SEE Action

STATE & LOCAL ENERGY EFFICIENCY ACTION NETWORK

Residential Retrofit Working Group Blueprint Summary

Dian Grueneich, Frank Murray

Executive Group Meeting

July 15, 2011

SEE Action

STATE & LOCAL ENERGY EFFICIENCY ACTION NETWORK

The Residential Retrofit Working Group of the State and Local Energy Efficiency Action Network is committed to taking action to increase investment in cost-effective energy efficiency. This Blueprint was developed under the guidance of and with input from the working group. The document does not necessarily represent an endorsement by the individuals or organizations of Residential Retrofit Working Group members.

The Residential Retrofit Working Group Blueprint is a product of the State and Local Energy Efficiency Action Network and does not reflect the views, policies, or otherwise of the federal government.

If this document is referenced, it should be cited as: State and Local Energy Efficiency Action Network (2011). Residential Retrofit Working Group Blueprint. www.seeaction.energy.gov

Table of Contents

Outline

- Working Group Membership
- Vision for the Home Energy Upgrade Market
- Definitions: Market and Program Concepts
- Target Market
- Market and Program Baseline
- Barriers to Market Expansion
- Market Assessment: Scenario Analysis Approach
- Scenario Analysis Results: Base, Moderate and Aggressive Cases
- Working Group Priorities and Target Projects
- Appendices

Residential Retrofit Working Group Members

- Two co-chairs
- 24 Members
  - Policymakers
  - Industry
  - Research / Academia
  - Coordinating Organizations
  - Practitioners / Utilities

Co-Chairs	
Dian Grueneich	California Public Utilities Commission (formerly)
Frank J. Murray, Jr.	NYSERDA
Policymakers	
Walt Auburn	Maryland Energy Administration
Rick Hanson	City of Jamestown Housing and Community Development Department
Tom Plant	Colorado Governor's Energy Office (formerly)
Gerald Shechter	Kansas City Office of Environmental Quality
Karen Villeneuve	NYSERDA
Industry	
Rick Gerardi	New Dawn LLC
Duncan McCulloch	Sears Home Improvements
Keith Williams	Building Services and Consulting LLC
Research/ Academia	
Loren Lutzenhiser	Portland State University
Coordinating Organizations	
Jared Asch	Home Performance Resource Center
Matt Golden	National Home Performance Council
William Johnson	Green America Public Private Partnership
Warren Lupson	AC, Heating, and Refrigeration Institute
Kevin Reilly	Laborers' International Union
Kara Saul-Rinaldi	National Home Performance Council
Bob Scott	National Association of State Community Service Providers
Ed Wisniewski	Consortium of Energy Efficiency
Practitioners/Utilities	
Diane Ferington	Energy Trust of Oregon
Tom Hines	Arizona Public Service
Sandy Hochstetter Byrd	Arkansas Electric Cooperative Corp.
Steve Saenz	Austin Energy
Theresa Spurling-Wood	Gainesville Regional Utility
Ben Taube	Southeast Energy Efficiency Alliance
John Tooley	Advanced Energy

Vision for the Home Energy Upgrade Market

The Residential Retrofit Working Group (RRWG) envisions a thriving industry for comprehensive, durable, performance-based home energy upgrades with:

- Robust demand for home energy upgrades
- A well-qualified network of full-service home performance contractors to meet this demand
- A rigorous system for quality assurance
- Sufficient pools of affordable, accessible private capital

Vision for the Home Energy Upgrade Market

- Home energy upgrades will be comprehensive (e.g. multiple measures and end uses) and performance-based; achieve savings of 20% or more of total energy use per building
- Public policies and funds provide support to leverage investments by more households
- Ultimate goal is to establish a robust, sustainable, private sector industry that provides home energy upgrade services

Definitions: Market & Program Concepts

- **Home Energy Upgrades** (HEU) – an alternative term for “residential retrofits” that encompasses a spectrum of energy improvements; some driven by energy efficiency programs, some not.

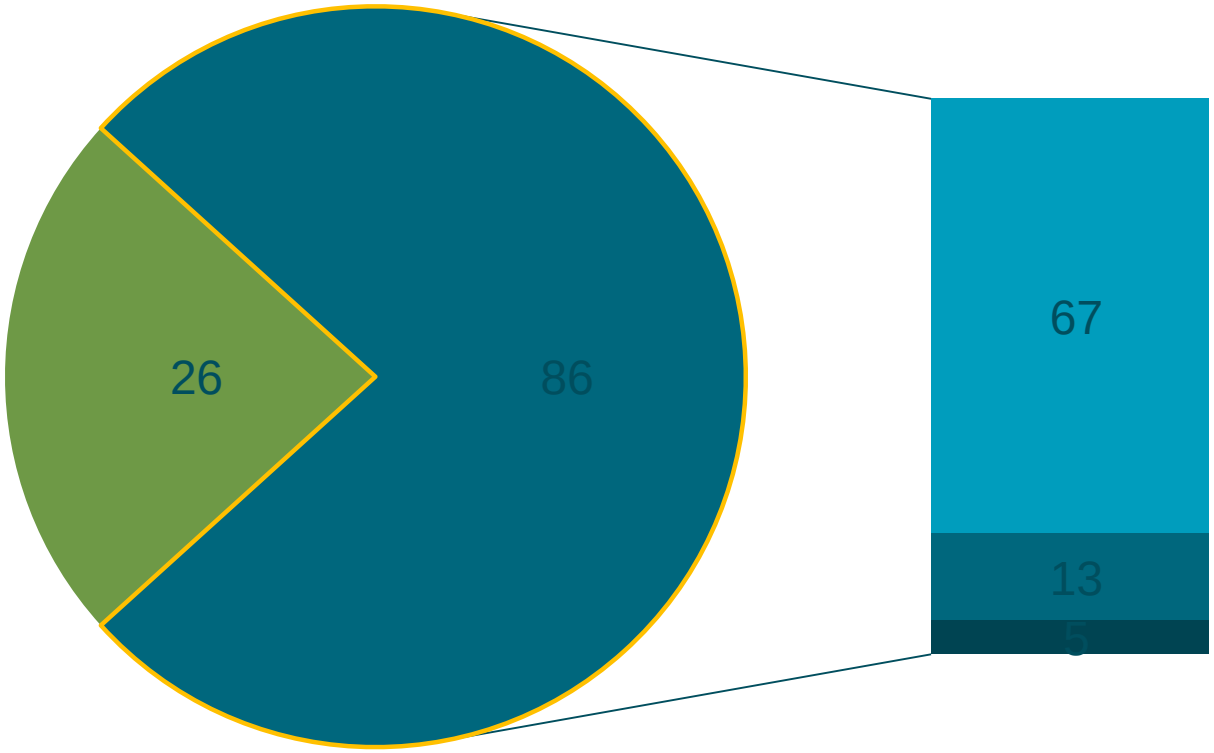
- **Home Performance** (HP) **Program/Project** – multi-measure upgrades performed by a contractor based on comprehensive energy assessment; typically involves a significant capital investment (e.g. HVAC replacement, wall insulation) with energy savings of 20% or greater of household energy use

- **Bundled Efficiency** (BE) **Program/Project** – programs that support multi-measure upgrades performed by a contractor but often without a full energy assessment; projects typically have less ambitious scope than HP with energy savings typically in the 10% to 20% range.

- **Low-Income/Assisted Energy Efficiency Programs** – Energy efficiency programs that promote home energy upgrades and target low-income households in an income band above Weatherization Assistance Program eligibility (generally 150% to 250% of the federal poverty guidelines). The 2011 guidelines are set at $22,350 for a family of four.

