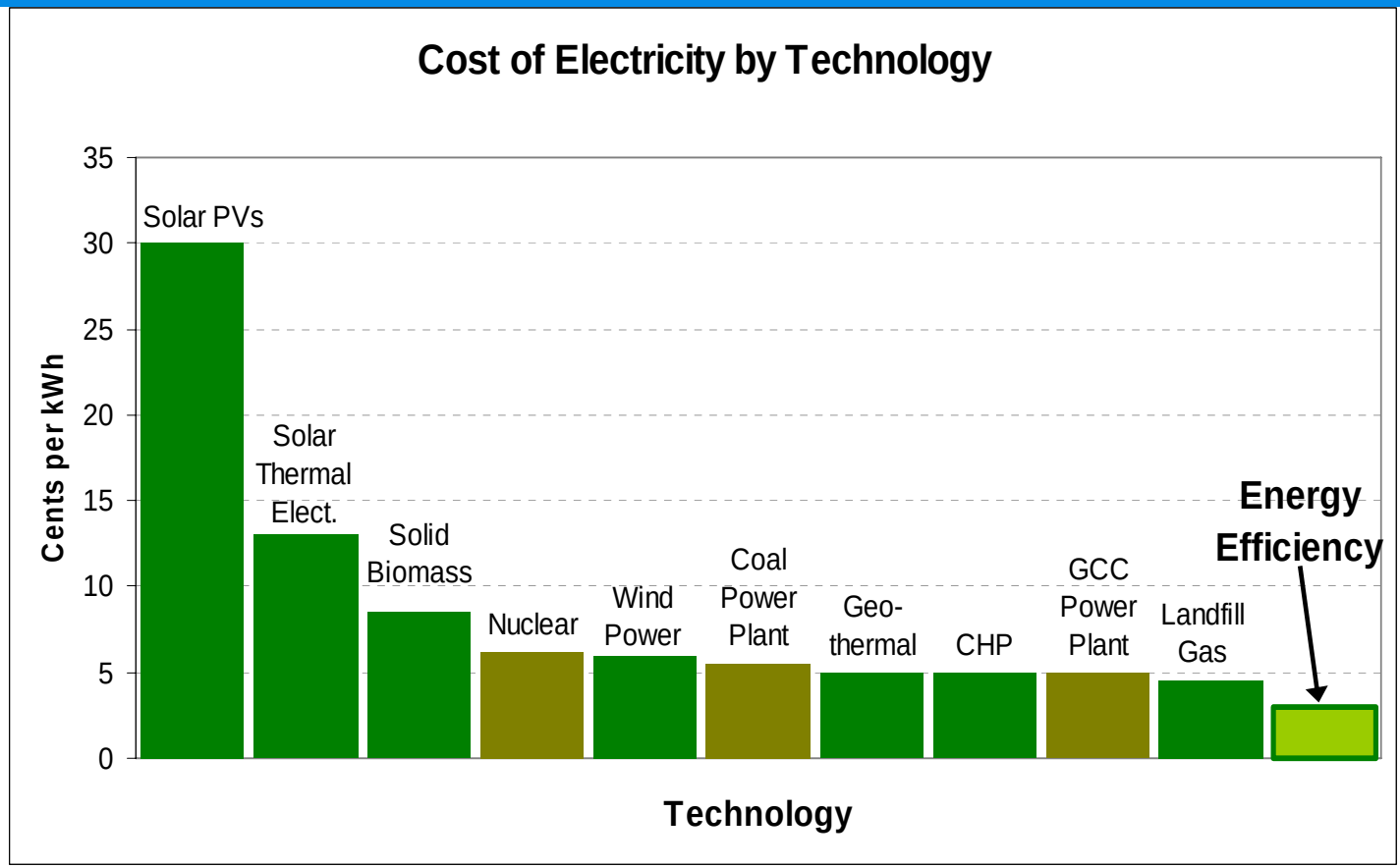
Residential Energy Efficiency: Home Performance with ENERGY STAR

Michigan Public Service Commission
Sept 1st, 2009

Perfect Energy/Environment Storm is Brewing

- Huge national WX goals
- Infrastructure will be hard pressed
- Market based HP needing huge ramp up
- Energy costs are rising
- Climate change is here
- New Leadership at top
- Utilities stepping up
- Time for action - NOW

Energy Efficiency – FIRST!



- Non-existent in 1970
- "NegaWatt before MegaWatt

•Cost-Effective

•Climate Change Regulations coming

HPwES is Part of the Solution

- Focuses attention on cost-effective home improvement options
- Big opportunity for savings - many homes have performance problems
  - ✓ fixing problems improves comfort, health and safety, and energy efficiency
  - ✓ product standards increasing - less saving potential from product rebate strategy
- Homeowners with high bills (and comfort problems) get real help
  - ✓ customer satisfaction
  - ✓ energy audits alone don't improve homes
- Helps your local economy
  - ✓ local contractors deliver improvements
- Good for environment
  - ✓ improving energy efficiency reduces air pollution and greenhouse gas emissions
  - ✓ start at home - change a light - then improve your whole house

Home Performance with ENERGY STAR

- More than contractor training and certification
  - ✓ Training or certification is one step and only qualifies a contractor to participate
  - ✓ Improving homes is the goal
- More than an energy audit
  - ✓ A whole-house evaluation with diagnostic tests and recommendations is one step and only identifies where improvements are needed
  - ✓ Improving homes is the goal
- More than installing energy efficient products
  - ✓ Equipment and products need to be installed correctly to be effective.
  - ✓ Test-out is an important step at the end to verify that improvements to the home will be effective
  - ✓ Improving homes is the goal
- No new label for existing homes
  - ✓ Home that meet the ENERGY STAR homes criteria can be labeled

