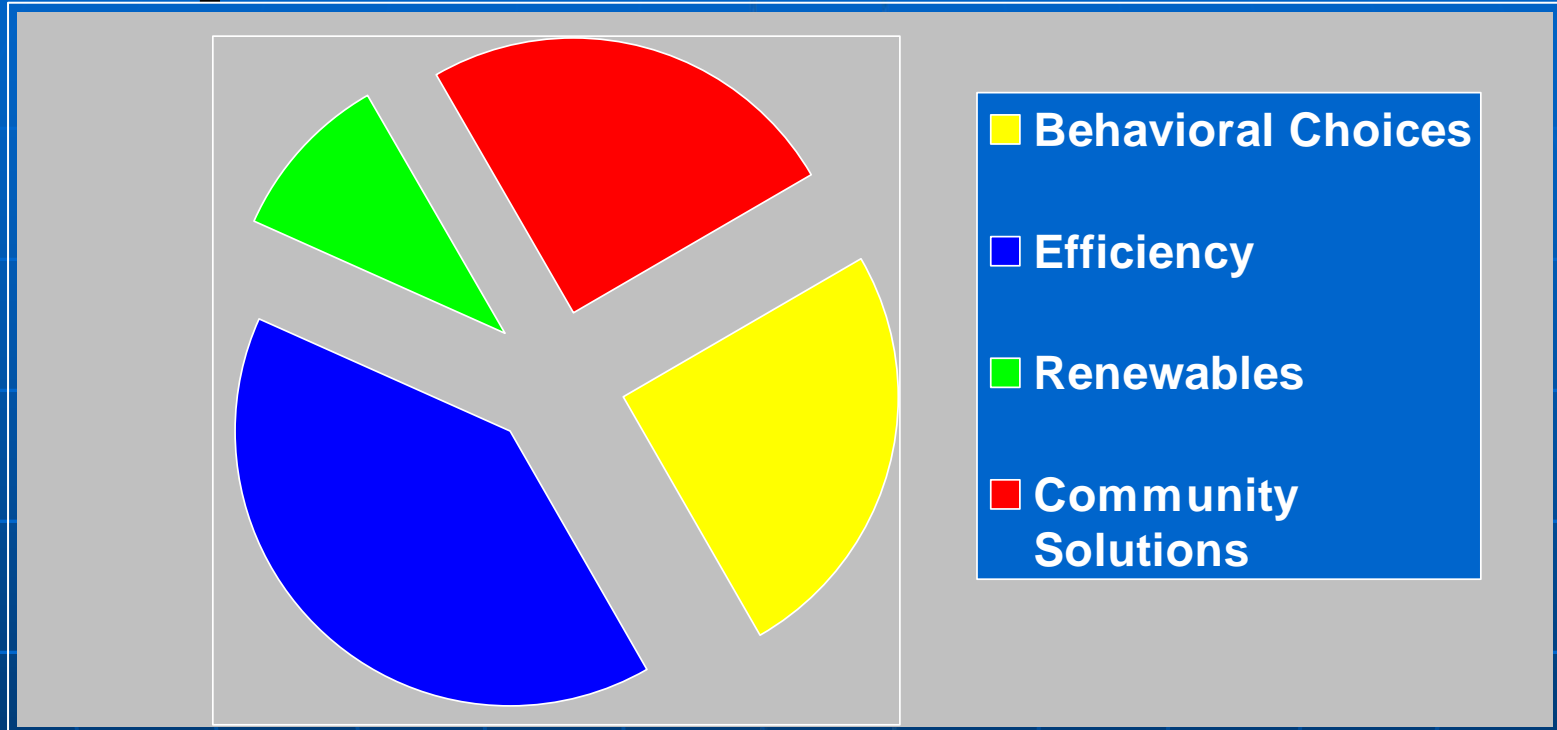
7. Leverage a Thousand Home Challenge multiplier

How is the Thousand Home Challenge Unique?

- Bottom line: Actual total use, not modeled
- Key metric: Customized household energy use threshold allowance
- Includes human & social dimension, not just technical solutions
- Stimulate creative solutions; Lots of potential paths; not prescriptive

Questions & Feedback?

Optimize Investment



Customized based on goals, opportunity, resources, & needs

Multiple paths to get to deep reductions!

Not Included in THC but Very Important

- Embodied Energy – food, energy, consumables, waste, building materials
- Transportation Energy

THC Timeline

Pilot Phase – Right now

- Confirmation of Projects, Sponsors, & Collaborators
- Draft & Revise Guidance Documents
- Development of Organizational & Operational Structure

Launch 2010

Thousand Home Challenge

Sponsors¹, Ring Leaders, & Collaborators²

CSG, National Grid, NYSERDA, PG&E¹ EFI
CCHRC, City of Boulder, Office of Environmental
Affairs, CMHC, Community Solutions,
Conservation Connection Consulting, CSG, Davis
Energy Group, Inc., NAHN, National Grid, NEEP,
NREL, PG&E, Sustainable Spaces

ACEEE, AO Smith, BKi, BSC, Columbia Gas of Ohio,
Conservation Technologies, ConSol, Delta-T Inc.,
GreenHomes America, Heyoka Solutions LLC, HomeEnergy
magazine, Johns Manville, KEMA Services Inc., LBNL,
Metropolitan Energy Center, Minnesota Power, NW Center
for Sustainability & Innovation, Oak Ridge National Labs,
Passive House Institute US, PSD, SRMI, The Energy
Conservatory, VEIC, WSU Energy Program

¹Guidance Document Sponsor

²Current as of 9/30/08

Key Metric
Transparent & Direct
Include Occupants

Net Annual Household Site Energy
(wood included, solar and onsite
renewables = credit / offset)

However, telling the story of
a homes performance
includes many indicators of
performance including...