Target Market: Residential Housing Units not served by Weatherization Assistance Program (WAP)

U.S. Occupied Housing Stock
(millions of homes)



- WAP-Eligible (<150% of Federal Poverty Line Assumed)
- Single Family (Non-WAP Eligible)
- MultiFamily (Non-WAP Eligible)
- Manufactured Homes (Non-WAP Eligible)

Existing Home Improvement/ Renovation Market

- **~20 million home renovations per year from 1994-2007; spending averaged ~$160 billion /year**
  - As much as 26% of owner-occupied households renovated or replaced home components each year during this period
  - 38% spent on do-it-yourself (DIY) projects
  - 62% spent on do-it-for-me (DIFM) projects (i.e., contractors)

- **Home renovation spending is dominated by large projects in more expensive homes**
  - 1% of households accounted for 42% of all remodeling expenditures
  - ~70% to 75% of renovations implemented in homes worth more than $200,000

- **Homeowners spent an average of ~$23 to 36 billion per year on potential *energy-related renovations* during 1994-2007 (depending on definition)**
  - Represents at least 14% of overall annual home renovation spending ($160 billion)

Source: LBNL Analysis; Harvard Joint Center for Housing Studies, Remodeling in Transition; U.S. Census Bureau, 2009 American Housing Survey

Existing Home Energy Upgrade Programs

- The working group identified **39 residential upgrade programs in 28 states** (excludes programs funded through DOE's BetterBuildings initiative)
  - 23 programs provide statewide incentives
- **HP programs**: 25 (of 39) programs reported ~41,000 comprehensive upgrades in 2009
  - Not included in survey
    - 15 HP programs launched in 2009 or early 2010
    - 35 BetterBuildings grantees also plan major home upgrade programs
- **BE programs**:
  - Reliable data is unavailable, but working group members believe that BE programs currently perform more home energy upgrades than current HP programs

Source: Navigant Consulting Inc. 2010 (unpublished data)

Barriers: Weak Demand & Supply

Demand

Limited customer interest in comprehensive home energy upgrades

- Other priorities for limited time and capital
- Wary of assuming more debt
- Not informed or cognizant of the opportunity ("high hurdle rates")

Supply

Contractors reluctant to bet on thin, unreliable demand

- Supply chain dominated by single-measure contractors
- Training, certification, and audits have costs and can put Home Performance contractors at a competitive disadvantage

Barriers (continued)

- Few attractive financing options, especially for less qualified borrowers
  - Contractor interest rate buy-downs can be expensive
- Split incentives
  - Landlord/tenant challenges in rental units
- High transaction costs
  - Significant demands on homeowners, particularly around time and effort

Barriers (continued)

- Energy savings not captured in property value
  - Real estate actors lack “comparatives” with higher value for energy efficiency
- Structural/physical barriers increase costs or limit efficiency options
  - Examples: Knob and tube wiring and elevated radon levels
- Regulatory/institutional issues
  - Often, electric (or gas) utility program administrators can only offer incentives or claim electricity (or gas) savings for measures that save the resource that they provide
  - Savings from end uses served by “unregulated” fuels (e.g., fuel oil) often not recognized
  - Cost effectiveness issues (e.g., credit for non-energy benefits, treatment of non-energy related project costs)

Home Energy Market Assessment: Scenario-Based Approach

- The RRWG modeled homes upgraded and investment under three "scenarios" between 2010 and 2020:
  - **BASE CASE** – Existing policies judged likely to persist to 2020 (e.g., energy efficiency programs paid for by utility customers, tax credits)
  - **MODERATE CASE** – Several major federal and state policy initiatives (e.g., a federal Clean Energy Standard with energy efficiency as eligible compliance option; Home Star-like rebate program; renewal of the federal residential energy efficiency tax credit; rural loans for financing; new and expanded energy efficiency programs paid for by utility customers)
  - **AGGRESSIVE CASE** – A full suite of federal and state programs (e.g., expanded ratepayer-funded energy efficiency programs, significant funding for State Energy Program (SEP) and EEBCG programs, Home Star rebate program; and federal climate legislation with cap-and-trade system)
- Scenarios are driven by programs funded by utility customers and federal taxpayers and the distribution of federal tax credits, rebates and CO_2 allowance revenues across the Home Energy Upgrade market
- Roadmap also includes additional policies and strategies that are not explicitly modeled in scenario analysis

Policy and Programmatic Drivers of Market Development (Partial List)

• Modeled by the Working Group

- Energy efficiency programs funded by utility customers; Pgm. Administrators in more states implement HEU programs (variants in all cases)
- Increasing share of HEU budgets for HP programs (Mod. & Agg. cases)
- Impact of Federal Residential Tax Credit (variants in all cases)
- Rural utility loans for HEU (Mod. & Agg. cases)
- Federal HEU Rebates & Loans (Variants in Mod. & Agg. cases)
- Federal Clean Energy Standard (Mod. Case)
- Federal Climate Legislation (Agg. case)

• Important But Not Modeled

- Sharing policy and program best practices
- Workforce development and contractor sales training
- Rigorous work standards
- Start-up capital for home energy upgrade businesses
- Improved market data
- Training for appraisers and real estate agents
- Home energy scores and pilots for upgrades on sale
- Revised cost-effectiveness screening

Energy Efficiency Programs Funded by Utility Customers

Policy & Program Levers	Base Case	Moderate Case	Aggressive Case
Ratepayer-Funded HP and BE Programs	• National energy efficiency program spending: $7.4B in 2020* • LBNL study assumes utilities meet EERS, DSM and IRP goals for energy efficiency in ~30+ states with explicit policies • ~20 uncommitted states spend about 0.5% of retail revenues on energy efficiency programs by 2020	Same as Base Case	• National energy efficiency program spending: ~$12.4B in 2020* • LBNL study assumes aggressive implementation of existing state energy efficiency policies in leading and up-and-coming states • ~20 uncommitted states reach today's average energy efficiency spending as % of retail revenues by 2020 (0.8%)
Home Energy Upgrade Program Budget as Percent of Residential Energy Efficiency Spending	• 28% average across all states for 2010-2020	• 28% average all states for 2010-2014 • 44% for 2015-2020	• 28% average across all states for 2010-2014 • 44% average across all states for 2015-2020
Spending on Low-Income Bundled Efficiency Programs	• 14% of total ratepayer energy efficiency funds	Same as Base Case	Same as Base Case

*Source: Barbose et al 2009. Shifting Landscape of of Ratepayer-funded Energy Efficiency in the U.S. LBNL 2258E, July.

Taxpayer-Funded Energy Efficiency Programs

Policy & Program Levers	Base Case	Moderate Case	Aggressive Case
EECBG & BetterBuildings Programs	• ARRA funds spent by 2013 • After 2013, assume no budget for BetterBuildings & EECBG	• ARRA funds spent by 2013 • After 2013, EECBG/Better Buildings budget of $45M/year; increasing at 3% /year to 2020 • Assume ~20% of budget targeted to home energy upgrades	• EECBG and BetterBuildings budget at $500M • Assume 33% of budget targeted to home energy upgrades
State Energy Program (SEP)	• SEP returns to 2008 level for 2013-2020 ($45M) • Assume ~3% of SEP budget devoted to home energy upgrades	• SEP returns to 2008 level of $45M in 2013 • Budget increases at 3%/year after 2013 • Assume ~6% of SEP budget targeted at home energy upgrade market	• SEP budget of $500M/yr in 2013; 3%/yr increase to 2020 • Assume ~6% of SEP budget targeted at home energy upgrade market.