    Difficult for most existing homes
  - ✓ Improving homes is the goal

HPwES Solves these Problems

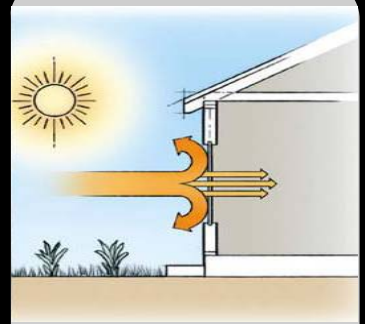
- Noise
- High Humidity
- Excessive Dust
- Cold Air Drafts
- Smoky Fireplace
- High Energy Bills
- Hot and Cold Rooms
- Foggy Windows
- Stuffy Air
- Soot Deposits
- Rotting Roof
- Allergy Symptoms
- Lingering Odors
- Peeling Paint
- **High Bills**

Fixing Existing Homes Requires Controlling Air, Thermal and Moisture Flow

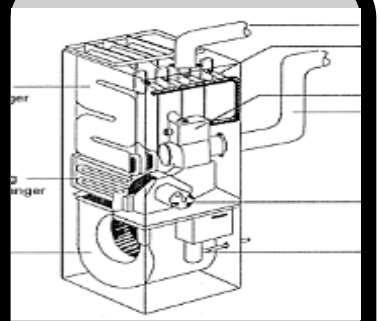
HOME PERFORMANCE WITH ENERGY STAR

Air Sealing

Tight Ducts

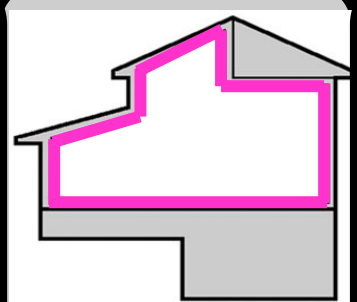


Advanced Windows



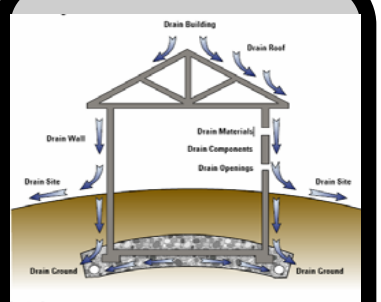
Efficient Equipment

Insulation Installation



Complete Air Barrier

Right Sizing

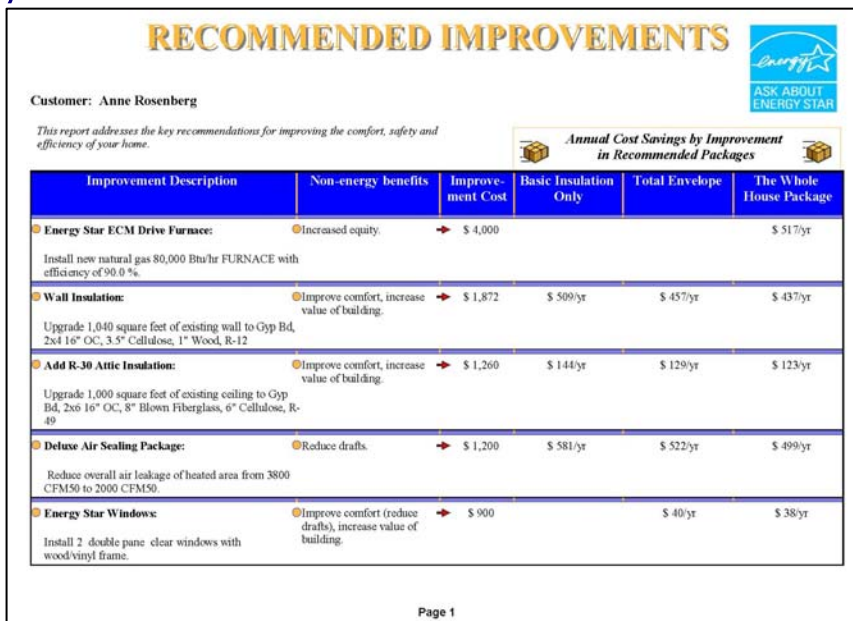


Bulk Moisture

Whole-house Approach

- Visual and diagnostic inspection
  - ✓ Energy specialist trained in building science
- Diagnostic testing (before work)

  i.e. air infiltration, HVAC air flow, duct leakage
- Summary report
  - ✓ Results
  - ✓ Recommendations
  - ✓ Estimated costs and savings



RECOMMENDED IMPROVEMENTS

ASK ABOUT ENERGY STAR

Customer: Anne Rosenberg

This report addresses the key recommendations for improving the comfort, safety and efficiency of your home.

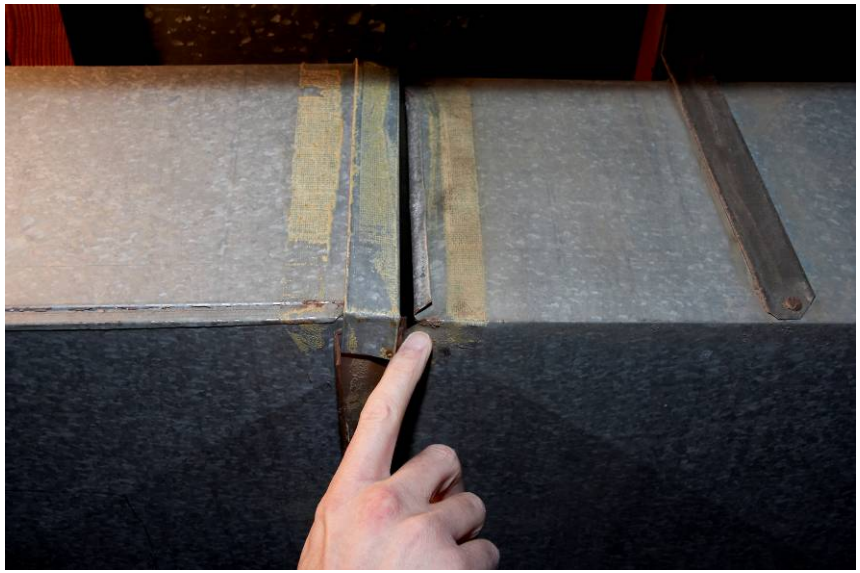
Annual Cost Savings by Improvement in Recommended Packages

