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Existing Homes: The Whole-House Story

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Why a whole house approach
to existing homes?



- Enormous potential for savings in existing homes
- A whole-house approach can capture synergies between multiple measures
- Applying sound building science can also:
 - Increase comfort
 - Protect health and safety,
 - And increase the durability of the home

A Tale of Two Houses



- Before:
 - 1320 square feet
 - 198 million BTUs
 - 6,000 kWh
- After:
 - 2030 square feet
 - 85 million BTUs
 - 3,000 kWh
- With a 50% **increase** in square footage...
- Almost 60% **reduction** in BTUs
- 50% **reduction** in kWh

3

Huge—and achievable—opportunities in existing homes



- ENERGY STAR Labeled Homes
 - HERS 86 or better, versus HERS 80 for a home built to the MEC
- Illinois Example
 - Adams Electric Coop pilot project
 - Average HERS score improved 22 points post-improvement
- Saving can be large...**IF** contractors can deliver the improvements and **IF** home owners will pay for them

4

A Sampling of Approaches



- California's RCP Program
- Pacific Northwest
- Austin Energy
- Home Performance with ENERGY STAR
 - **New York**, Wisconsin, Massachusetts, Rhode Island, **Kansas City**, **California**

5

California's RCP Program — Basic Design



- Single and multifamily
- Objectives: Promoting a self-sustaining contractor market for E-E services
 - Improve customers' awareness and understanding
 - Promote whole system and whole house approaches
 - Provide contractor incentives to build self-sustaining businesses
- Was a statewide program, however there were differences across statewide IOU territories
- Contractor screening and specialized training requirements for certain services

6

California's RCP Program — Shortcomings



- No financial commitment to market and to develop infrastructure
- No consistent training of contractors on whole house concepts or business development across IOU service territories
- No requirement for modeling, use of multiple measures, or marketing of whole house concepts

7

California's RCP Program — Results



- Helped to expose to concept of whole house contracting to contractors, CPUC, CEC, and utilities
- Often didn't address the whole house:
 - The majority of work done by contractors only used one to three measures
 - Most frequently used measure was windows, due to effectiveness of phone marketing by window companies

8

Steps Toward Whole-House in the Pacific Northwest



- The Northwest Energy Efficiency Alliance launched the Performance Tested Comfort Systems in September 1997—operated by Climate Crafters.
- Limited contractor capacity in performing duct and equipment diagnostics and services.
- Training and certification for contractors in Residential Air Systems Diagnostics and Heat Pump and Air Conditioning Diagnostics.

9

Steps Toward Whole-House in the Pacific Northwest



- All work completed in any home by a certified contractor is verified or inspected for quality assurance.
- The PTCS standards have become the defacto regional standards for the Northwest. Any utility rebates going through the Bonneville Power Authority must meet these standards.
- The program is currently in transition as Climate Crafters works to become self-sustaining without further support from the NW Alliance.

10

Whole-house in the Northwest —Lessons Learned



- Overall, the program has reinforced the difficulty of working in the residential retrofit market.
- Consumers are unaware of the benefits from retrofit services, and...
- Contractors are unwilling to invest time and money in training and certification without customer demand.
- The existing homes market is still considered a good opportunity, but it is increasingly clear that a general tune-up service very hard to sell.
- The NW Alliance is hopeful that training conducted as part of the new homes program will also influence the existing homes side of their business.

11

Austin Energy's Total Home Efficiency Program



- Whole-house approach to energy efficiency
- How it works
 - Trained contractor provides home energy analysis
 - Contractor inspects, HVAC system, ducts, attic insulation, envelope leakage
 - AC system properly sized
 - Austin Energy incentives included in proposal
- Work is completed by contractor & sub-contractors
 - Required blower door, duct blaster, and combustion safety test
- Austin Energy Performs 100% Inspection

12

Austin Energy's Total Home Efficiency—Contractors



- Eighty Contractors
 - HVAC companies & specialty companies
- Monthly Training
- Incentives
 - Equipment financing & discounted training
 - Sales incentives for job completion
 - Co-op advertising
- Ongoing engagement
 - Meetings, lead cards, and recruitment

13

Austin Energy's Total Home Efficiency—Putting It Together



- Marketing Emphasis : Promote Benefits
 - Lower Energy Bills, Greater Comfort, Better IAQ
- Consumer Awareness : Large Presence
 - Bill insert, Direct Mail, Co-op Newspaper, Billboards, Movie Theatres, Sporting Events
- Consumer Barrier : Too Expensive
 - Response: Incentives and payment options
- **Results: 1,700 jobs per year!**

14



Home Performance with ENERGY STAR

15

ENERGY STAR Label for Homes



- ENERGY STAR label for all homes
 - Both new and existing homes
 - HERS 86
- No new label for existing homes
 - 2nd label would add confusion
 - As soon as someone moves into a new home, it becomes an existing home!
- Focus is on inserting energy-efficiency into an array of transactions...including whole house improvements

16

Home Performance with ENERGY STAR®



- Extends ENERGY STAR brand into whole-house improvements.
- Links the building performance contracting service to ENERGY STAR
- Marketing message is about more than energy!
Includes emphasis on:
 - comfort and durability
 - health and safety
 - and professional problem-solving...
...along with energy-efficiency

17

Essential Components



The core of the Home Performance with ENERGY STAR service includes:

- Bona fide whole-house approach
- Home energy inspection and evaluation, with the **emphasis on delivering improvements**
- Diagnostic testing and “best practice” installation
- Quality Assurance

18

Quality Assurance



- Essential to protect the ENERGY STAR brand—and the partner’s brand as well
- Currently two models
 - Inspection
 - Certification/Accreditation



19

Home Performance Implementation



- Targeted to states or areas with the necessary interest, support, and expertise
- Initial Pilots
 - NYSERDA began Spring 2001
 - Wisconsin began October 2001
- Recently Launched
 - National Grid, NStar and Berkshire Gas in Massachusetts
 - National Grid in Rhode Island
 - Metropolitan Energy Center in Kansas City
 - California Building Performance Contractors Association (CBPCA) in Fresno and San Jose

20

Implementation Example: NYSERDA



- Began Spring 2001; rapid roll-out in upstate media markets
- Using BPI certification/accreditation
- Offering interest rate buy-downs (to 5%) on unsecured loans
- Aggressive marketing campaign featuring Steve Thomas
- Contractor Training Assistance
- Contractor Equipment Package Assistance

21

Implementation Example: NYSERDA Results



- Over 18,000 calls from consumers
- 2,000 jobs completed
- Average job size more than \$6,500!
- 100 contractors accredited; almost 250 technicians certified
- 1,000,000 KWh saved to date
- 50 billion BTU's (gas;oil)

22

Implementation Example: NYSERDA Results



- Over 18,000 calls from consumers
- **2,000 jobs completed**
- **Average job size more than \$6,500!**
- 100 contractors accredited; 220 technicians certified
- 1,000,000 KWh saved to date
- 50 billion BTU's (gas;oil)

+ high conversion rate of bids to jobs

= **Market driven
opportunity for contractors!**

23

Kansas City: Home Performance on a Shoestring



- Is it possible to drive the market with benefits alone?
- Can a unique group of market components coalesce in a successful home performance contractor certification program without substantial subsidy?
- Kansas City's Metropolitan Energy Center is piloting this approach.

24

Moving Forward



- Several new potential programs emerging around the country
- U.S. DOE State SEP solicitation offering \$500,000 in seed money to help jump start new efforts
- Growing interest in establishing national consensus technical standards

25

Discussants



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