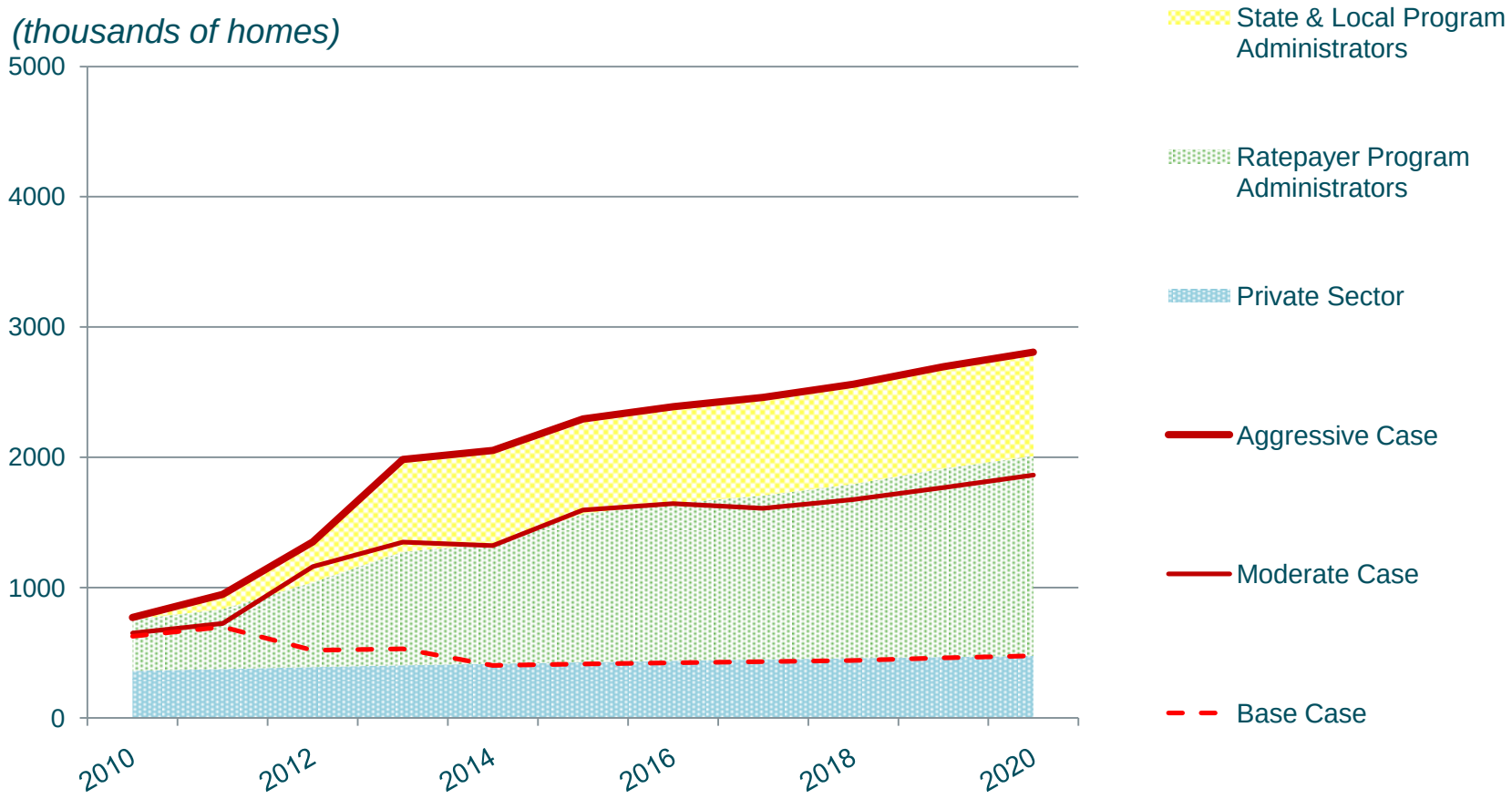
Other Federal Policy Initiatives

Policy & Program Levers	Base Case	Moderate Case	Aggressive Case
Federal Tax Credits	• 2009-2010: Federal Tax Credit (25C) at ARRA levels (30%) • 2011: Drops to 10% • 2012-2020: No tax credit	• 10% tax credit extended through 2020 • No tax liability assumed for low-income households	• Tax credit maintained at 30% during 2010-2020 • No tax liability assumed for low-income households
Federal Rebate/Loan Program	NOT IN SCENARIO	• $3.3B total funding; 2-Yr ramp & 6 years at steady funding	• $6.6B total funding; 2-Yr ramp & 11 years at steady Funding
Rural Star	NOT IN SCENARIO	• $800M Utility Loans to historic USDA Rural Utility Recipients for HEU	Same as Moderate Case
Clean Energy Standard	NOT IN SCENARIO	• CES Target of 15% of retail sales in 2015; 20% in 2020 • Assume EE can provide 33% of target (i.e. 4.9% in 2015, 6.6% in 2020	NOT IN SCENARIO – Targets assumed met or exceeded by market under carbon pricing
Emissions Allowances from Federal Climate Legislation	NOT IN SCENARIO	NOT IN SCENARIO	• Large annual GHG allowance allocations to utilities, state energy offices, rural coops, based on CO_2 intensity

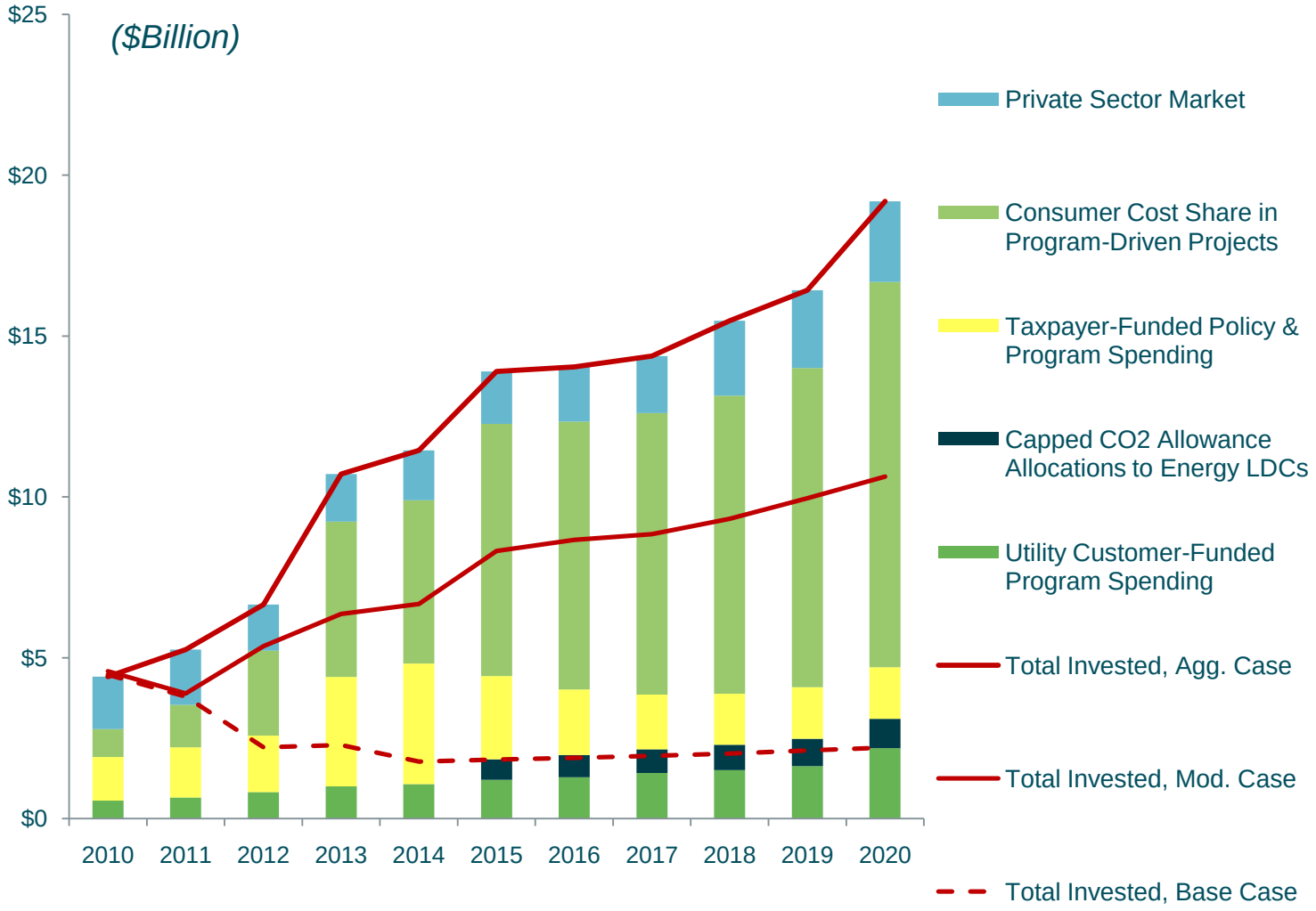
Results Summary

Metrics	2009	Base Case in 2020	Mod. Case in 2020	Agg. Case in 2020
TOTAL HOUSING STOCK	112 M	128 M	128 M	128 M
TARGET MARKET: Households with incomes >149% Federal Poverty Level residing in homes built prior to 2005	82 M	93 M	93 M	93 M
HOME ENERGY UPGRADE MARKET ACTIVITY				
Annual Number of Homes Upgraded		**0.5 M**	**1.7 M**	**3.0 M**
Homes upgraded as % of Households >149% Federal Poverty Level & Pre-2005 Construction	0.7%	0.5%	1.8%	3.2%
Cumulative Number of Homes Upgraded (2010-2020)		7 M	14M	22M
Market Saturation: Cumulative # of Home Upgrades by 2020 as % of Households >149% Poverty Level & Pre-2005 Construction		**7%**	**15%**	**23%**
ENERGY SAVINGS & INVESTMENT REQUIRED				
Delivered Energy Savings in 2020*		**0.08 Quads**	**0.22 Quads**	**0.32 Quads**
Cumulative Delivered Energy Savings, All Homes Upgraded (2010-2020)*		**0.53 Quads**	**1.14 Quads**	**1.59 Quads**
Annual Public/Private Investment in 2020		**$2.1 B**	**$10.1 B**	**$19 B**
Total Private Sector Investment		$17 B	$65 B	$91 B
Total Public Sector Investment		$9 B	$18 B	$41 B
Ratio of Private to Public Investment		**1.8**	**3.6**	**2.2**

All 3 Scenarios:
Number of Home Energy Upgrades



All 3 Scenarios:
Investment by Funding Source



Residential Retrofit Priority Areas

Goal

Significantly increase the number of comprehensive, durable, performance-based home energy upgrades (HEUs) through a robust, sustainable industry – in line with estimates for the Moderate or Aggressive scenarios.