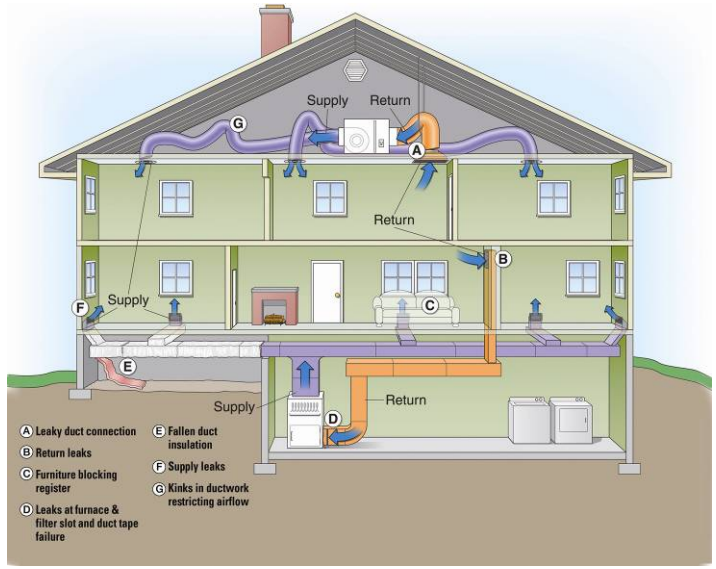
Improvement Description	Non-energy benefits	Improve-ment Cost	Basic Insulation Only	Total Envelope	The Whole House Package
Energy Star ECM Drive Furnace: Install new natural gas 80,000 Btu/hr FURNACE with efficiency of 90.0 %.	Increased equity.	$ 4,000			$ 517/yr
Wall Insulation: Upgrade 1,040 square feet of existing wall to Gyp Bd, 2x4 16" OC, 3.5" Cellulose, 1" Wood, R-12	Improve comfort, increase value of building.	$ 1,872	$ 509/yr	$ 457/yr	$ 437/yr
Add R-30 Attic Insulation: Upgrade 1,000 square feet of existing ceiling to Gyp Bd, 2x6 16" OC, 8" Blown Fiberglass, 6" Cellulose, R-49	Improve comfort, increase value of building.	$ 1,260	$ 144/yr	$ 129/yr	$ 123/yr
Deluxe Air Sealing Package: Reduce overall air leakage of heated area from 3800 CFM50 to 2000 CFM50.	Reduce drafts.	$ 1,200	$ 581/yr	$ 522/yr	$ 499/yr
Energy Star Windows: Install 2 double pane clear windows with wood/vinyl frame.	Improve comfort (reduce drafts), increase value of building.	$ 900		$ 40/yr	$ 38/yr

Page 1

Diagnostics: House Leakage Test

Diagnostics: Duct Leakage and Air Flow Tests





Diagnostics: Infrared Imaging To Locate Thermal Bypasses

Discuss Results with Homeowner and Present Proposal and Sell Job

Common Improvements: Air Sealing

Common Improvements: Adding Insulation

Common Improvements: Duct Sealing and Repair

Common Improvements: New HVAC Equipment

ENERGY STAR HVAC QI Guidelines

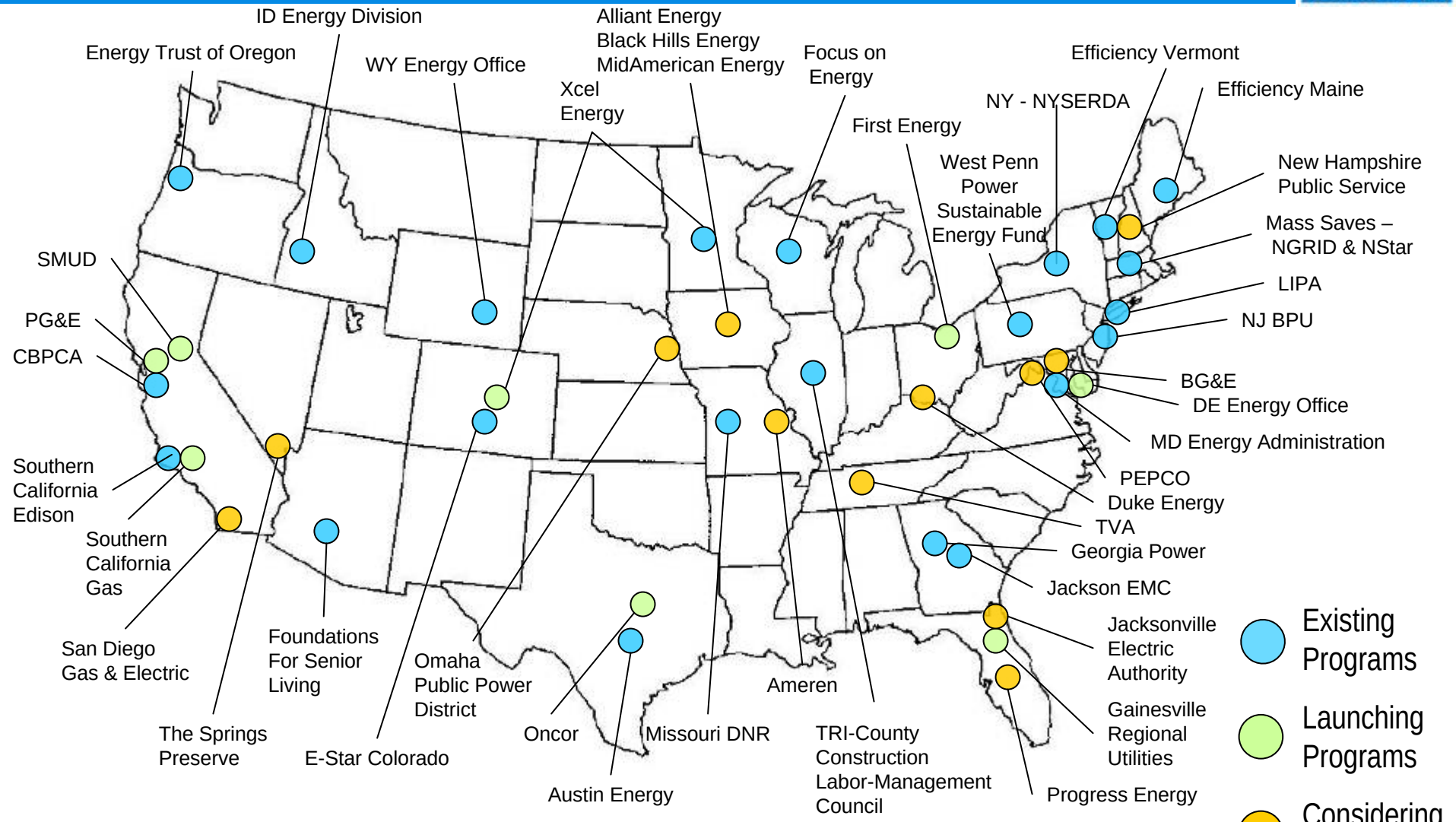
- Minimum requirements for installations under the program must meet the ANSI/ACCA HVAC Quality Installation Specification
- The QI Specification identifies consensus requirements associated with quality installations, acceptable procedures for measuring or verifying the attainment of those requirements, and acceptable forms of documentation to show compliance to the requirements.
- 8000 HVAC systems are being installed across the country today…. Over 70% have at least one deficiency: sizing, air flow, charge and bad ducts. Houston – we have a problem!
- What level of QI is DOE WX doing??