Direct Indicators of Performance

- Btu/kWh per Home
- Household Annual Cost (\$)
- Btu/kWh per Person
- Btu/kWh per FFA (finished floor area)
- Peak Energy (if measured)
- Water & Sewage (if measured)

Indirect Indicators of Performance

- Btu/kWh per HCDD (heating and cooling degree day)
- Tons Carbon Equivalent
- Peak Energy
- Source Energy
- Home Energy Rating

Two Options for Qualifying

Meet or exceed a customized household energy allowance

OPTION A

**Relative, 75%
reduction**

**Input: Annual measured
previous energy use**

**For higher use
households with
measured pre-use**

OPTION B

Absolute, not relative

**Inputs: climate, house
size, occupants, heat
source, attached /
detached**

For low use households

OPTION B: Customized Household Threshold

Estimates energy needed for a very high performance house for

- Heating
- Cooling
- Hot Water
- Everything Else

Sum is the actual site energy household threshold that must be met or exceeded in order to meet the Thousand Home Challenge

THC – Option B – Total Annual kWh / Year Threshold

<i>3 Member (actual) Household</i>	House Size - Square ft		
	1200	2400	3600
SAN DIEGO, CA	3123	3363	3603
PHOENIX, AZ	4212	5142	6033
HOUSTON, TX	4577	5587	6553
NEW YORK, NY	7243	9414	11479
BOSTON, MA	7738	10121	12385
BURLINGTON, VT	9001	11957	14761
DULUTH, MN	10548	14206	17673

INPUTS: detached, 3 full-time occupants, fossil or wood heat & finished floor area (FFA) not CFA or TFA

THC – Option B – Total Annual kWh / Year Threshold

1 Member (actual) Household	House Size - Square ft		
	1200	2400	3600
SAN DIEGO, CA	1615	1855	2095
PHOENIX, AZ	2882	3811	4702
HOUSTON, TX	3118	4127	5093
NEW YORK, NY	5561	7733	9797
BOSTON, MA	6009	8393	10656
BURLINGTON, VT	7194	10150	12954
DULUTH , MN	8647	12304	15771

INPUTS: detached, 1 full-time occupant, fossil or wood heat & finished floor area (FFA) not CFA or TFA

How to Start a THC Project

- Participate – Intro to Thousand Home Challenge Webinar
- Determine household threshold allowance
- Start with needs / wants
- Assess context & resources
- Assemble team & information; learn from others
- Plan actions & process

THC REDUCTION MATRIX

(Mild Climate Sample)

ANNUAL HOUSEHOLD kWh
(Pre, Proposed, and Threshold)

Loads	Current Use	Proposed Usage Reductions - kWh/yr					Target Use	THC Threshold
	(breakout may be estimated)	Efficiency		Behavioral	Renewables	Community		
	(kWh/yr)	Building Upgrades	Equipment Upgrades	Choice Reductions	On-site Offsets	Solutions	(kWh/yr)	(kWh/yr)
Heating	10,000	5,000	1000	1,000			3000	1821
Cooling								
Hot Water	5000	500	1,000	1,500	2,000	500	500	1060
All Else	6000		1.500	2,000	2,000	500	0	1620
Total	21,000	5,500	3,500	4,500	4,0000	1,000	3500	4500

REDUCTION

18,500 kWh/yr

Thousand Home Challenge – 5-09

How far does OPTION B go?

- Goal to be challenging for everyone
- Developed independently of EPA Home Energy Yardstick (HEY)
- Spreadsheet shows Yardstick estimate of average US energy for same household
(Usually 15% to 30% of Yardstick average estimation fossil heat; 40% if electric heat)
- **Ballpark:** 70% to 85% less than average home in same climate, same size, & number of occupants (not a 7.5 HEY score, rather 9.999)

THC Projects

- “All at Once” or multi-year “Phased”
- Accept projects in progress or who have met THC performance
- Conditional acceptance - Commit to vision, actions, & process
- Officially meet THC: 1 year of documented energy use
- Not just energy reductions

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Initiatives & Synergy

Things to Ponder - How can...

- The THC support your goals?
- You support the Thousand Home Challenge?
- We build knowledge & capacity to achieve & deploy deep energy reductions?
- We develop & document local / regional solutions?

Questions & Feedback?

Online Resources

www.affordablecomfort.org

1) Select ACI Initiatives

<http://www.affordablecomfort.org/initiatives.php?PageID=16>

Deep Energy Reduction Resources

ACI White Paper - One Year Later

Thousand Home Challenge

**Move on to Threshold
Calculator Spreadsheet**

Feedback Welcome

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