Priorities

I. Improve Residential Energy Efficiency Program Design

1. Improve the quality of home energy upgrade program design and implementation

2. Rigorous quality assurance standards and workforce training

II. Enable Access to Capital

3. Improve access to credit for both product and service providers

4. Improve access to financing for customers

III. Increase the Market Value of Home Energy Upgrades

5. Increase the value of home energy upgrades, through labeling, disclosures, education, data collection, etc.

IV. Bolster Energy Efficiency Funding & Policy Support

6. Increase HEU funding from utility customers
7. Maintain or increase taxpayer funding for state and local HEU programs
8. Offer federal rebates and tax credits for HEUs
9. State and Federal Clean Energy Commitments
10. Federal CO_2 legislation with funding to support HEU programs

RRWG Priorities and Proposed Projects*

Priorities I & II: Improve Program Design and Enable Access to Capital

Project 1: Home Performance Market Modeling

Project 2: Forum on Moderate Income Program Design and Delivery

Priority III: Increase the Market Value of Home Energy Upgrades

Project 3: Forum on Green Multiple Listing Services

Project 4: Evaluating the Impact of Home Energy Upgrades on Property Value

Project 5: Valuation of Market Transformation and Other Non-Energy Benefits

Priority IV: Bolster Program Funding and Policy Support

Project 6: Regulatory Barriers and Opportunities for HEU Programs

**"Priorities" are taken from the working group's Roadmap Report, also shown on slide 22. The ordering of this list is not intended to reflect any preference or hierarchy of "priority areas" nor of the projects associated with them. Many of the projects could arguably be associated with several of the four priorities; linkages back to priorities have been bucketed for simplicity.*

Project 1: Home Performance Market Modeling

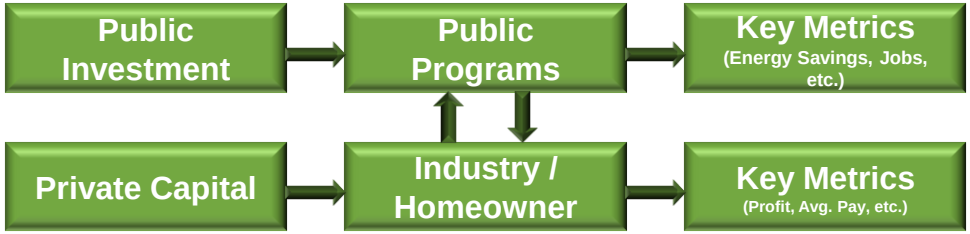
Rationale:

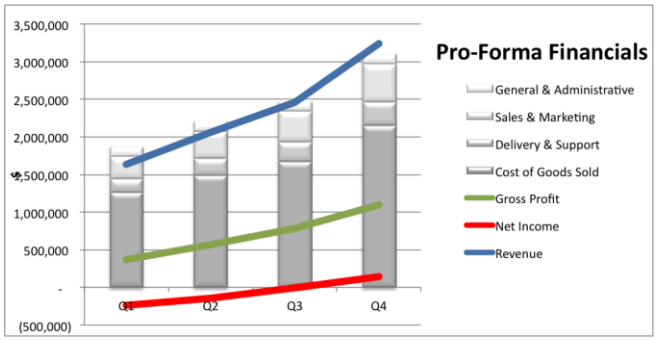
- Provide a tool that allows program administrators to **test the impact of changes** in a program's operating conditions and private contractors to evaluate and predict the outcome of their operations with a robust financial model.
- Questions the model could answer:
  - What wage levels can a contractor afford given profit margins, costs of materials and overhead, and other factors?
  - What are the implications of shifting costs, such as marketing or lead generation, to the public sector in terms of contractor profit?
  - What economies of scale are possible, what time frame will achieve them, and what impacts will they have on public funding productivity and industry profitability?

Approach: Building on existing data from operating private companies and public programs, develop specific models representing investments and goals in key markets.

Audience: Industry stakeholders, program administrators, federal/state policy makers

Timeline (if funded): Hold meeting with DOE Better Buildings and Booz Allen Hamilton to discuss their similar existing project and ensure no duplication; identify any opportunities for collaboration (Aug. 2011)





SEE Action
STATE & LOCAL ENERGY EFFICIENCY ACTION NETWORK

Project 2: Moderate Income Program Design & Delivery

- **Rationale**:
  - Targets widely overlooked yet large market segment 60% to 120% of state median income (approximately third of U.S. households)
  - Moderate income customers are credit/equity challenged and highly impacted by energy costs
- **Approach:**
  - Leverages technical research underway at LBNL and expertise on RRWG by convening key implementers and administrators in calls and webinars
- **Audience:**
  - Federal/state policymakers, program administrators, regulatory bodies, foundation managers
- **Timeline (if funded):**
  - Hold exploratory meeting with Better Buildings, SEP, HPRC, and LBNL to discuss existing work and projects underway; consider creating and hosting a forum for stakeholders to share experiences and ideas (Exploratory meeting: Fall 2011 at earliest, depends on other DOE programs' plans and progress)

Project 3: Forum on Green MLS

- **Rationale:**
  - Move forward next steps of NHPC's report, "Unlocking the Full Value of Green Homes: Why Green Multiple Listing Services Are a Key to Home Energy Efficiency"
  - Engage NAR, EcoBrokers, appraisers, banks, and home performance contractors to discuss the merits and challenges of a Green MLS
- **Approach:**
  - Calls/webinars with key stakeholders to identify opportunities and challenges of a green MLS
  - Identify areas where green MLS is gaining traction, develop case studies and identify best practices, help other regions engage realtors to promote and implement green MLS and related realty services
  - Build upon work that Home Performance Resource Center and NHPC have done (separately)
- **Audience:**
  - Federal/state policymakers, real-estate community, financiers, home sellers
- **Timeline (if funded):**
  - Collect, review, and synthesize existing literature, information on programs/projects underway, and best practices of existing green MLS activity (Aug./Sept. 2011).
  - Convene stakeholders to present synthesized collection of information and gather reactions to formulate potential next steps (Fall 2011)

Project 4: Develop a Methodology for Assessing the Impact of Energy Upgrades on Property Value

- **Rationale:**
  - Currently, there are multiple—but no uniformly agreed upon or widely accepted—methods of assessing the contribution of energy upgrades to home value (at sale and appraised)
  - Until more data is available on home sales with upgrades (a matter of time), a common methodology is needed to attempt to quantify the value of upgrades—laying a framework against which future data can be collected and analyzed.
- **Approach:**
  - Review literature and methodological considerations in assessing the impact of HEU on home value
  - Propose analytic framework for collecting data that will reveal upgrades' contribution to home value
- **Deliverables:** Policy brief and Webinar; outreach to real estate community
- **Audience:** Federal/state policymakers; real-estate stakeholders
- **Timeline (if funded):** Conduct literature reviews and speak with organizations already conducting work in this area to determine whether next steps or a project is sensible, given the newness of the area and limited data presently available (Fall 2011)

Project 5: Evaluating Market Transformation and Non-Energy Benefits

- **Rationale:**
  - Much is said and claimed about "market transformation", but metrics are not well established to indicate when true transformation exists, making it hard for programs to measure their success
  - Non-energy benefits are often neglected as benefits of energy efficiency programs, quantifiable values are needed if they are to be counted, or at minimum values should be qualitatively described uniformly in increase understanding and awareness of them

- **Approach:**
  - Assess the value and meaning of "market transformation"; establish metrics that are indicative; identify to what extent the most "successful" programs exhibit these metrics
  - Evaluate, and attempt to assign standards and/or quantitative measures, on commonly overlooked non-energy benefits

- **Audience:** NARUC, PUCs, energy efficiency program administrators

- **Timeline (if funded):**
  - Review previously completed studies (e.g., ACEEE study) and subsequent follow-on studies that have attempted to tackle this issue (Sept. 2011)
  - Scope the project more fully by detailing variables to be assessed (e.g., characteristics of market transformation, which non-energy benefits to quantify, etc.) (Nov. 2011)

Project 6: Regulatory Barriers and Opportunities for Home Energy Upgrade Programs

- **Rationale:**
  - Current application of cost-effectiveness tests poses challenges to home energy upgrade programs
  - Need to elaborate on best practices in application of TRC and other factors used in program screening
- **Approach:**
  - Analyze current approaches to screening energy efficiency portfolios and programs for cost effectiveness and the impact of those approaches on HEU programs
  - Discuss appropriate application of the TRC and use of multiple cost-effectiveness tests, as well as other considerations in screening HEU programs
- **Deliverables:**
  - Convene stakeholders in a forum around work in this area by NHPC and LBNL
  - Meetings with key stakeholders (e.g., Commissioners, program administrators)
  - Technical paper, webinars
- **Audience:** NARUC and state PUCs, policymakers, program administrators
- **Timeline (if funded):**
  - Review existing literature; identify and understand work underway by other organizations (Aug. 2011)
  - Present literature review findings and synthesis of current projects to stakeholders (including those already doing work in this area (Meeting: Fall 2011)
  - Determine additional analysis or collaboration w/current projects would be beneficial (Proposal by Fall 2011)