Contractor Tests After Improvements to Verify Results and Combustion Safety

- Diagnostic testing (after work)
  - i.e. Air infiltration, HVAC air flow, duct leakage, combustion safety testing
- Feedback to
  - ✓ the contractor
  - ✓ the homeowner
  - ✓ the program administrator
- Verified improvements and persistent energy savings

ENERGY STAR Report 2008

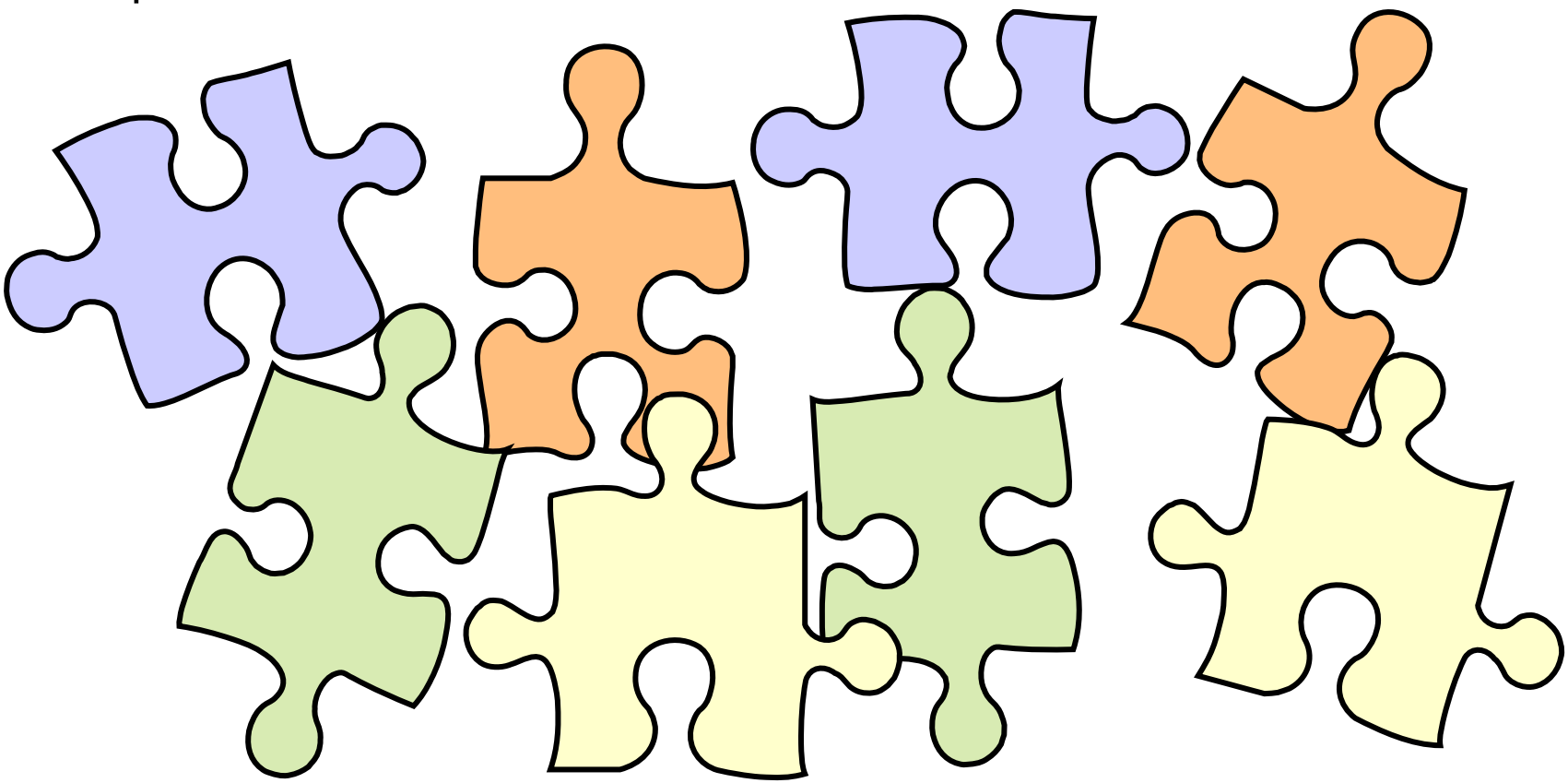
Home Performance with ENERGY STAR



Over 50,000 homes improved

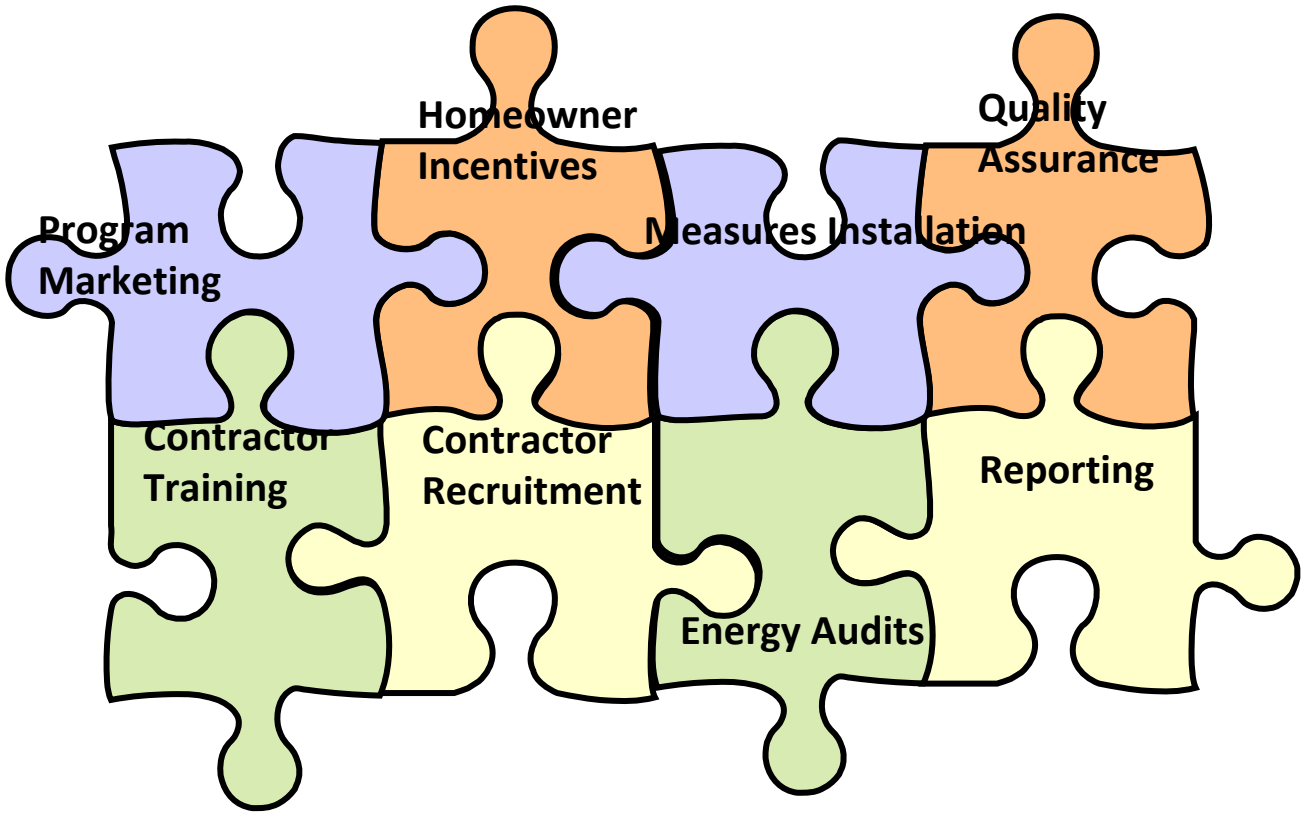
Program Elements

- Having the elements for a thriving energy efficiency retrofit “industry” requires different elements – “no one size fits all.”