Appendix A:
Priorities Mapped to Stakeholders

Roadmap Priorities and Key Stakeholder Groups

	Priorities		Federal Govt	State Govt	Local Govt	Regulatory Commissions	Utility Customer-Funded Administrators	Product & Service Providers & Industry Groups	National and Regional NGOs
Improve Residential EE Program Design	**1. Improve the quality of home energy upgrade program design and implementation**	1a. Monitor and evaluate existing and new HEU programs (e.g. innovations piloted in BetterBuildings programs) to better understand best practices	√	√	√	√	√	√	√
		1b. Share lessons learned among program administrators and with industry partners	√	√	√	√	√	√	√
		1c. Create tools and resources to support ongoing program improvement	√	√			√	√	√
		1d. Further analyze strategies for reaching hard to serve markets, e.g., multifamily, manufactured homes, rental properties and low/moderate income households	√	√	√	√	√	√	√
		1e. Review the opportunity and costs associated with more comprehensive upgrades (>40% savings/home) and support initiatives in this area	√	√	√	√	√	√	√
	2. Rigorous quality assurance standards and workforce training	2a. Establish standards and develop high-quality, accessible training to support a qualified workforce	√	√			√	√	√
		2b. Improve and standardize quality assurance for home energy upgrade programs	√	√			√	√	√

√ = Major role

√ = Minor role

SEE Action
STATE & LOCAL ENERGY EFFICIENCY ACTION NETWORK

Roadmap Priorities and Key Stakeholder Groups (continued…)

	Priorities		Federal Govt	State Govt	Local Govt	Regulatory Commissions	Utility Customer-Funded Administrators	Product & Service Providers & Industry Groups	National and Regional NGOs
Enable Access to Capital	**3. Improved access to credit for product and service providers**	3a. Assess need for startup capital and lines of credit for new and growing home energy upgrade businesses	√	√	√			√	
		3b. Provide needed capital access to these businesses directly or through financial partners	√	√	√			√	
	4. Improve access to financing for customers	4a. Acquire a better understanding of credit needs and alternative underwriting methods for low/moderate-income households	√	√	√	√	√	√	√
		4b. Increase the availability and affordability of financing for home energy upgrades; including considering how to extend terms to match the cost and savings of more comprehensive upgrades, and ways of attaching loans to property rather than property owner.	√	√	√	√	√	√	√
		4c. Sustain state and local revolving loan funds (RLFs) for the residential sector, eliminate 20% cap on RLF allocations and consider reprogramming RLFs to more credit-challenged sectors.	√	√	√				
		4d. Analyze on-bill financing pilots and replicate if they are promising	√	√		√	√		
		4e. Consider ways of packaging loans across multiple programs or states for sale into secondary markets, providing greater liquidity to HEU program financing	√	√	√		√		√
		4f. Consider linking financing to rigorous quality assurance standards, e.g., third-party or national work specifications	√	√	√		√		

Roadmap Priorities and Key Stakeholder Groups (continued…)

		Priorities	Federal Govt	State Govt	Local Govt	Regulatory Commissions	Utility Customer-Funded Administrators	Product & Service Providers & Industry Groups	National and Regional NGOs
Increase the Value of Upgrades	**5. Increase the value of home energy upgrades**	5a. Consider public disclosures on energy performance through home energy performance labeling	√	√	√			√	√
		5b. Track and analyze the impact of home energy labeling on property value	√					√	√
		5c. Educate/inform real estate agents, appraisers, and home buyers about the value of home energy upgrades	√	√	√		√	√	√
		5d. Consider merging federal EE programs under a single national brand that states and localities may adopt, with uniform testing and quality assurance to increase coherence, brand recognition, and market confidence	√	√	√		√	√	√
		5e. Consider requiring cost-effective home energy upgrades at time of sale		√	√			√	√

Roadmap Priorities and Key Stakeholder Groups (continued…)

	Priorities		Federal Govt	State Govt	Local Govt	Regulatory Commissions	Utility Customer-Funded Administrators	Product & Service Providers & Industry Groups	National and Regional NGOs
Bolster EE Funding & Policy Support (continued)	**6. Increase utility customer funding for home energy upgrade programs** [Some elements included in Base, Moderate and Aggressive cases]	6a. Increase the number of states with utility customer-funded HEU programs.		√	√	√	√		
		6b. Expand the size of existing and new utility customer-funded HEU programs		√	√	√	√		√
		6c. Address policy or regulatory issues that limit home energy upgrade programs (e.g. strategies to address non-energy benefits; balancing cost-effectiveness tests, allowing EE for multiple fuels)		√		√	√		√
	7. Maintain or increase taxpayer funding for state and local home energy upgrade programs [Some elements included in the Moderate and Aggressive cases]	7a. Consider continued availability of SEP and EECBG funding and competive federal grants for home energy upgrade programs	√	√	√		√		√
		7b. Increase state and local funding for home energy upgrade programs		√	√		√		√
		7c. Consider additional funding sources, e.g., funds for improving the home health, safety and structural integrity	√	√	√		√	√	√

Roadmap Priorities and Key Stakeholder Groups (continued…)

	Priorities		Federal Govt	State Govt	Local Govt	Regulatory Commissions	Utility Customer-Funded Administrators	Product & Service Providers & Industry Groups	National and Regional NGOs
Bolster EE Funding and Policy Support	**8. Offer federal rebates and tax credits for HEUs** [Varying approaches included in the Moderate and Aggressive cases]	8a. Establish and fund a federal rebate program (e.g. HomeStar)	√	√	√	√	√	√	√
		8b. Establish and fund a rural utility loan program (e.g. RuralStar) for comprehensive home energy upgrades to channel affordable federal credit to utilities with	√	√		√	√		
		8c. Preserve the federal Residential Energy Efficiency Tax Credit at no less than 10% and consider modifications, e.g. coverage of labor, tiered credits for fuller upgrades and linkages to work standards	√				√	√	
	9. State and Federal Clean Energy Commitments [Included in the Moderate case]	9a. Establish new state policy commitments in energy efficiency resource standards, (e.g., EERS, RPS), utility resource plans, demand-side management plans, mandates for acquiring all "cost-effective energy efficiency savings"		√		√	√		√
		9b. If a federal resource standard is enacted (e.g., a Clean Energy Standard), allow energy efficiency as an eligible resource for compliance	√	√		√	√		
	10. Federal carbon legislation with funding to support home energy upgrade programs [Included in the Aggressive case]	10. If federal climate legislation is enacted that prices carbon emissions, provide incentives for states and utilities to use a fraction of the funds generated to support the HEU market and programs	√					√	√

SEE Action

STATE & LOCAL ENERGY EFFICIENCY ACTION NETWORK

Appendix B: Priorities, Resources, and Suggested Actions

Priority 1a. Monitor and evaluate existing and new HEU programs (e.g. innovations piloted in BetterBuildings programs) to better understand best practices

Stakeholders	Key Actions
Federal Govt	Track the progress and impacts of federally-funded programs; make data and case studies available.
State Govt	Track the progress and impacts of state-funded programs; make data and case studies available; work with federal govt to track SEP-funded programs.
Local Govt	Work with federal govt to track EECBG-funded programs.
Regulatory Commissions	Track the progress and impacts of ratepayer-funded programs; make data and case studies available.
Utility Customer-Funded Administrators	Work with regulatory commissions to track the progress and impacts of ratepayer-funded programs; make data and case studies available.
Product & Service Providers & Industry Groups	Provide data on projects; provide feedback to program evaluators on effective program design.
National and Regional NGOs	Work between states, regions, and the federal govt to coordinate evaluation efforts as appropriate.

Existing Resources: Some data being collected from ARRA-funded grantees.

Additional Resources Needed: Funding for qualitative research on both ARRA-funded programs and ratepayer programs would further our understanding of how to scale up the residential market.

Near-Term Actions: Create an advisory committee drawn from key stakeholder groups to give guidance on a research agenda to identify residential energy efficiency best practices. Collect and make public program data. Plan and fund more rigorous experimental design to test what works.

Priority 1b. Share lessons learned among program administrators and with industry partners

Stakeholders	Key Actions
Federal Govt	Provide funding for peer-to-peer forums for exchange of lessons learned.
State Govt	Facilitate sharing among local govts, and pursue connections btw states to share learnings.
Local Govt	Participate in peer-to-peer forums.
Regulatory Commissions	Participate in peer-to-peer forums for regulators; encourage program administrators to seek out innovative models.
Utility Customer-Funded Administrators	Participate in peer-to-peer forums.
Product & Service Providers & Industry Groups	Provide feedback on what has worked from a product/service provider perspective.
National and Regional NGOs	Facilitate regional and national forums for exchange of lessons learned.

Existing Resources: Many "peer" organizations already exist (e.g., NASEO, NARUC, CEE, ICLEI, Efficiency First) that have relationships with many key players. DOE's Office of Weatherization and Intergovernmental Program and BetterBuildings also have started some of this work through support provided to ARRA grantees.

Additional Resources Needed: More attention and funding needs to be given to scaling up the residential sector; this will require deeper relationships with "peer groups" and new relationships across groups (e.g., between industry players and various levels of government).

Near-Term Actions: Increase the focus on the residential energy efficiency market at peer conferences and workshops (e.g. at the many annual/semi-annual meetings that already happen). DOE also should consider bringing together leaders from these various stakeholder groups to develop relationships and discuss lessons learned across stakeholder groups at least semiannually.

Priority 1c. Create tools and resources to support ongoing program improvement

Stakeholders	Key Actions
Federal Govt	Fund the creation of tools and resources to support new and existing residential EE programs.
State Govt	Fund the creation of state-specific tools and resources to support new and existing residential EE programs.
Utility Customer-Funded Administrators	Provide templates, tools, and other resources that will speed program deployment and increase program impacts.
Product & Service Providers & Industry Groups	Help identify needed tools and resources.
National and Regional NGOs	Help identify needed tools and resources.

Existing Resources: Many tools and resources exist but are scattered and may not be tailored to a program implementer audience – need to assess existing resources. DOE's Office of Weatherization and Intergovernmental Program and BetterBuildings program have also started some of this work through the support they provide to ARRA grantees.

Additional Resources Needed: A range of tools and resources are needed, use the advisory committee drawn from key stakeholder groups to give guidance on specific resources needed.

Near-Term Actions: Assess existing resources; create and fund an advisory group to identify additional resources needed. Start creating tools and resources.

Priority 1d. Further analyze strategies for reaching hard to serve markets, e.g., multifamily, manufactured homes, rental properties and low/moderate income households

Stakeholders	Key Actions
Federal Govt	Fund this research.
State Govt	Fund this research; experiment with programs to reach these audiences.
Local Govt	Experiment with programs to reach these audiences.
Regulatory Commissions	Fund this research.
Utility Customer-Funded Administrators	Experiment with programs to reach these audiences.
Product & Service Providers & Industry Groups	Experiment with products & services to reach these audiences.
National and Regional NGOs	Facilitate coordination of efforts to reach these audiences as appropriate.

Existing Resources: A few programs have had some success in these markets – first assess details of progress to date.

Additional Resources Needed: Funds to support pilot programs that focus on these markets.

Near-Term Actions: Assess existing programs that target these under-served markets. Identify and consider funding at least two or three new pilot programs that target these market segments. Launch pilot programs and track them closely.

Priority 1e. Review the opportunity and costs associated with more comprehensive upgrades (>40% savings/home) and support initiatives in this area

Stakeholders	Key Actions
Federal Govt	Fund this research.
State Govt	Fund this research; experiment with programs to increase savings per home.
Local Govt	Experiment with programs to increase savings per home.
Regulatory Commissions	Fund this research.
Utility Customer-Funded Administrators	Experiment with programs to increase savings per home.
Product & Service Providers & Industry Groups	Experiment with products & services to increase savings per home.
National and Regional NGOs	Facilitate coordination of efforts as appropriate.

Existing Resources: Work has been done by DOE, National Laboratories, Affordable Comfort, and others on this topic.

Additional Resources Needed: Additional research and in-field experimentation needed. Inquiry into which advanced measures are – or could be – cost-effective is important.

Near-Term Actions: Assess research to date. Identify and consider funding demonstration programs and projects that test various "deep savings" strategies.

2a. Establish standards and develop high-quality, accessible training to support a qualified workforce
2b. Improve and standardize quality assurance for home energy upgrade programs

Stakeholders	Key Actions
Federal Govt	Establish national workforce standards for home energy upgrades. Facilitate the exchange of best practices for quality assurance programs. Provide funding for workforce training.
State Govt	Develop minimum quality assurance standards for state-funded programs
Utility Customer-Funded Administrators	Develop minimum quality assurance standards for ratepayer-funded programs
Product & Service Providers & Industry Groups	Provide insight and feedback to program implementors to design a system that is rigorous without being unduly burdensome on industry
National and Regional NGOs	Identify and share best practices in workforce training and quality assurance

Existing Resources: Multiple QA programs already exist and can be improved and replicated. DOE is currently developing workforce standards that will advance the industry.

Additional Resources Needed: Additional effort and funding will be required to improve workforce training as the industry scales up, and to improve and expand QA programs required to maintain high work quality.

Near-Term Actions: Establish national workforce standards; share best practices on quality assurance programs; develop and/or improve QA for both ratepayer and taxpayer-funded energy efficiency programs.

Priority 3a. Assess need for startup capital and credit for HEU businesses
Priority 3b. Offer affordable capital to these businesses directly or through financial partners

Stakeholders	Key Actions
Federal Govt	Fund an assessment of growth capital and working capital needed for home energy upgrade businesses; provide direct loans or other credit support through the SBA and other agencies as appropriate.
State Govt	Monitor the ability of firms to get access to capital; provide support through existing state economic development organizations.
Local Govt	Monitor the ability of firms to get access to capital; provide support through existing local economic development organizations.
Product & Service Providers & Industry Groups	Provide feedback about what type of access to capital barriers exist.

Existing Resources: Some federal, state and local small business resources exist, but have not been tailored for home energy improvement market.

Additional Resources Needed: A better understanding of the specific needs for this market is required. Additional start up capital and working capital probably are required for this market to scale up.

Near-Term Actions: Assess the capital needs in home energy improvement market. Identify state and local small business resource partners that already exist.

Priority 4a. Acquire a better understanding of credit needs and alternative underwriting methods for low/moderate-income households
Priority 4b. Increase the availability and affordability of HEU financing. Consider matching terms to cost and savings of more comprehensive upgrades and ways of attaching loans to property rather than property owner.

Stakeholders	Key Actions
Federal Govt	Provide technical support (e.g. fund study) to assess the credit needs and alternative underwriting methods for low/moderate-income households; organize existing resources into an accessible online resource library.
State Govt	See the SEE Action Financing Working Group findings for specific recommendations.
Local Govt	See the SEE Action Financing Working Group findings for specific recommendations.
Regulatory Commissions	See the SEE Action Financing Working Group findings for specific recommendations.
Utility Customer-Funded Administrators	See the SEE Action Financing Working Group findings for specific recommendations.
Product & Service Providers & Industry Groups	See the SEE Action Financing Working Group findings for specific recommendations.
National and Regional NGOs	See the SEE Action Financing Working Group findings for specific recommendations.

Existing Resources: Multiple guidance documents created through ARRA-funded technical assistance work and through the many state and local governments and NGOs working on this topic

Additional Resources Needed: Templates and "How Tos" for the variety of financing options, access to lower cost capital, the development of a secondary market for loans

Near-Term Actions: See the SEE Action Financing Solutions Working Group findings for specific recommendations.

Priority 4c. Sustain state and local revolving loan funds (RLFs) for the residential sector, eliminate 20% cap on RLF allocations, and consider reprogramming RLFs to more credit-challenged sectors, e.g., moderate-income households

Stakeholders	Key Actions
Federal Govt	Eliminate 20% cap on federal funds used for RLF allocations.
State Govt	Sustain RLF for the residential sector, and consider reprogramming RLFs to more credit-challenged sectors, e.g., moderate-income households.
Local Govt	Sustain RLF for the residential sector, and consider reprogramming RLFs to more credit-challenged sectors, e.g., moderate-income households.

Existing Resources: There are over $650 million in ARRA-funded RLF pools established.

Near-Term Actions: Eliminate 20% RLF in future federal funding; consider reprogramming RLFs to more credit-challenged sectors.

Priority 4d. Review on-bill financing and property-attached financing pilots. Expand and replicate if successful.

Stakeholders	Key Actions
Federal Govt	Provide funding to analyze existing on-bill financing and property-attached financing programs.
State Govt	Support new on-bill and property-attached financing programs.
Regulatory Commissions	Support new on-bill and property-attached financing programs.
Utility Customer-Funded Administrators	Support new on-bill and property-attached financing programs.

Existing Resources: Some existing on-bill and property-attached financing programs.

Additional Resources Needed: Funding to analyze impacts of on-bill and property-attached financing programs; possibly funding to increase number of on-bill programs.

Near-Term Actions: Analyze existing on-bill and property-attached financing programs.

Priority 4e. Consider ways of packaging loans across multiple programs or states for sale into secondary markets, providing greater liquidity to HEU program financing

Stakeholders	Key Actions
Federal Govt	Support the development of a secondary market.
State Govt	Facilitate the development of a secondary market. Adopt conforming underwriting and other standards for state programs.
Local Govt	Encourage local financing programs to adopt conforming underwriting and other standards.
Utility Customer-Funded Administrators	Adopt conforming underwriting and other standards for utility customer-funded programs.
National and Regional NGOs	Facilitate the development of a secondary market.

Existing Resources: Some early efforts to establish standards for a secondary market.

Additional Resources Needed: Funding to continue to develop standards and facilitate sales into a secondary market.