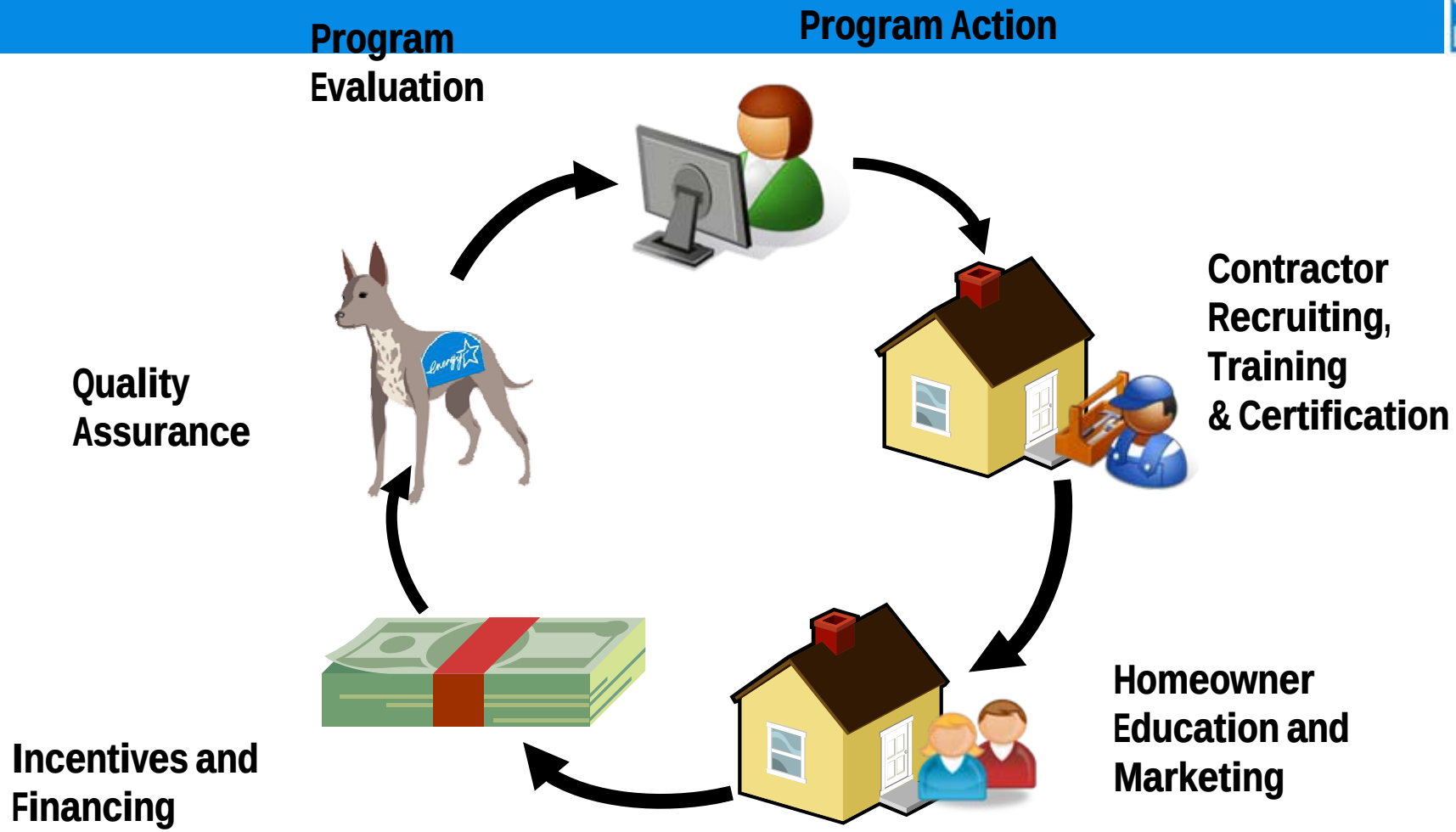


Program Elements

- However, there are pieces to the home energy retrofit “puzzle” which remain the same. States can play a variety of different roles.



Program Elements



Program Action

Begin your planning:

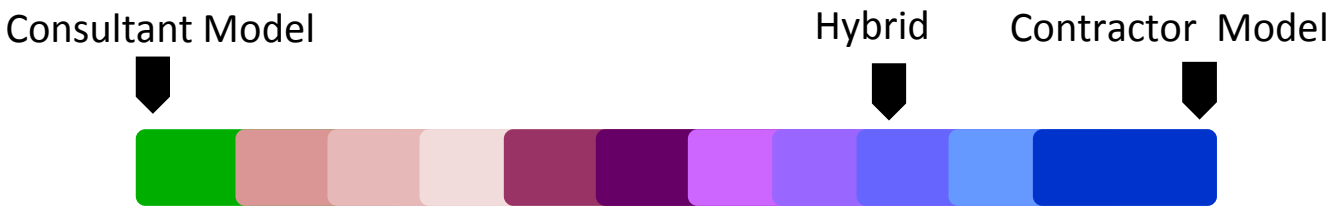
- Determine best sponsor
- “Contractor” or “Consultant” Model
- Pilot location and target market
- Schedule and budget
- Implementation Plan
- RFP development

Program Sponsor

- A **Program Sponsor** ensures all the elements of a Home Performance with ENERGY STAR program are in place.
  - ✓ Contractors test-in, recommend improvements, install improvements, and test-out.
  - ✓ A third party performs Quality Assurance- checking to make sure homes are safe and improved per industry best practices.
- As a Sponsor, you are responsible for overseeing the program's implementation and the performance of participating contractors to ensure that quality standards are met.
- The sponsor can be a State or utility or a non-profit organization. Non profits generally do not have needed resources. Utilities once allowed to recover costs – generally are more successful in as sponsors.
- PSC or PUCs have obvious influence on promoting utilities as sponsors.

Program Models

- Current Home Performance with ENERGY STAR program models can be characterized by the delivery of audits and the installation of improvements.
- As current programs mature, more emphasis is placed on certain program elements and models evolve.



Program Action

Establish Goals

Table 1 – Potential Per Home Energy Savings				
Census Region	Northeast	Midwest	South	West
Electricity (kWh)	1400	1700	4600	1400
Natural Gas (Therms)	400	400	200	200
Typical Improvements	Increase attic insulation; insulating crawl spaces or rim joists: duct sealing, repair and insulation; air sealing; and installing programmable thermostat, energy-efficient heat pump, air conditioner, furnace, boiler, lighting or windows.			

Number of contractors/jobs

Number of homes improved

Energy savings

Contractors

Recruit/Business Case

Train to standards

Certification

Participation Agreement

Sponsor

Mentor

Strategies for Successful Home Performance Selling

When: Wednesday, April 11, 2007
8:00 am - 2:00 pm

Where: Wyoming Energy Council Office
710 Garfield, Laramie,
Wyoming 82070

Why:

- Learn what these photos have in to do with Home Performance Selling
- Hear Joe Kuonen's war stories and lessons learned from **12 years of selling Home Performance Jobs to Homeowners** with over $1 million in annual sales

What:

- In-office and in-home strategies for successful HP selling
- Techniques for communication (of benefits, problems, countering of objections, closing deals, getting customers on-board)
- Using diagnostic tools and processes in a consultative selling manner to educate, communicate, motivate, and close deals
- Tried and true "canned" techniques in motivating the homeowner into action
- After to sale - staying with the customer and how to mine for referrals

PLUS TOOLS to take away:

- Lead Qualification Checklist
- In-home, Interview Process
- Do's and Don'ts of Selling HP
- Example Presentation Book
- Opportunity for One-on-One Mentoring

To register, please contact Kristin Shewfelt at (303) 459-4449 or Email: kshewfelt@e-star.com
Lunch will be provided.

HOME PERFORMANCE WITH ENERGY STAR

Contractor Infrastructure – Good for All

- Building Performance Institute
  - ✓ Certifications for contractor staff
    - Building Analyst, Envelope Specialist, and HVAC Specialist
    - Written and field practical tests
  - ✓ Accreditation for building performance companies
    - Commitment to Whole House Approach
    - Use of certified staff
    - Quality management system and BPI QA program
  - ✓ Affiliates that offer training, test proctoring, and mentoring of contractors
  - ✓ Working with RESNET on common standards for building analyst and home energy rater

Homeowner Education

PERFORMANCE WITH ENERGY STAR

Program marketing is critical to generating demand.

Marketing includes educating homeowners through a variety of mediums such as the program website, brochures, public forums, etc.

Maryland HPwES web site includes benefits of home performance, incentives, Fed tax credit explained – how to find a contractor/energy auditor – benefits of quality assurance program

Homeowner Education

YOUR HOME CONTRIBUTES TO THE QUALITY OF OUR ENVIRONMENT

U.S. Environmental Protection Agency • U.S. Department of Energy

About ENERGY STAR • News Room • FAQs Search

ENERGY STAR

Products | Home Improvement | New Homes | Buildings & Plants | Partner R

Home Improvement

- Common Home Problems
- Home Energy Yardstick
- Home Energy Audits
- Air Seal & Insulate
- Heat & Cool Efficiently
- Home Performance with ENERGY STAR
- Home Improvement FAQs

Home > Home Improvement > **Home Energy Yardstick**

Home Energy Performance Results

Energy & Environmental Performance

Your score: 8.3 out of 10

Your score is excellent and your energy use is well below average. 83% of U.S. homes use more energy than you.

About Your Home & Energy Use [Edit I

About Your Home

Zip Code: 22046
People Living in Home: 2
Square Footage of Home: 2200
Home Built: 1950s
Heating Degree Days: 4029
Cooling Degree Days: 1496

HOME PERFORMANCE WITH ENERGY STAR

Components for a Successful HPwES Program

- Committed & trained contractors – without this, nada
- Program marketing – using multiple channels that are sustained
- Incentives – both big and understandable, must drive comprehensive work
- Financing – both attractive and easy, ratchet to promote comprehensive work
- Job reporting – without this, nada
- Quality Assurance – protects everyone and ES logo

Incentives

Incentives are often necessary to develop both demand and supply.

Homeowners: financing, rebates, neighborhood competitions…

Contractors: training rebates, equipment rebates, rewards for jobs completed…

Post installation incentives? Reward once savings are confirmed?

Quality Assurance

Protect sponsor

Protect compliant contractors

Market high standards

Self-reinforcing once value is established

Confirms savings estimates

Quality - Reporting

Reporting – without reporting, no program

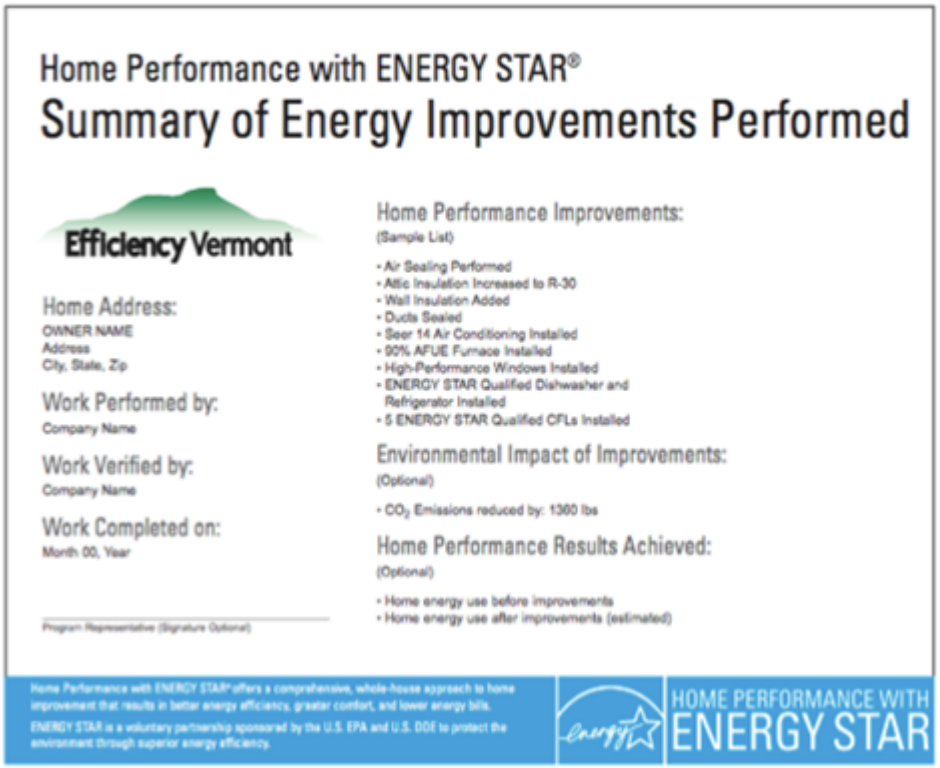
Linked job test-out to incentives

Keep it simple/easy

Report to national program

Quality - Certificates

HOME PERFORMANCE WITH ENERGY STAR



Home Performance with ENERGY STAR®

Summary of Energy Improvements Performed

Efficiency Vermont

Home Address:
OWNER NAME
Address
City, State, Zip

Work Performed by:
Company Name

Work Verified by:
Company Name

Work Completed on:
Month 00, Year

Program Representative (Signature Optional)

Home Performance Improvements:
(Sample List)

- Air Sealing Performed
- Attic Insulation Increased to R-30
- Wall Insulation Added
- Ducts Sealed
- Seer 14 Air Conditioning Installed
- 90% AFUE Furnace Installed
- High-Performance Windows Installed
- ENERGY STAR Qualified Dishwasher and Refrigerator Installed
- 5 ENERGY STAR Qualified CFLs Installed

Environmental Impact of Improvements:
(Optional)

- CO_2 Emissions reduced by: 1300 lbs

Home Performance Results Achieved:
(Optional)

- Home energy use before improvements
- Home energy use after improvements (estimated)

Home Performance with ENERGY STAR® offers a comprehensive, whole-house approach to home improvement that results in better energy efficiency, greater comfort, and lower energy bills.
ENERGY STAR is a voluntary partnership sponsored by the U.S. EPA and U.S. DOE to protect the environment through superior energy efficiency.