Near-Term Actions: Support efforts to create a secondary market. Adopt conforming underwriting and other standards.

Priority 4f. Consider linking financing to rigorous quality assurance standards, e.g., third-party or national work specifications

Stakeholders	Key Actions
Federal Govt	Provide guidance on how to link financing to rigorous quality assurance standards
State Govt	Link state financing to rigorous quality assurance standards.
Local Govt	Link local financing to rigorous quality assurance standards.
Utility Customer-Funded Administrators	Link ratepayer-funded financing to rigorous quality assurance standards.

Existing Resources: Work is underway on national work specifications that can serve as quality assurance standards for programs, households and lenders.

Near-Term Actions: Link existing financing programs to rigorous quality assurance standards where possible.

Priority 5a. Public disclosures on energy performance through home energy scores
Priority 5b. Track and analyze the impact on home energy scores on property value

Stakeholders	Key Actions
Federal Govt	Develop a national rating system for energy performance (in process); fund research to track the impact of home energy scores on property value.
State Govt	Require public disclosure of energy performance at time-of-sale and time-of-rental.
Local Govt	Require public disclosure of energy performance at time-of-sale and time-of-rental, if not required at the state level.
Product & Service Providers & Industry Groups	Provide feedback and participate in testing of energy performance scores.
National and Regional NGOs	Advocate for implementation of energy performance scores.

Existing Resources: National home energy labeling pilots in process.

Additional Resources Needed: Need to adapt home energy labeling based on feedback from the pilots; funding required to track the impact of the labeling program over time.

Near-Term Actions: Complete a thorough assessment of the home energy labeling pilots with feedback from all stakeholders. Launch “improved” version of the home energy labels. Start research on the impact of the score on property value and other potential outcomes of labeling.

Priority 5c. Educate/inform real estate agents, appraisers, lenders and home buyers about the value of home energy upgrades

Stakeholders	Key Actions
Federal Govt	Provide data from ARRA-funded residential retrofit programs and the home energy score pilot to key stakeholders.
State Govt	Ensure that appraisers, lenders and real estate agents are aware of increases on home values from whole-house approaches to efficiency, comfort &
Local Govt	Fill in gaps in state efforts as needed.
Utility Customer-Funded Administrators	Provide education to potential program participants about the value of home energy upgrades.
Product & Service Providers & Industry Groups	Provide case studies and data about the value of home energy upgrades to all stakeholders.
National and Regional NGOs	Facilitate communication about educational efforts across states and localities.

Existing Resources: Some educational materials exist for these audiences, especially for home buyers; EcoBrokers and other groups have started to organize real estate agents.

Additional Resources Needed: Funding for a concerted effort to educate those professionals most influential in the home buying process .

Near-Term Actions: Expand courses for real estate agents and appraisers on valuing the impact of efficiency on operating costs in existing homes. Identify the most effective practices (e.g. those that lead to action) for educating home buyers. Ensure information about efficiency-enhanced home values is distributed to the real-estate community.

Priority 5d. Consider merging federal energy efficiency programs under a single national brand that states and localities may adopt, with uniform testing and quality assurance to increase coherence, brand recognition, and market confidence

Stakeholders	Key Actions
Federal Govt	Merge federal EE programs under a single national brand, and promote this brand widely.
State Govt	Adopt national brand where appropriate.
Local Govt	Adopt national brand where appropriate.
Utility Customer-Funded Administrators	Adopt national brand where appropriate.
Product & Service Providers & Industry Groups	Adopt national brand where appropriate.
National and Regional NGOs	Adopt national brand where appropriate.

Existing Resources: Several brands currently exist, and some (ENERGYSTAR) have wide public recognition.

Additional Resources Needed: Funding to promote brand.

Near-Term Actions: Identify and analyze existing brands; simplify all brands into a single national brand where possible.

Priority 5e. Consider requiring cost-effective home energy upgrades at time-of-sale

Stakeholders	Key Actions
State Govt	Consider requiring the implementation of cost-effective home energy upgrades at time-of-sale or immediately after sale.
Local Govt	If state-wide law is absent, consider requiring the implementation of cost-effective home energy upgrades at time-of-sale or immediately after sale.
Product & Service Providers & Industry Groups	Provide feedback and case studies to support policy design.
National and Regional NGOs	Advocate for time-of-sale ordinances and statutes.

Existing Resources: A few time-of-sale programs currently exist.

Additional Resources Needed: Support for new pilot policies, including analysis of impacts. Sharing of lessons learned.

Near-Term Actions: Identify and analyze existing programs. Consider funding several pilot programs in geographically/climatically diverse localities.

Priority 6a. Increase the number of states with utility customer-funded HEU programs

Stakeholders	Key Actions
State Govt	Consider establishing ratepayer-supported efficiency programs.
Local Govt	Partner with utilities and tailor ARRA-funded programs for easy transition to ratepayer supported programs.
Regulatory Commissions	Support broad efficiency portfolios that include home energy upgrades.
Utility Customer-Funded Administrators	Propose portfolios that include comprehensive home energy upgrades; shifting mix of investments from lighting to HEU programs has a large effect on the pace of national upgrades and energy savings.

Existing Resources: Utility customer-funded energy efficiency programs are the most consistent driver of demand for home energy upgrades across all policy scenarios. Existing state policies and programs provide multiple models that can be adapted to individual state circumstances.

Additional Resources Needed:. Many EECBG/SEP grantees offer programs and infrastructure of potential use to new utility customer-funded HEU programs.

Near-Term Actions: NARUC and NGOs can focus education and assistance on helping states modestly committed to efficiency and home energy upgrades specifically to understand the paths to full efficiency portfolios and consumer savings. The federal government can collect and share data and lessons learned.

Priority 6b. Expand the size of existing and new utility customer-funded home energy upgrade programs

Stakeholders	Key Actions
State Govt	Consider providing top-level guidance and policy support for ratepayer-funded HEU programs.
Local Govt	Prepare ARRA-funded programs for transition to ratepayer support.
Regulatory Commissions	Consider strategic direction and regulatory support in favor of comprehensive HEU programs.
Utility Customer-Funded Administrators	Propose portfolios that include home energy upgrades. Shifting investments from lighting to HEU programs has a large effect on state and national upgrades and energy savings.
National and Regional NGOs	Promote the inclusion of HEU programs in state efficiency portfolios.

Existing Resources: Many examples of successful programs exist.

Additional Resources Needed: Comparative review and analysis of outcomes of expanded HEU programs; program data are often not widely and publicly shared at present.

Near-Term Actions: States and regulatory commissions can examine the cost reductions available with the expansion of programs with proven design elements. Industry groups and NGOs can begin assembling arguments in favor of HEU programs.

Priority 6c. Address policy or regulatory issues that limit home energy upgrade programs (e.g., strategies to address non-energy benefits; balancing cost-effectiveness tests, allowing energy efficiency for multiple fuels)

Stakeholders	Key Actions
State Govt	Consider providing legislative support on EE policy guidelines, balancing cost effectiveness tests and other factors in considering HEU programs.
Regulatory Commissions	Consider EE policy guidelines, balancing among appropriate cost-effectiveness tests and other factors in screening HEU programs. Consider specific performance incentives for administrators that undertake such programs.
Utility Customer-Funded Administrators	Consider models for program administration and design that facilitate inclusion of whole house improvements that target all fuels to enhance cost effectiveness and obtain deeper savings.
National and Regional NGOs	Inform/educate stakeholders on factors that should be considered in analysis and screening of HEU programs.

Existing Resources: A number of pilot programs are being implemented that allow program administrators to provide comprehensive retrofits for all end uses served by multiple energy sources (e.g. electricity, gas, fuel oil).

Additional Resources Needed: Enabling regulatory and policy guidelines and funding sources are critical to including multiple fuels. ARRA-funded experiments in this area can be adopted by states.

Near-Term Actions: Assess existing multi-fuel programs. Fund and monitor at least two new experimental programs in these markets. Launch these programs and track them closely.

Priority 7a. Consider continued availability of SEP and EECBG funding and competitive federal grants for HEU programs

Stakeholders	Key Actions
Federal Govt	Consider tiered or performance-based funding keyed to investment in national policy goals for home energy savings programs.
State Govt	Consider investing federal funds into getting HEU programs past the initial cost barriers, making them more attractive for ratepayer support.
Local Govt	Consider shouldering community based HEU program components such as marketing & outreach that do not produce obvious energy savings for a program administrator.
Ratepayer-Funded Administrators	Seek out collaborations with SEP & EECBG recipients who might assume less cost-effective components of HEU programs and make ratepayer funds go farther.
National and Regional NGOs	Work among localities, states and regions to facilitate collaborations and divisions of labor betweenSEP& EECBG recipients and ratepayer program administrators.

Existing Resources: Dozens of local SEP- and EECBG-funded HEU programs exist, but funding is uncertain after ARRA.

Additional Resources Needed: Consider continuation of SEP and EECBG funding that can build off of lessons learned from BetterBuildings program grantees. Consider competitive grants that target HEU programs

Near-Term Actions: Devise transition plans for SEP and EECBG programs that target home energy upgrades and no longer will be funded post-ARRA. Monitor, analyze and disseminate lessons learned based on experiences designing and implementing current HEU and residential financing programs.

Priority 7b. Increase availability of state and local funding for HEU programs

Stakeholders	Key Actions
State Govt	Consider starting or increasing state funding for HEU programs to meet energy savings goals. Consider directing more of the estimated $1 billion in state revolving loan funds to home energy upgrade programs (now less than 1% devoted to HEU programs.)
Local Govt	Consider starting or increasing local funding for HEU programs.
Utility Customer-Funded Administrators	Consider advocating for these resources as complementary funding for ratepayer programs or joint endeavors.
National and Regional NGOs	Lend analysis and advocacy to state efforts at establishing HEU programs.

Existing Resources: Successful state and local HEU programs provide examples and serve as potential models for new or expanding programs. Existing revolving loan funds represent an opportunity for expanding financing opportunities in home energy improvement market.

Additional Resources Needed: Expansion of state and local HEU programs could provide states with direct means to achieve savings goals and efficient conduits for federal rebates or other policies.

Near-Term Actions: Monitor, analyze, and disseminate lessons learned based on experiences designing and implementing current HEU and residential financing programs.

Priority 7c. Consider additional funding sources, e.g., funds for improving home health, safety, and structural integrity

Stakeholders	Key Actions
Federal Govt	Work with federal agencies to ID other sources of complementary funds.
State Govt	Work with state agencies to ID other sources of complementary funds.
Local Govt	Work with local govt offices to ID other sources of complementary funds.
Utility Customer-Funded Administrators	Work with govt to ID other sources of complementary funds.
National and Regional NGOs	Support govt and administrators in to ID other sources of complementary funds.

Existing Resources: Sources of complementary funds for health, safety, and structural integrity may be paired with funds for energy efficiency, e.g., HUD and local housing grants and EPA lead abatement project funds.

Additional Resources Needed: Need to identify the range of funds available in the residential market and reduce barriers to joining those resources.

Near-Term Actions: Identify complementary funds and provide guidance to program administrators on how to pair these funds for greater impact.

Priority 8a. Establish a federal rebate program (e.g., Home Star)

Stakeholders	Key Actions
Federal Govt	Consider adoption of a federal rebate program of similar magnitude to the proposed Home Star program, potentially spread over more years.
State Govt	Consider models for optimizing the integration of federal rebates into existing programs to facilitate more and deeper home energy upgrades. Partner with retailers to intervene in major equipment replacements and ensure rapid rebating for programmatic and non-programmatic consumers.
Local Govt	Consider models for optimizing the integration of federal rebates into existing programs to facilitate more and deeper home energy upgrades.
Regulatory Commissions	Consider ways of integrating federal rebates into EE resources and plans.
Utility Customer-Funded Administrators	Consider models for optimizing the integration of federal rebates into existing programs to facilitate more and deeper home energy upgrades. Partner with retailers to intervene in major equipment replacements and ensure rapid rebating for programmatic and non-programmatic consumers.
Product & Service Providers & Industry Groups	Devise business models and sales strategies that integrate federal rebates.
National and Regional NGOs	ID and disseminate rebate integration models.

Existing Resources: A large-scale federal program providing financial incentives to support home energy improvement market has been proposed but does not exist. Some utilities offer these types of programs.

Additional Resources Needed: Large-scale federal rebate program could have significant impact on home energy improvement market activity and investment level(see Moderate and Aggressive scenarios).

Near-Term Actions: Lay the groundwork for a federal rebate program, including debate over program structure and distribution of rebates over time.

Priority 8b. Create a rural utility loan program (e.g., Rural Star) for comprehensive HEUs to channel affordable federal credit to utilities, especially those with small rate base

Stakeholders	Key Actions
Federal Govt	Consider establishing a rural utility loan program for home energy upgrades similar to the RuralStar proposal. Provide technical support for coordination with ratepayer-funded programs.
State Govt	Consider designs that target households with difficulty accessing affordable financing. Consider how these new programs might leverage existing infrastructure for program delivery.
Regulatory Commissions	Consider regulatory actions for enabling on-bill financing.
Utility Customer-Funded Administrators	Consider designs that target households with difficulty accessing affordable financing. Consider coordination with existing or new ratepayer programs. Prepare billing systems for on-bill financing.

Existing Resources: None in many states.

Additional Resources Needed: Funding to establish a rural utility loan program.

Near-Term Actions: Debate and consider passing the legislation. If passed, eligible utilities and state entities should begin establishing systems and infrastructure.

Priority 8c. Preserve the federal Residential Energy Efficiency Tax Credit at no less than 10% and consider modifications, e.g. coverage of labor, tiered credits for fuller upgrades, and linkages to work standards

Stakeholders	Key Actions
Federal Govt	Consider longer term renewal and elevation of the 25C tax credit for non-business energy property. Consider tiering the credit to reward more expansive upgrades on a performance basis; also consider ways of covering labor for less capital-intensive measures.
Utility Customer-Funded Administrators	Consider integrating the tax credits more seamlessly into offerings, including in upstream partnerships with retailers. Consider clear linkages to quality work standards and performance.
Product & Service Providers & Industry Groups	Consider sales techniques that capitalize on the credit, especially with performance-based tiers and quality-assurance requirements.

Existing Resources: The residential energy efficiency tax credit increases demand in the home energy improvement market (supports private sector market activity and helps leverage program activity).

Additional Resources Needed: Research is needed into the market response to different levels and renewal periods for the tax credit, i.e. 1 year versus 3 to 5 years. Research also is needed into the efficiency impacts of including or excluding labor as an eligible expense.

Near-Term Actions: Debate and consider a longer-term renewal of the tax credit at 10% or higher. Longer term policy support for tax credit (3+ years) could reinforce market confidence and accelerate investment among contractors and their lenders.

Priority 9a. Establish new state policy commitments in energy efficiency resource standards, (e.g., EERS, RPS), utility resource plans, demand-side management plans, mandates for acquiring all "cost-effective energy efficiency savings"

Stakeholders	Key Actions
State Govt	Consider statutes and actions needed to set and implement energy efficiency commitments.
Regulatory Commissions	Consider resources, strategies and guidelines needed to establish and implement new or higher commitments to energy efficiency.
Utility Customer-Funded Administrators	Devise and propose portfolios that should meet or exceed state and administrator commitments to efficiency targets - and that include HEU programs.
National and Regional NGOs	Disseminate models of state EERS approaches and case studies on outcomes.

Existing Resources: Multiple states already have an EERS and can serve as examples for regulatory approaches, funding, and integration with other state objectives.

Additional Resources Needed: States without an EERS could use actionable information about efficiency and clean generation resources in their states so they can set goals.

Near-Term Actions: States can begin evaluating their potential for energy savings and acquiring information from EERS states on considerations in setting targets and enabling compliance.

Priority 9b. If a federal resource standard were enacted (e.g., a Clean Energy Standard), allow energy efficiency as an eligible resource for compliance

Stakeholders	Key Actions
Federal Govt	Consider energy efficiency as an eligible resource in a federal energy resource standard (e.g., in a federal CES, RPS, or EERS) or make efficiency more explicit as a reduction in baseline retail sales.
State Govt	Consider State Energy Office partnerships with utilities on strategic planning to meet a federal energy or efficiency standard.
Regulatory Commissions	Consider issues associated with implementing federal energy legislation that includes a CES.
Utility Customer-Funded Administrators	Consider issues associated with implementing federal energy legislation that includes a CES.

Existing Resources: More than 20 states have adopted an EERS.

Near-Term Actions: Monitor debate on federal energy legislation (e.g. CES, RPS, EERS).

Priority 10. If federal climate legislation were enacted that prices carbon, provide incentives for states and utilities to use part of the funds generated to support the home energy upgrade market and programs

Stakeholders	Key Actions
Federal Govt	Consider climate legislation and emissions allowance allocations that promote residential efficiency and savings for residential consumers. Consider incentives for states to use allowance allocations for energy efficiency, including HEU programs. Provide modeling of future emissions intensities and projections of state allocations.
State Govt	Plan for integrating a large new funding stream into state energy policy. Consider what proportion of emissions reductions can or should come from existing housing stock and end uses.
Regulatory Commissions	Consider regulatory guidance that enables rapid scaling in HEU programs.
Utility Customer-Funded Administrators	Consider HEU program designs and delivery mechanisms that can scale very rapidly.

Existing Resources: Regional and state initiatives (e.g. RGGI) provide examples for allocation of funds from carbon allowances to support energy efficiency programs, including those targeted at home energy upgrades.