HOME PERFORMANCE WITH ENERGY STAR

Send with Survey

Tied to reporting

Program Evaluation

Look at your data

Review assumptions, tweak as needed

Communicate with national program and other sponsors

ENERGY STAR Support

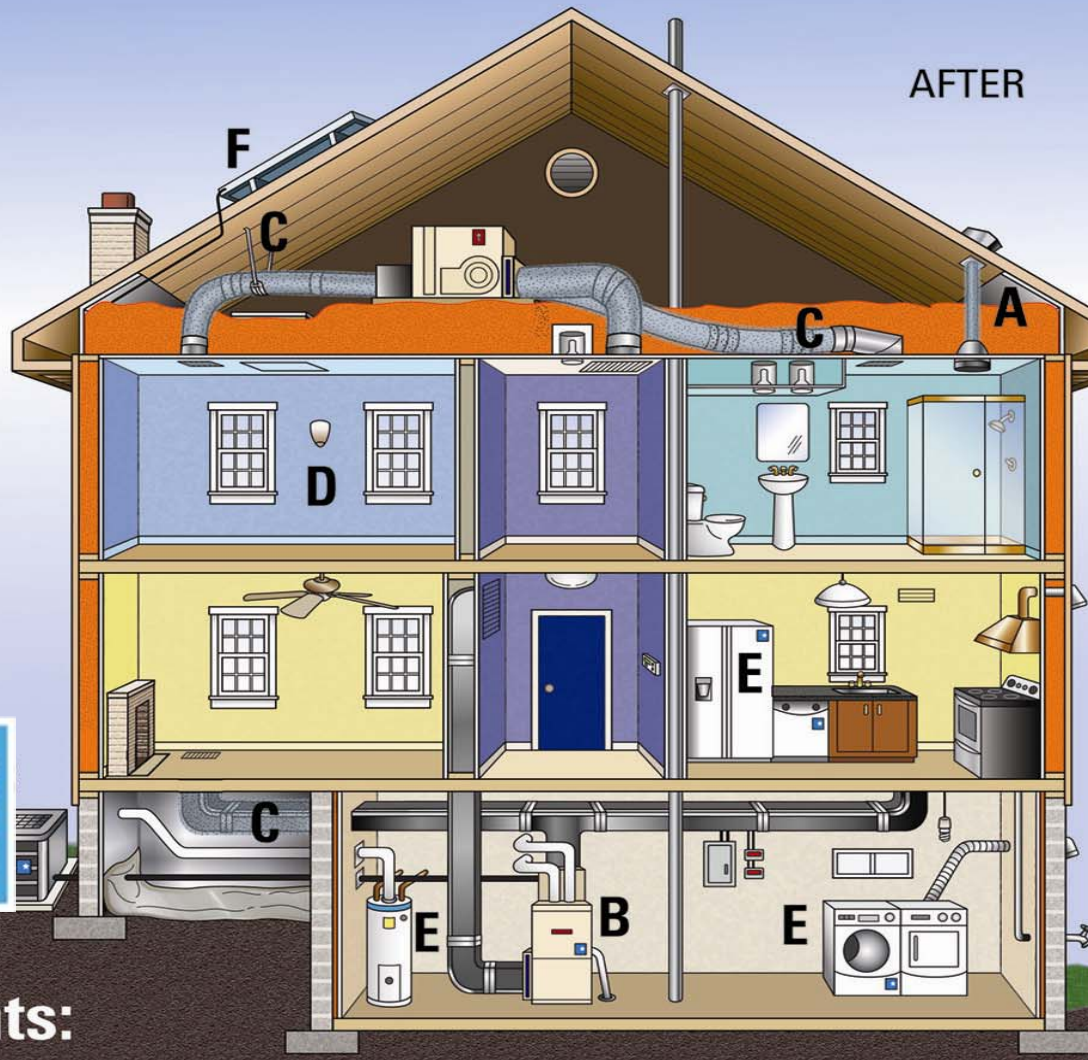
- Program Development Assistance
- Sponsor Guide
- Logo
- Marketing toolkit
- Promotional videos
- Graphics
- Sales Training for Contractors

- Contractor Business Development Guide – Home Energy magazine
- Case Studies
- National Campaigns
- Financing Guidebook
- National Symposium

www.energystar.gov/hpwessponsors

BEFORE

AFTER



HOME PERFORMANCE WITH ENERGY STAR

Typical Home Improvements:

- A Sealing Air Leaks and Adding Insulation
- B Improving Heating and Cooling Systems
- C Sealing Ductwork
- D Replacing Windows
- E Upgrading Lighting, Appliances, and Water Heating Equipment
- F Installing Renewable Energy Systems

The Michigan HPwES Challenge

- No DSM programs past 14 years
- Infrastructure not there, building required
- 65 utilities in state – some efficiency programs underway
- “Michigan Saves” and “Pay as you Save” options on table
- On bill financing – great tool to promote work, utilities softening on position
- Statewide uniformity – HPwES could be foundation

National Conferences for 2010

- RESNET – Raleigh, NC - Feb 22-24, 2010
- ACI National – Austin, TX - April 19 – 23, 2010

And continue your learning with Home Energy Magazine!

Contact Info / Questions

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